

STRUCTURAL CALCULATIONS

Project:

Sitka
216 Shotgun Alley
Sitka, AK 99835

Architect:

Prentiss + Balance + Wickline
216 West Galer
Seattle, WA 98119

Structural Engineer:

Harriott Valentine Engineers, Inc.
1932 First Avenue, Suite 720
Seattle, WA 98101
tel. 206-624-4760



SECTION 1: GENERAL

CRITERIA

Gravity

roof	dead	metal roofing 3/4" plywood 11-7/8" TJI 560 / LVL's @ 24"oc R38 insulation 5/8" gyp. wallboard slope factor miscellaneous	1.2 2.3 3.0 2.0 2.8 0.1 <u>3.6</u> 24%	live snow	50.0 psf
					15.0 psf
	total	dead + snow			65.0 psf
floor	dead	3/4" hardwood 3/4" plywood 11-7/8" TJI 560 @ 16"oc acoustic insulation 5/8" gyp. wallboard miscellaneous	3.0 2.3 3.0 1.0 2.8 <u>2.9</u> 19%	live residential	40.0 psf
					15.0 psf
	total	dead + live			55.0 psf
deck floor	dead	2x decking 3/4" plywood 2x12 @ 16"oc miscellaneous	4.3 2.3 3.3 <u>2.1</u> 18%	live residential	60.0 psf
					12.0 psf
	total	dead + live			72.0 psf
walls		battens 2x2 @ 24"oc 1/2" plywood 2x6 @ 16"oc R38 insulation 1/2" gyp. wallboard miscellaneous	0.3 1.5 1.7 1.4 2.2 <u>1.9</u> 21%		
					9.0 psf

Sitka's Structural Design Criteria

(For use with the International Building Code 2021 or the American Society of Civil Engineers - Minimum Design Loads for Buildings and Other Structures ASCE 7-16.)

- **Wind Load:**

Basic wind speed, V (3-second gust wind speed) = 150 miles per hour

- **Snow Load:**

Ground snow load, p_g = 50 pounds per square foot

- **Earthquake Load:**

Maximum considered earthquake ground motion-

0.2 second spectral response, S_s = 0.97 g

1.0 second spectral response, S_1 = 0.60 g

- **Frost Depth:**

Minimum of 18 inches required from finish grade to base of footing or base of non-frost susceptible fill.

- [Wind Exposure Definitions](#)

Codes in effect in Sitka:

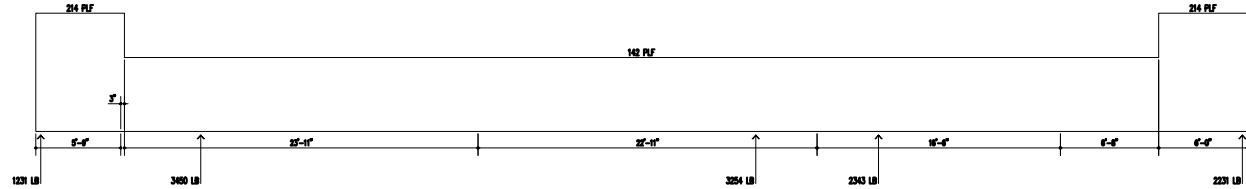
Residential (adopted by Sitka General Code):

- 2021 International Residential Code (not including plumbing and electrical)
- 2021 Uniform Plumbing Code
- 2020 National Electrical Code

Commercial (adopted by State statute and Sitka General Code)

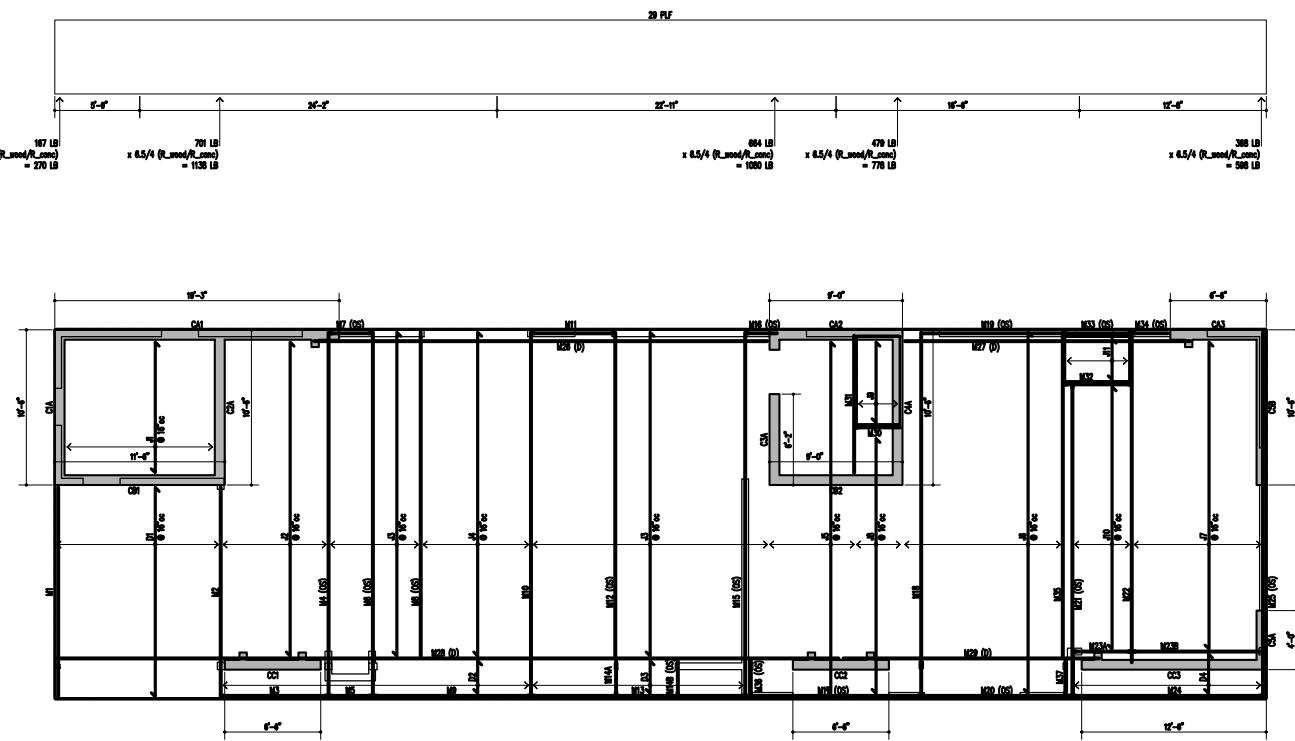
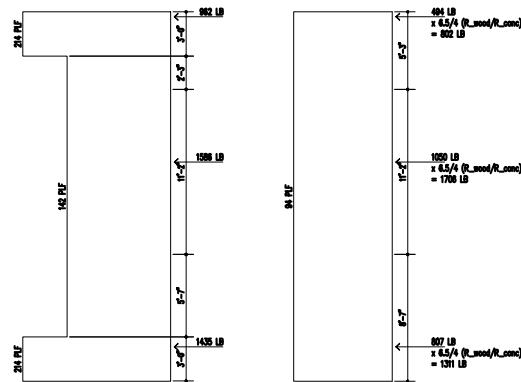
- 2021 International Building, Fire, and Mechanical Codes
- 2021 Uniform Plumbing Code
- 2020 National Electrical Code
- 2021 International Existing Building Code

0.6W



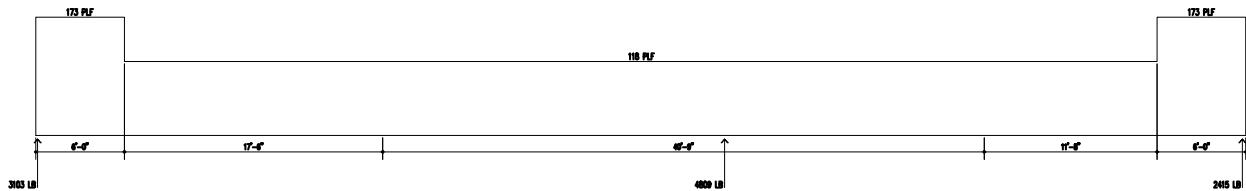
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NEED TO AMPLIFY LOADS FROM ANALYSIS AT FLOOR BY CONVERTING THE SEISMIC COEFFICIENT USED FROM PLYWOOD SHEARWALLS ABOVE TO CONCRETE SHEARWALLS BELOW

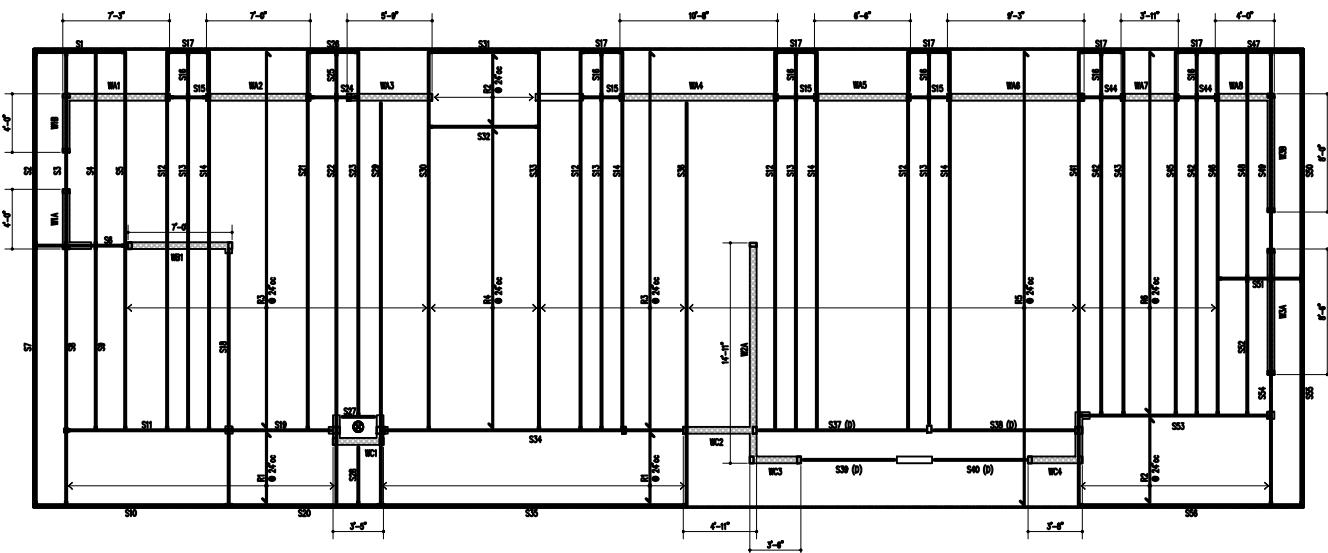
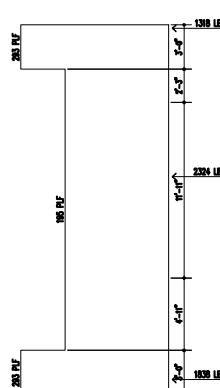
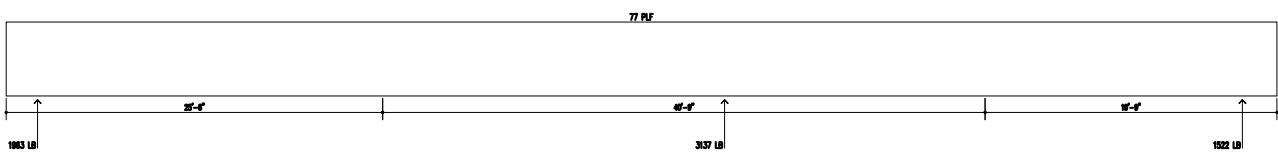


FIRST FLOOR FRAMING PLAN (FOUNDATION WALLS)

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ROOF FRAMING PLAN (FIRST FLOOR WALLS)
S2.2 BEAM AND LATERAL LOAD LAYOUT

SECTION 2: FRAMING

S2.2

Member Name	Results (Max UTIL %)	Current Solution	Comments
R1	Passed (30% R)	1 piece(s) 11 7/8" TJI® 110 @ 24" OC	Web Stiffeners Required
R2	Passed (36% R)	1 piece(s) 11 7/8" TJI® 110 @ 24" OC	Web Stiffeners Required
R3	Passed (99% R)	1 piece(s) 11 7/8" TJI® 560 @ 24" OC	Web Stiffeners Required
R4	Passed (91% R)	1 piece(s) 11 7/8" TJI® 560 @ 24" OC	Web Stiffeners Required
R5	Passed (83% ΔL)	1 piece(s) 11 7/8" TJI® 560 @ 24" OC	
R6	Passed (76% ΔL)	1 piece(s) 11 7/8" TJI® 560 @ 24" OC	
S1	Passed (26% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S2	Passed (27% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S3	Passed (71% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S4	Passed (32% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S5	Passed (63% ΔT)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S6	Passed (26% R)	1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL	
S7	Passed (36% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S8	Passed (74% ΔT)	1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL	
S9	Passed (42% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S10	Passed (45% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S11	Passed (100% R)	1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL	
S12	Passed (89% ΔT)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S13	Passed (76% ΔT)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S14	Passed (89% ΔT)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S15	Passed (33% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S16	Passed (6% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S17	Passed (4% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S18	Passed (95% R)	1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL	
S19	Passed (100% R)	1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL	
S20	Passed (46% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S21	Passed (102% ΔT)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S22	Passed (86% ΔT)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S23	Passed (68% ΔT)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S24	Passed (44% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S25	Passed (6% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S26	Passed (5% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S27	Passed (29% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S28	Passed (8% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S29	Passed (79% ΔL)	1 piece(s) 7" x 11 7/8" 2.2E Parallam® PSL	
S30	Passed (79% R)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S31	Passed (39% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S32	Passed (82% R)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S33	Passed (79% R)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S34	Passed (62% R)	1 piece(s) 7" x 24" 2.2E Parallam® PSL	
S35	Passed (82% ΔL)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S36	Passed (71% ΔL)	1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL	
S37	Passed (87% R)	1 piece(s) 5 1/4" x 11 1/4" 2.2E Parallam® PSL	
S38	Passed (74% R)	1 piece(s) 5 1/4" x 11 1/4" 2.2E Parallam® PSL	
S39	Passed (30% ΔT)	2 piece(s) 2 x 4 HF No.2	
S40	Passed (30% ΔT)	2 piece(s) 2 x 4 HF No.2	
S41	Passed (73% R)	1 piece(s) 5 1/4" x 11 7/8" 2.2E Parallam® PSL	
S42	Passed (69% ΔT)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S43	Passed (78% ΔT)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S44	Passed (32% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S45	Passed (81% ΔT)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	

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S46	Passed (48% ΔT)	1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL	
S47	Passed (20% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S48	Passed (40% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S49	Passed (64% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S50	Passed (28% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S51	Passed (25% R)	1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL	
S52	Passed (31% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S53	Passed (41% R)	1 piece(s) 5 1/4" x 14" 2.2E Parallam® PSL	use W10x19
S54	Failed (97% ΔT)	1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL use HGLT hanger for uplift	An excessive uplift of -1315 lbs at support located at 5 1/2" failed this product.
S55	Passed (28% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
S56	Passed (66% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
12'-0" WB	Passed (72% ΔT _{lat})	1 piece(s) 3 1/2" x 5 1/4" 1.8E Parallam® PSL (Plank)	
16'-0" WB	Failed (162% ΔT _{lat})	1 piece(s) 3 1/2" x 5 1/4" 1.8E Parallam® PSL (Plank)	use HSS 5x3x1/4

S2.1

Member Name	Results (Max UTIL %)	Current Solution	Comments
D1	Passed (85% M)	1 piece(s) 2 x 10 HF No.2 @ 16" OC	
D2	Passed (13% R)	1 piece(s) 2 x 10 HF No.2 @ 16" OC	
D3	Passed (100% R)	1 piece(s) 2 x 10 HF No.2 @ 16" OC	
D4	Passed (9% R)	1 piece(s) 2 x 10 HF No.2 @ 16" OC	
J1	Passed (27% R)	1 piece(s) 14" TJI® 110 @ 16" OC	
J2	Passed (47% R)	1 piece(s) 14" TJI® 560 @ 16" OC	
J3	Passed (70% V)	1 piece(s) 14" TJI® 560 @ 16" OC	Web Stiffeners Required
J4	Passed (47% R)	1 piece(s) 14" TJI® 560 @ 16" OC	
J5	Passed (39% R)	1 piece(s) 14" TJI® 210 @ 16" OC	
J6	Passed (40% ΔL)	1 piece(s) 14" TJI® 560 @ 16" OC	
J7	Passed (46% R)	1 piece(s) 14" TJI® 560 @ 16" OC	
J8	Passed (37% R)	1 piece(s) 14" TJI® 210 @ 16" OC	Web Stiffeners Required
J9	Passed (25% R)	1 piece(s) 9 1/2" TJI® 110 @ 16" OC	
J10	Passed (51% R)	1 piece(s) 14" TJI® 560 @ 16" OC	
J11	Passed (11% R)	1 piece(s) 9 1/2" TJI® 110 @ 16" OC	Web Stiffeners Required
M1	Passed (34% R)	1 piece(s) 6 x 14 HF No.2	
M2	Passed (101% R)	1 piece(s) 6 x 14 HF No.2	
M3	Passed (29% R)	1 piece(s) 2 x 14 HF No.2	
M4	Passed (69% R)	1 piece(s) 6 x 14 HF No.2	
M5	Passed (11% R)	1 piece(s) 2 x 14 HF No.2	
M6	Passed (75% R)	1 piece(s) 8 x 14 HF No.2	
M7	Passed (61% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
M7 (OS)	Passed (63% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
M8	Passed (86% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M8 (OS)	Passed (86% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M9	Passed (63% R)	1 piece(s) 2 x 14 HF No.2	
M10	Passed (100% ΔL)	1 piece(s) 6 x 14 HF No.2	
M11	Passed (100% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
M12	Passed (62% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M12 (OS)	Passed (62% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M13	Passed (96% M)	1 piece(s) 6 x 14 HF No.2	
M14A	Passed (100% R)	1 piece(s) 6 x 14 HF No.2	
M14B	Passed (100% R)	1 piece(s) 6 x 14 HF No.2	
M15	Passed (92% ΔL)	1 piece(s) 7" x 14" 2.2E Parallam® PSL	
M16	Passed (34% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
M16 (OS)	Passed (34% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
M17	Passed (85% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
M17 (OS)	Passed (100% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	

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M18	Passed (96% R)	1 piece(s) 7" x 14" 2.2E Parallam® PSL	
M19	Passed (100% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M19 (OS)	Passed (100% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
M20	Passed (66% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
M20 (OS)	Passed (100% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
M21	Passed (42% R)	1 piece(s) 5 1/4" x 14" 2.2E Parallam® PSL	
M21 (OS)	Passed (51% R)	1 piece(s) 5 1/4" x 14" 2.2E Parallam® PSL	
M22	Passed (97% M)	1 piece(s) 6 x 14 HF No.2	
M23A	Passed (27% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M23B	Passed (75% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M24	Passed (53% M)	1 piece(s) 2 x 14 HF No.2	
M25	Passed (29% M)	1 piece(s) 6 x 14 HF No.2	
M25 (OS)	Passed (24% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M26	Failed (294% M)	1 piece(s) W18X65 (A992) ASTM Steel	use W18x106
M27	Passed (79% M)	1 piece(s) W18X35 (A992) ASTM Steel	use W18x106
M28	Failed (222% R)	1 piece(s) 8 3/4" x 33" 24F-V4 DF Glulam	Support 2 failed reaction check due to insufficient bearing capacity. use W18x106
M29	Passed (77% ΔL)	1 piece(s) 7" x 16" 2.2E Parallam® PSL	use W18x106
M30	Passed (9% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M31	Passed (23% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M32	Passed (65% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M33	Passed (7% R)	1 piece(s) 5 1/4" x 14" 2.2E Parallam® PSL	
M33 (OS)	Passed (8% R)	1 piece(s) 5 1/4" x 14" 2.2E Parallam® PSL	
M34	Passed (25% R)	1 piece(s) 5 1/4" x 14" 2.2E Parallam® PSL	
M34 (OS)	Passed (61% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
M35	Passed (87% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M36	Passed (100% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M36 (OS)	Passed (100% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
M37	Passed (100% R)	1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL	
Bridge			
Member Name	Results (Max UTIL %)	Current Solution	Comments
B1	Passed (43% R)	1 piece(s) 2 x 14 HF No.2 @ 16" OC	
B2	Passed (53% M)	1 piece(s) 2 x 8 HF No.2 @ 16" OC	
B3	Passed (68% M)	1 piece(s) 2 x 8 HF No.2 @ 16" OC	
B4	Passed (3% R)	1 piece(s) W14X22 (A992) ASTM Steel	
B5	Passed (14% R)	1 piece(s) W8X10 (A992) ASTM Steel	
B6	Passed (7% R)	1 piece(s) W8X10 (A992) ASTM Steel	
B7	Passed (25% R)	1 piece(s) W8X10 (A992) ASTM Steel	
B8	Passed (94% ΔL)	1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL	
B9	Passed (39% R)	1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL	

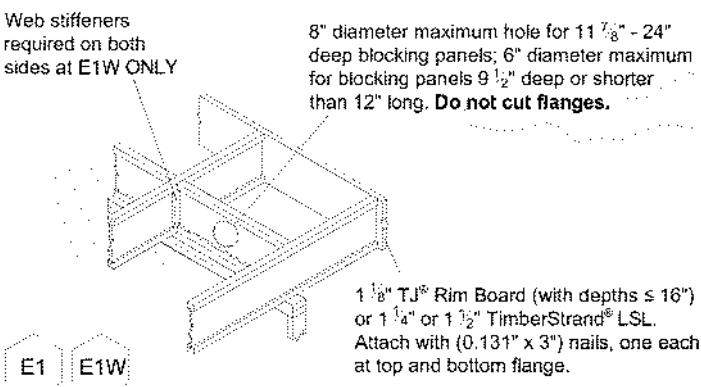
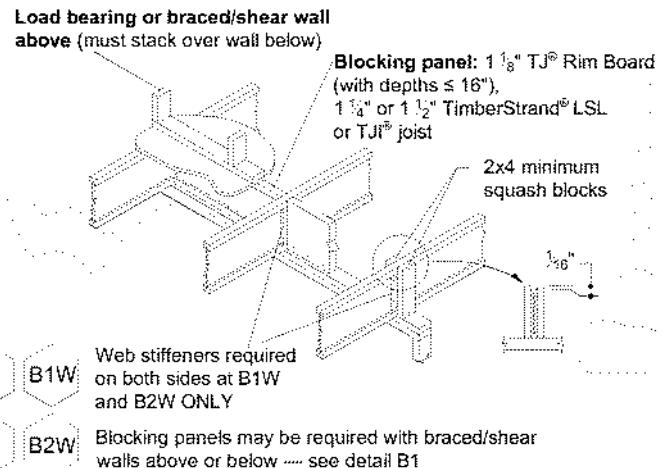
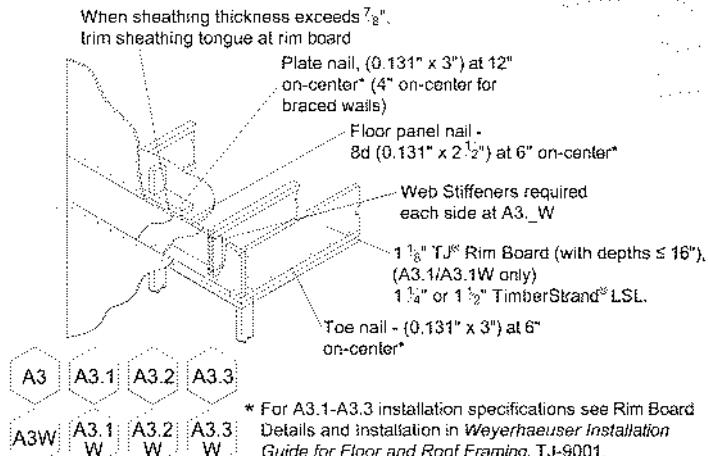
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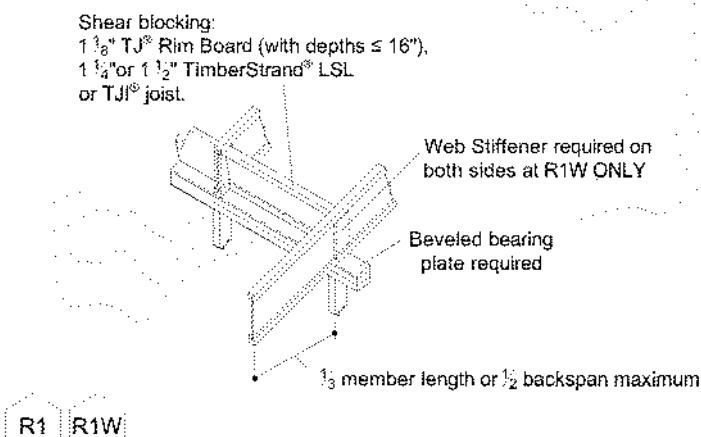
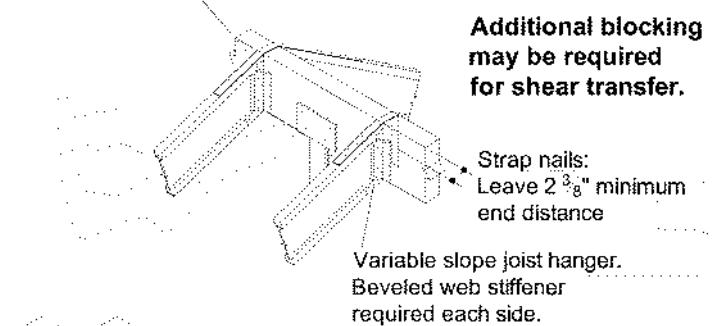
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File Name: Sitka



LSTA24 (Simpson Strong-Tie or USP Structural Connectors) strap with twelve 10d (0.148 x 1 $\frac{1}{2}$) nails required at H5S with slopes greater than 3:12



WEB STIFFENER ATTACHMENT

Gap*: 1 $\frac{1}{8}$ " minimum 2 $\frac{3}{4}$ " maximum (1 $\frac{1}{2}$ " for TJI® 560, 560D)

Nailing: See table below.

Web stiffener both sides.

See table below.

Tight fit

* With point load from above, and no support below. Install web stiffener tight to top flange (gap at bottom flange).

TJI® Joist Series	Depth (in.)	Minimum Web Stiffener Size	Nailing Requirements	
			Type	Number Nails
			End	Intermediate
110	All	2 $\frac{5}{16}$ " x 2 $\frac{5}{16}$ "	8d (0.113" x 2 $\frac{1}{2}$ ')	3
210	All	2 $\frac{5}{16}$ " x 2 $\frac{5}{16}$ "		
230 & 360	All	7 $\frac{1}{8}$ " x 2 $\frac{5}{16}$ "		
560	All	2x4 ^{1/2}	16d (0.135" x 3 $\frac{1}{2}$ ')	4
	18"		16d (0.135" x 3 $\frac{1}{2}$ ')	5
	20"		16d (0.135" x 3 $\frac{1}{2}$ ')	6
	22 $\frac{1}{2}$ "	2x4 ^{1/2}		11
	24 $\frac{1}{2}$ "	2x4 ^{1/2}		13

(1) PS1 or PS2 sheathing, face grain vertical

(2)

(3) Web stiffeners are always required for 22" and 24" TJI® 560D Joists

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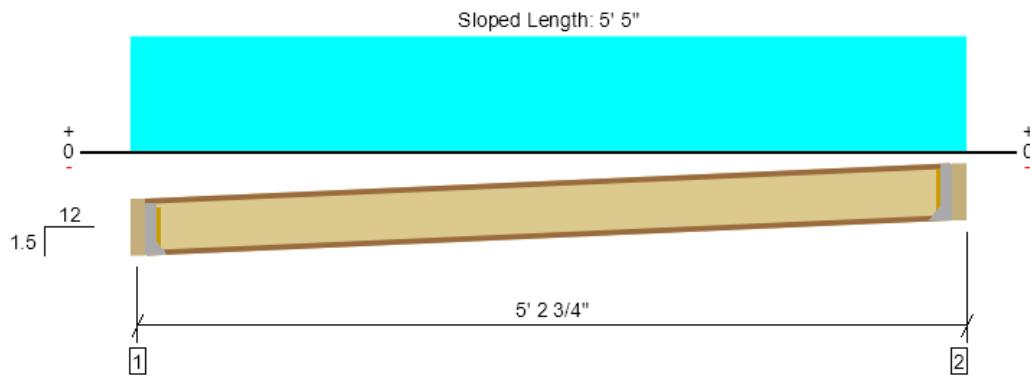
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S2.2, R1

1 piece(s) 11 7/8" TJI® 110 @ 24" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	312 @ 3 1/2"	1047 (1.75")	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	312 @ 3 1/2"	1794	Passed (17%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	374 @ 2' 8 1/4"	3634	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.010 @ 2' 8 1/4"	0.241	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.013 @ 2' 8 1/4"	0.322	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 4' 11 7/16"
 System : Roof
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Snow	Factored		
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.75" / - ²	81	269	350	See note ¹	H5
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.75" / - ²	81	269	350	See note ¹	H5

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

• ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 10" o/c	
Bottom Edge (Lu)	4' 10" o/c	

• TJI joists are only analyzed using Maximum Allowable bracing solutions.

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	Web Stiffeners
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	Web Stiffeners

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 5' 4 1/2"	24"	15.0	50.0	Default Load

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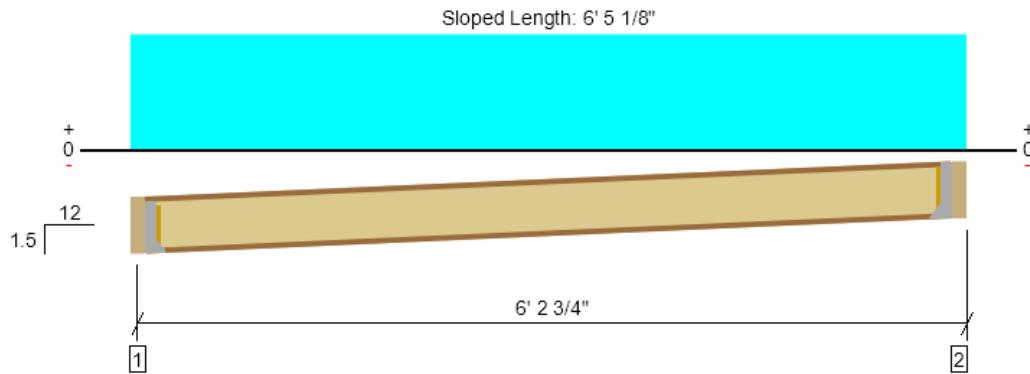
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S2.2, R2

1 piece(s) 11 7/8" TJI® 110 @ 24" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	377 @ 3 1/2"	1047 (1.75")	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	377 @ 3 1/2"	1794	Passed (21%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	546 @ 3' 2 1/4"	3634	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.017 @ 3' 2 1/4"	0.292	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.022 @ 3' 2 1/4"	0.389	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 5' 11 1/2"
 System : Roof
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Snow	Factored		
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.75" / - ²	96	319	415	See note ¹	H5
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.75" / - ²	96	319	415	See note ¹	H5

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

• ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 10" o/c	
Bottom Edge (Lu)	5' 10" o/c	

• TJI joists are only analyzed using Maximum Allowable bracing solutions.

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	Web Stiffeners
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	Web Stiffeners

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 6' 4 1/2"	24"	15.0	50.0	Default Load

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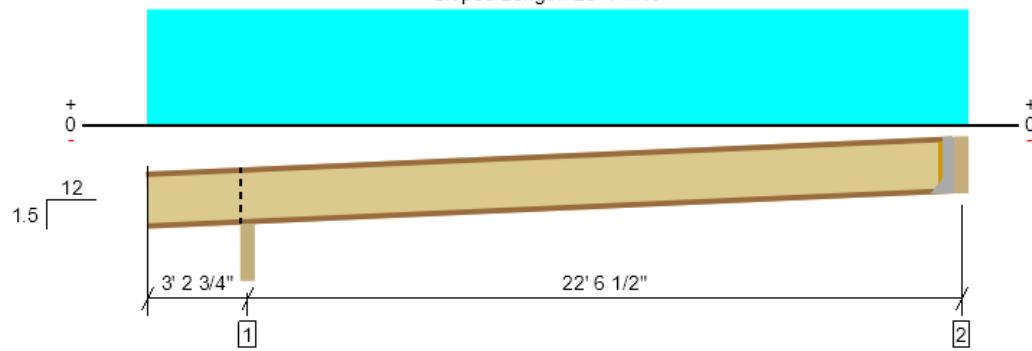


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S2.2, R3

1 piece(s) 11 7/8" TJI® 560 @ 24" OC

Sloped Length: 26' 1 7/16"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1440 @ 25' 7 1/2"	1455 (1.75")	Passed (99%)	1.15	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	1440 @ 25' 7 1/2"	2358	Passed (61%)	1.15	1.0 D + 1.0 S (Alt Spans)
Moment (Ft-lbs)	7957 @ 14' 6 7/8"	10925	Passed (73%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.978 @ 14' 5 5/8"	1.129	Passed (L/277)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	1.267 @ 14' 5 11/16"	1.505	Passed (L/214)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 25' 11 3/8"
 System : Roof
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Snow	Factored		
1 - Beveled Plate - HF	3.50"	3.50"	3.50"	443	1466	1909	Blocking	R1
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.75" / - ²	340	1137	1478	See note ¹	H5

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.
- ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' o/c	
Bottom Edge (Lu)	14' 7" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LSSR410Z	1.88"	N/A	22-16dx2.5	18-16dx2.5	Web Stiffeners

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 25' 11"	24"	15.0	50.0	Default Load

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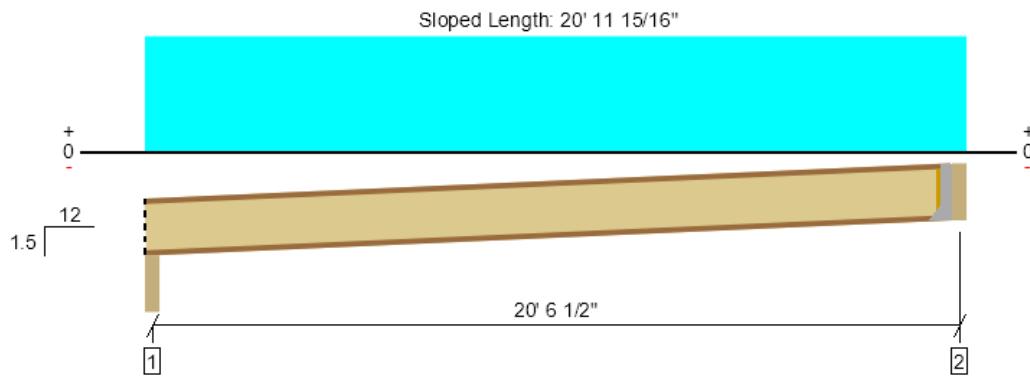
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S2.2, R4

1 piece(s) 11 7/8" TJI® 560 @ 24" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1324 @ 20' 6 1/2"	1455 (1.75")	Passed (91%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1324 @ 20' 6 1/2"	2358	Passed (56%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6731 @ 10' 4 1/2"	10925	Passed (62%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.694 @ 10' 4 1/2"	1.025	Passed (L/354)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.904 @ 10' 4 1/2"	1.366	Passed (L/272)	--	1.0 D + 1.0 S (All Spans)

Member Length : 20' 9 7/8"
 System : Roof
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Snow	Factored		
1 - Beveled Plate - HF	3.50"	3.50"	1.75"	314	1038	1351	Blocking	R1
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.75" / - ²	316	1046	1362	See note ¹	H5

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

• ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 8" o/c	
Bottom Edge (Lu)	20' 8" o/c	

• TJI joists are only analyzed using Maximum Allowable bracing solutions.

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LSSR410Z	1.88"	N/A	22-16dx2.5	18-16dx2.5	Web Stiffeners

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 20' 10"	24"	15.0	50.0	Default Load

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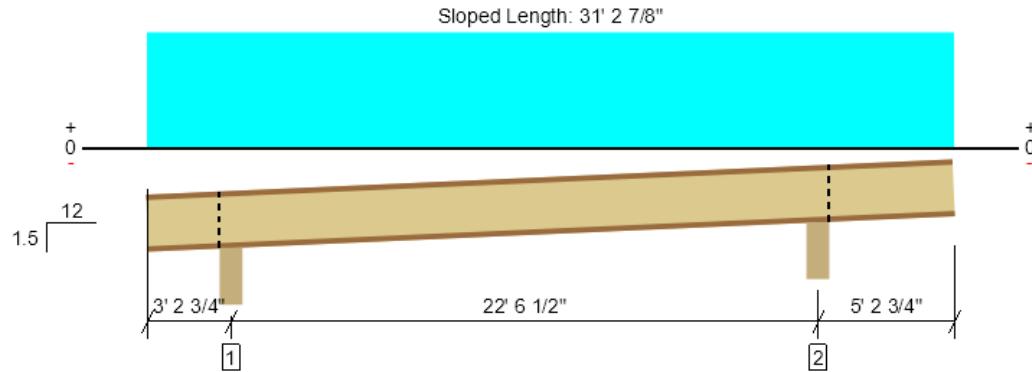
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S2.2, R5

1 piece(s) 11 7/8" TJI® 560 @ 24" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2209 @ 25' 9 1/4"	4004 (5.25")	Passed (55%)	1.15	1.0 D + 1.0 S (Adj Spans)
Shear (lbs)	1405 @ 25' 6 1/2"	2358	Passed (60%)	1.15	1.0 D + 1.0 S (Adj Spans)
Moment (Ft-lbs)	7518 @ 14' 3 1/4"	10925	Passed (69%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.943 @ 14' 5 3/16"	1.136	Passed (L/289)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	1.203 @ 14' 5"	1.514	Passed (L/227)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 31' 4 3/8"
 System : Roof
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Upward deflection on left and right cantilevers exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left and right cantilevers exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Snow	Factored		
1 - Beveled Plate - HF	5.50"	5.50"	3.50"	427	1443	1870	Blocking	R1
2 - Beveled Plate - HF	5.50"	5.50"	3.50"	510	1699	2209	Blocking	R1

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 3" o/c	
Bottom Edge (Lu)	13' 6" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Vertical Load	Location	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 31'	24"	15.0	50.0	Default Load

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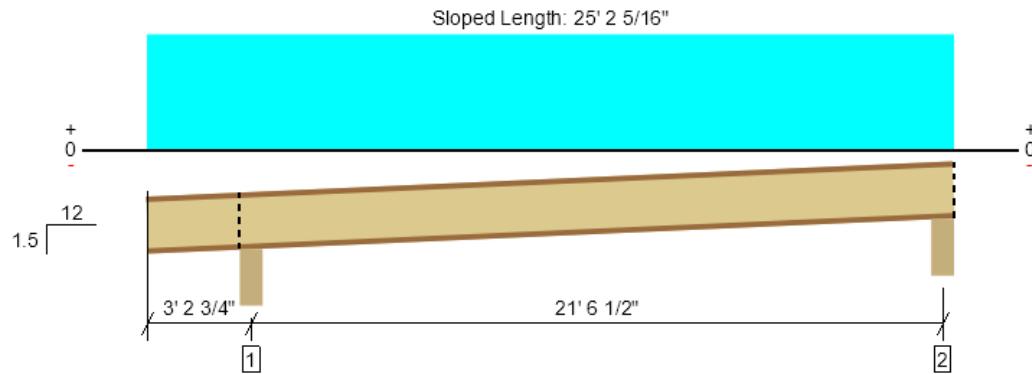
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S2.2, R6

1 piece(s) 11 7/8" TJI® 560 @ 24" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1423 @ 24' 7 1/2"	1984 (3.50")	Passed (72%)	1.15	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	1363 @ 24' 6 1/2"	2358	Passed (58%)	1.15	1.0 D + 1.0 S (Alt Spans)
Moment (Ft-lbs)	7245 @ 14' 15/16"	10925	Passed (66%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.821 @ 13' 11 5/8"	1.078	Passed (L/315)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	1.062 @ 13' 11 3/4"	1.437	Passed (L/244)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 25' 3 13/16"
 System : Roof
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Snow	Factored		
1 - Beveled Plate - HF	5.50"	5.50"	3.50"	428	1417	1846	Blocking	R1
2 - Beveled Plate - HF	5.50"	5.50"	1.75"	327	1095	1423	Blocking	R1

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 5" o/c	
Bottom Edge (Lu)	14' 7" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Vertical Load	Location	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 25'	24"	15.0	50.0	Default Load

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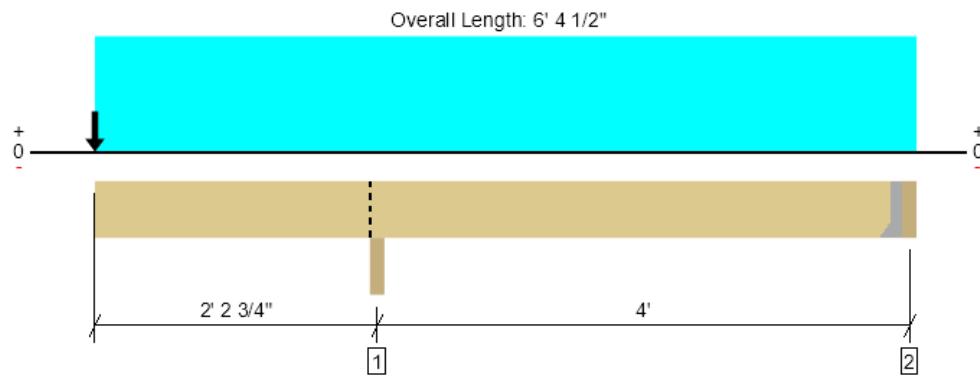
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S2.2, S1

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1197 @ 2' 2 3/4"	4594 (3.50")	Passed (26%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	620 @ 1' 1 1/8"	4541	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1385 @ 2' 2 3/4"	10263	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.021 @ 0	0.200	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.029 @ 0	0.223	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 6' 1"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 252 lbs uplift at support located at 6' 1". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beam - LVL	3.50"	3.50"	1.50"	347	849	1197	Blocking
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	-59	-193	-252	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 1" o/c	
Bottom Edge (Lu)	6' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	HUS1.81/10	3.00"	N/A	30-10dx1.5	10-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 1"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 6' 4 1/2" (Front)	1'	15.0	50.0	Default Load
2 - Point (lb)	0 (Front)	N/A	156	386	Linked from: S2, Support 1

• Side loads are assumed to not induce cross-grain tension.

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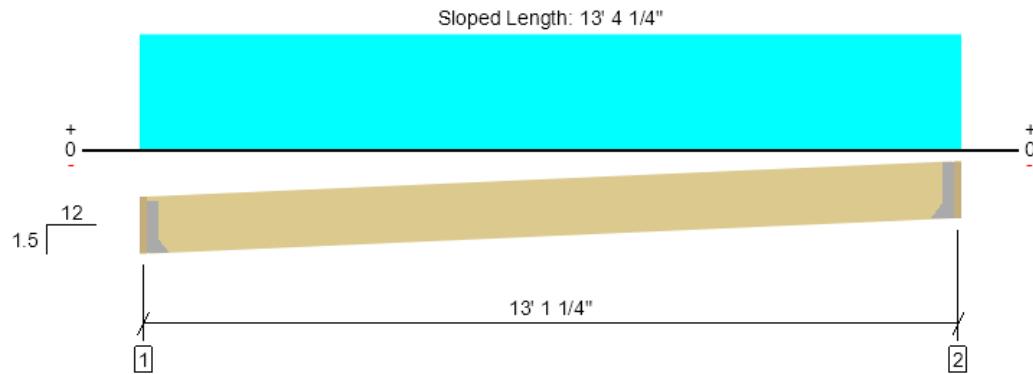
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S2.2, S2

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	532 @ 1 3/4"	1969 (1.50")	Passed (27%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	451 @ 1' 1 9/16"	4541	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1723 @ 6' 7 1/2"	10263	Passed (17%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.084 @ 6' 7 1/2"	0.653	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.118 @ 6' 7 1/2"	0.871	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 13' 2 3/16"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	1.75"	Hanger ¹	1.50"	156	386	543	See note ¹
2 - Hanger on 11 7/8" LVL beam	1.75"	Hanger ¹	1.50"	156	386	543	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 1" o/c	
Bottom Edge (Lu)	13' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U14X SLU7	2.00"	N/A	14-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	U14X SLD7	2.00"	N/A	14-10dx1.5	6-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 3/4" to 13' 1 1/4"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 13' 3"	1' 2"	15.0	50.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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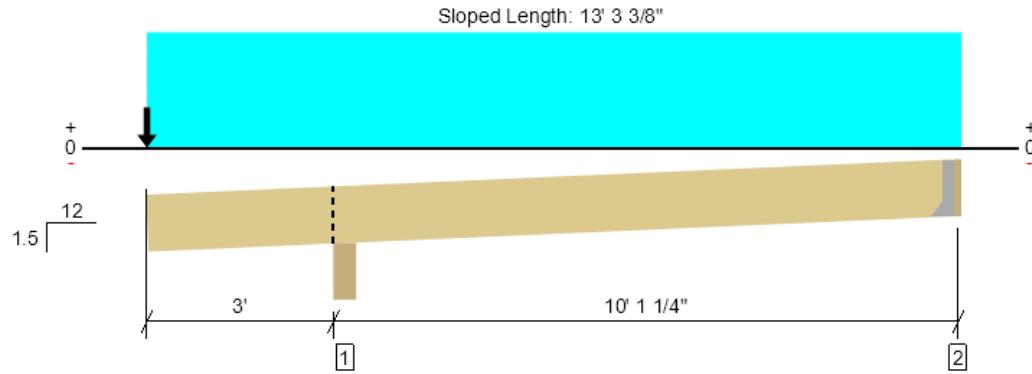
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S2.2, S3

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2771 @ 3' 2 3/4"	3928 (5.50")	Passed (71%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1471 @ 2' 3/16"	4541	Passed (32%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-4573 @ 3' 2 3/4"	10263	Passed (45%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.158 @ 0	0.325	Passed (2L/494)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.214 @ 0	0.434	Passed (2L/364)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 13' 3 1/16"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	3.88"	776	1995	2771	Blocking
2 - Hanger on 11 7/8" LVL beam	1.75"	Hanger ¹	1.50"	49	338/-73	387/-24	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 2" o/c	
Bottom Edge (Lu)	9' 9" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	U14X SLD7	2.00"	N/A	14-10dx1.5	6-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13' 3/8"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 13' 2 1/8"	2'	15.0	50.0	Default Load
2 - Point (lb)	0	N/A	347	849	Linked from: S1, Support 1

- Side loads are assumed to not induce cross-grain tension.

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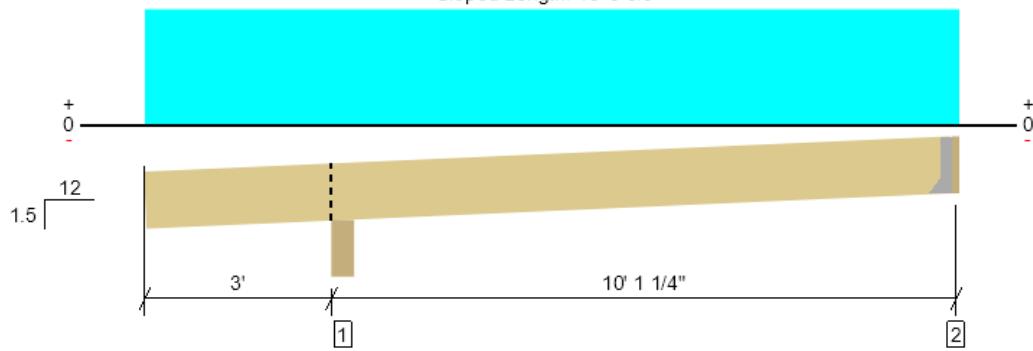


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S2.2, S4

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Sloped Length: 13' 3 3/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	622 @ 13' 3/8"	1969 (1.50")	Passed (32%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	576 @ 4' 5 5/16"	4541	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1420 @ 8' 5 5/8"	10263	Passed (14%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.044 @ 8' 2 13/16"	0.494	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.058 @ 8' 3 1/8"	0.659	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 13' 3 1/16"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).

- Overhang deflection criteria: LL (2L/240) and TL (2L/180).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	1.65"	315	866	1181	Blocking
2 - Hanger on 11 7/8" LVL beam	1.75"	Hanger ¹	1.50"	163	478	641	See note ¹

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 2" o/c	
Bottom Edge (Lu)	13' 2" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	U14X SLD7	2.00"	N/A	14-10dx1.5	6-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13' 3/8"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 13' 2 1/8"	2'	15.0	50.0	Default Load

- Side loads are assumed to not induce cross-grain tension.

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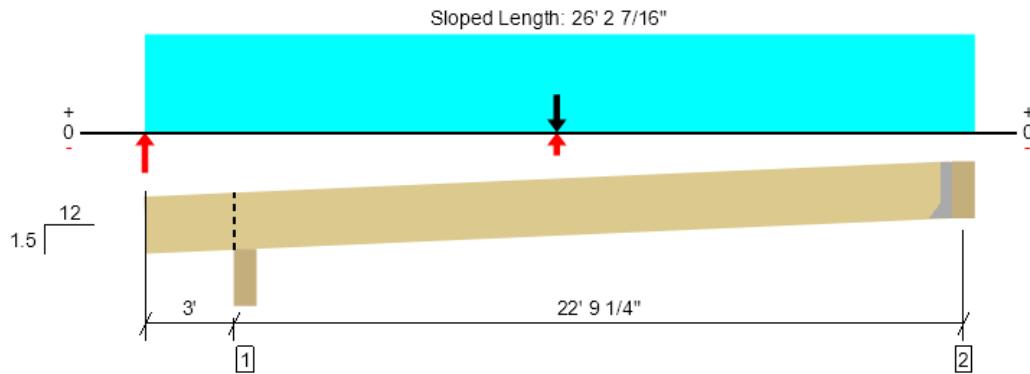
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S2.2, S5
2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	1695 @ 25' 6 1/2"	3938 (1.50")	Passed (43%)	--	1.0 D + 1.0 S (All Spans) [1]
Shear (lbs)	1555 @ 24' 6 11/16"	9081	Passed (17%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Moment (Ft-lbs)	10084 @ 13' 7 11/16"	20525	Passed (49%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Live Load Defl. (in)	0.689 @ 14' 3 15/16"	1.124	Passed (L/392)	--	1.0 D + 1.0 S (All Spans) [1]
Total Load Defl. (in)	0.951 @ 14' 4 1/8"	1.499	Passed (L/284)	--	1.0 D + 1.0 S (All Spans) [1]

Member Length : 25' 10 3/8"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	1.50"	567	1353	1919	Blocking
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	497	1257	1755	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 8" o/c	
Bottom Edge (Lu)	25' 9" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LSSR410Z	1.88"	N/A	22-16dx2.5	18-16dx2.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 25' 6 1/2"	N/A	12.1	--	
1 - Uniform (PSF)	0 to 26'	2'	15.0	50.0	Default Load
2 - Point (lb)	0	N/A	-59	-193	Linked from: S1, Support 2
3 - Point (lb)	13' 3 1/4"	N/A	25	203-83	Linked from: S6, Support 2

- Side loads are assumed to not induce cross-grain tension.

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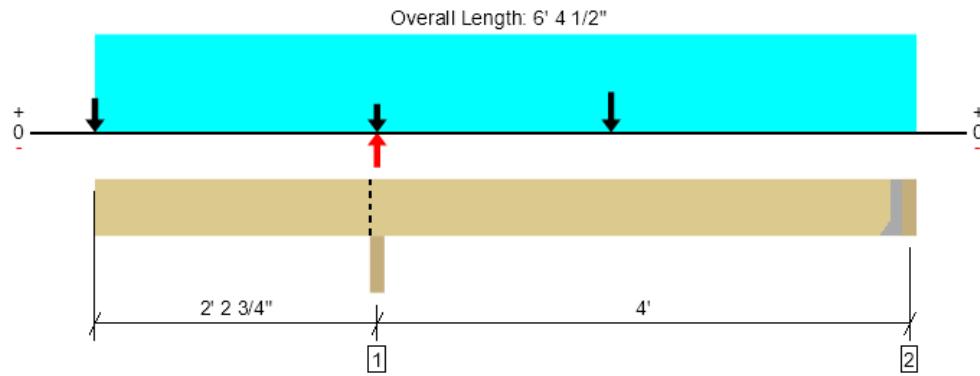
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S2.2, S6

1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	1975 @ 2' 2 3/4"	7656 (3.50")	Passed (26%)	--	1.0 D + 1.0 S (All Spans) [1]
Shear (lbs)	772 @ 3' 4 3/8"	9241	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Moment (Ft-lbs)	-1402 @ 2' 2 3/4"	22888	Passed (6%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Live Load Defl. (in)	0.009 @ 0	0.200	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans) [1]
Total Load Defl. (in)	0.012 @ 0	0.223	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans) [1]

Member Length : 6' 1"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beam - LVL	3.50"	3.50"	1.50"	465	1511	1975	Blocking
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	25	203/-83	228/-58	See note ¹

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 1" o/c	
Bottom Edge (Lu)	6' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 1"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 6' 4 1/2" (Front)	1'	15.0	50.0	Default Load
2 - Point (lb)	0 (Front)	N/A	156	386	Linked from: S2, Support 2
3 - Point (lb)	4' (Front)	N/A	163	478	Linked from: S4, Support 2
4 - Point (lb)	2' 2 3/4" (Front)	N/A	49	338/-73	Linked from: S3, Support 2
5 - Point (lb)	2' 2 3/4" (Front)	N/A	-53	65/-428	Linked from: S8, Support 1

• Side loads are assumed to not induce cross-grain tension.

ForteWEB Software Operator	Job Notes
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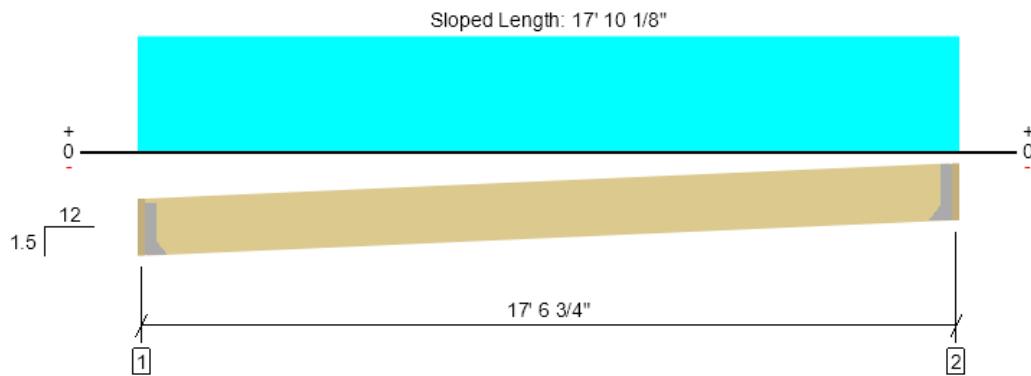
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S2.2, S7
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	715 @ 1 3/4"	1969 (1.50")	Passed (36%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	634 @ 1' 1 9/16"	4541	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3112 @ 8' 10 1/4"	10263	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.263 @ 8' 10 1/4"	0.878	Passed (L/800)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.371 @ 8' 10 1/4"	1.170	Passed (L/568)	--	1.0 D + 1.0 S (All Spans)

Member Length : 17' 8 1/8"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	1.75"	Hanger ¹	1.50"	209	516	726	See note ¹
2 - Hanger on 11 7/8" LVL beam	1.75"	Hanger ¹	1.50"	209	516	726	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	15' 4" o/c	
Bottom Edge (Lu)	17' 7" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U14X SLU7	2.00"	N/A	14-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	U14X SLD7	2.00"	N/A	14-10dx1.5	6-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 3/4" to 17' 6 3/4"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 17' 8 1/2"	1' 2"	15.0	50.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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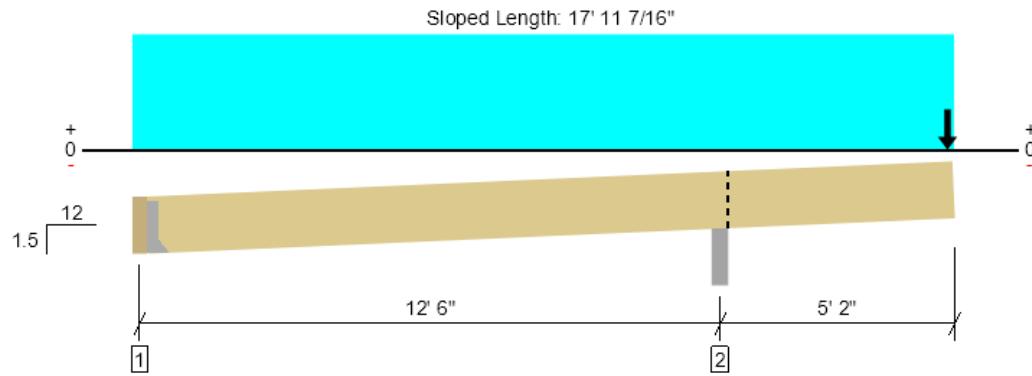
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S2.2, S8

1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3796 @ 12' 7 3/4"	8818 (4.00")	Passed (43%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2270 @ 13' 9 9/16"	9241	Passed (25%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-10789 @ 12' 7 3/4"	22888	Passed (47%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.376 @ 17' 9 3/4"	0.521	Passed (2L/332)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.513 @ 17' 9 3/4"	0.694	Passed (2L/244)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 17' 9 3/8"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 481 lbs uplift at support located at 3 1/2". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	-53	65/-428	12/-481	See note ¹
2 - Column - steel	4.00"	4.00"	1.72"	1126	2670	3796	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	17' 8" o/c	
Bottom Edge (Lu)	17' 8" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LSSR410Z	1.88"	N/A	22-16dx2.5	18-16dx2.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 17' 9 3/4"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 17' 9 3/4"	1' 2"	15.0	50.0	Default Load
2 - Point (lb)	17' 8"	N/A	529	1383	Linked from: S10, Support 1

• Side loads are assumed to not induce cross-grain tension.

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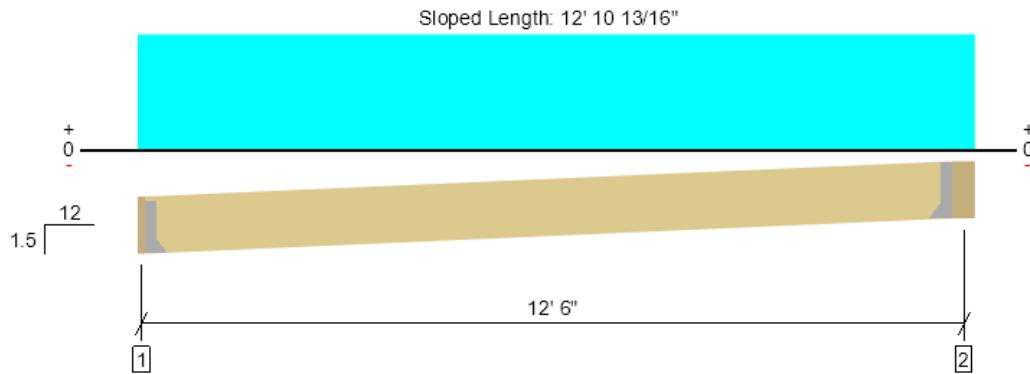
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S2.2, S9

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	832 @ 1 3/4"	1969 (1.50")	Passed (42%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	698 @ 1' 1 9/16"	4541	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2536 @ 6' 2 15/16"	10263	Passed (25%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.114 @ 6' 2 15/16"	0.615	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.155 @ 6' 2 15/16"	0.820	Passed (L/950)	--	1.0 D + 1.0 S (All Spans)

Member Length : 12' 5"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	1.75"	Hanger ¹	1.50"	226	624	851	See note ¹
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	235	656	891	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 4" o/c	
Bottom Edge (Lu)	12' 4" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U14X SLU7	2.00"	N/A	14-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 3/4" to 12' 4 1/8"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 12' 9 5/8"	2'	15.0	50.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

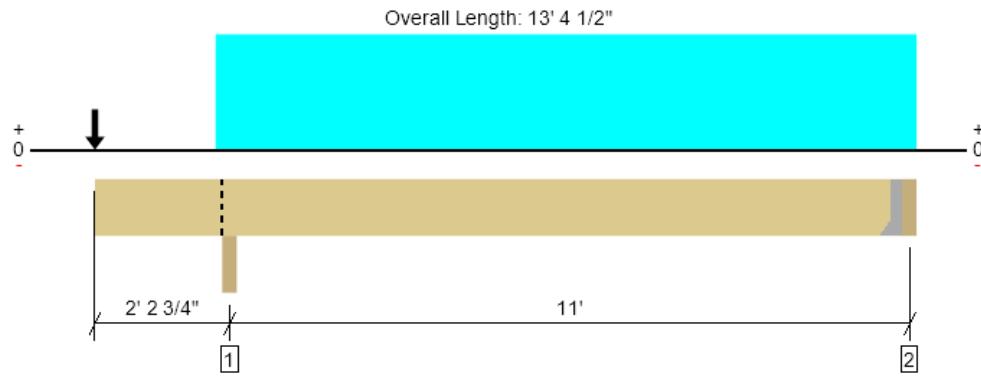
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S2.2, S10
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	885 @ 13' 1"	1969 (1.50")	Passed (45%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	928 @ 3' 4 3/8"	4541	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2163 @ 8' 2 5/16"	10263	Passed (21%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.082 @ 7' 9 3/4"	0.362	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.103 @ 7' 10 9/16"	0.543	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 13' 1"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beam - LVL	3.50"	3.50"	1.50"	529	1383	1912	Blocking
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	220	716	936	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 1" o/c	
Bottom Edge (Lu)	13' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13' 1"	N/A	6.1	--	
1 - Uniform (PLF)	2' to 13' 4 1/2" (Front)	N/A	40.5	134.5	Linked from: R1, Support 2
2 - Point (lb)	0 (Front)	N/A	209	516	Linked from: S7, Support 2

• Side loads are assumed to not induce cross-grain tension.

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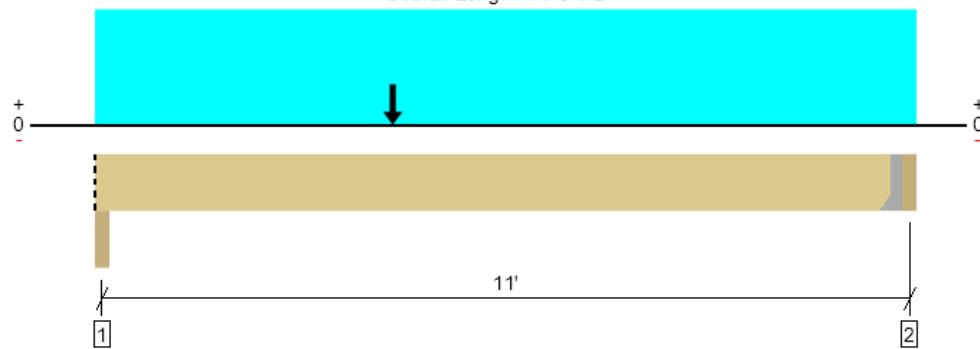


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S2.2, S11

1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL

Overall Length: 11' 3 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3896 @ 11'	3896 (1.78")	Passed (100%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3686 @ 1' 3 3/8"	9241	Passed (40%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	12655 @ 4' 6 1/16"	22888	Passed (55%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.202 @ 5' 5 3/4"	0.361	Passed (L/644)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.272 @ 5' 5 11/16"	0.542	Passed (L/478)	--	1.0 D + 1.0 S (All Spans)

Member Length : 11'
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beam - LVL	3.50"	3.50"	2.04"	1143	3312	4454	Blocking
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.78"	1027	3040	4067	See note ¹

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	11' o/c	
Bottom Edge (Lu)	11' o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	HHUS48	3.00"	N/A	22-10d	8-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 11'	N/A	13.0	--	
1 - Uniform (PSF)	0 to 11' 3 1/2" (Front)	6' 4"	15.0	50.0	
2 - Uniform (PLF)	0 to 11' 3 1/2" (Front)	N/A	40.5	134.5	Linked from: R1, Support 1
3 - Point (lb)	4' 2" (Front)	N/A	497	1257	Linked from: S5, Support 2

• Side loads are assumed to not induce cross-grain tension.

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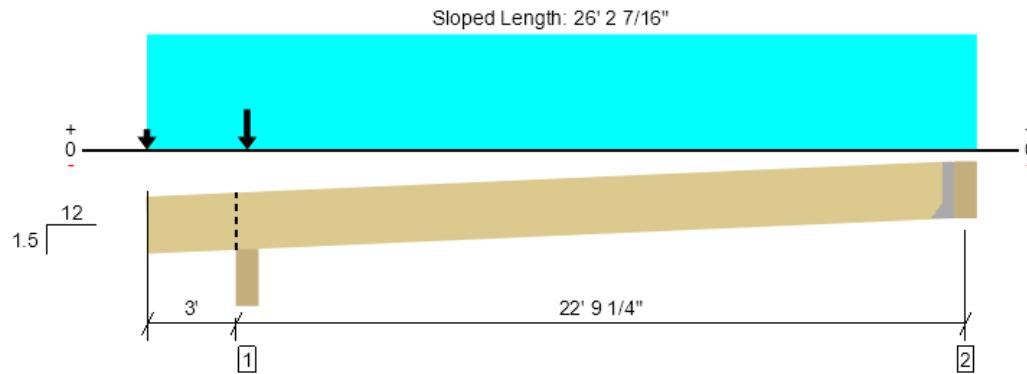
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S2.2, S12

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1284 @ 25' 6 1/2"	1969 (1.50")	Passed (65%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	1208 @ 4' 5 15/16"	4541	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	7023 @ 14' 7 1/4"	10263	Passed (68%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.985 @ 14' 5 5/16"	1.124	Passed (L/274)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	1.338 @ 14' 5 9/16"	1.499	Passed (L/202)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 25' 10 3/8"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	3.46"	686	1783	2470	Blocking
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	357	979	1335	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 7" o/c	
Bottom Edge (Lu)	25' 9" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 25' 6 1/2"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 26'	1' 8 1/2"	15.0	50.0	Default Load
2 - Point (lb)	0	N/A	29	59	Linked from: S17, Support 1
3 - Point (lb)	3' 2 3/4"	N/A	186	466	Linked from: S15, Support 1

- Side loads are assumed to not induce cross-grain tension.

ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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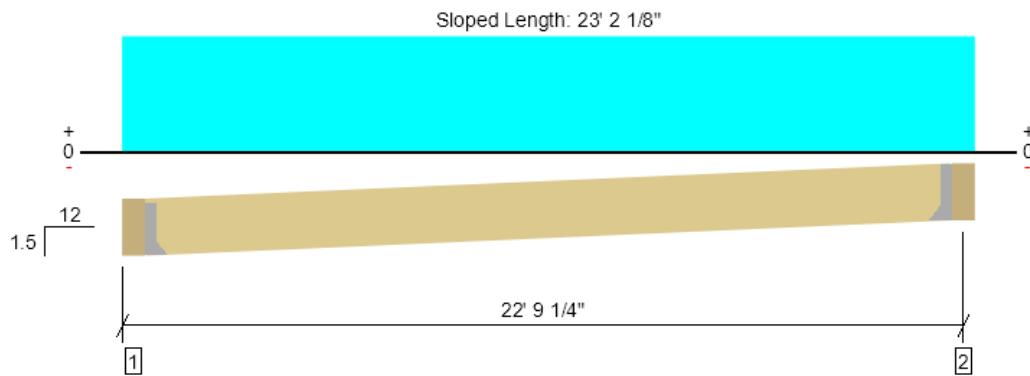
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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Lexee Navarre Harriett Valentine Engineers (206) 697-1700 lnavarre@harriettvalentine.com	



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S2.2, S13
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1086 @ 5 1/2"	1969 (1.50")	Passed (55%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	989 @ 1' 5 5/16"	4541	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5996 @ 11' 6"	10263	Passed (58%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.812 @ 11' 6"	1.113	Passed (L/329)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.128 @ 11' 6"	1.484	Passed (L/237)	--	1.0 D + 1.0 S (All Spans)

Member Length : 22' 4 9/16"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	314	815	1128	See note ¹
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	314	815	1128	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 10" o/c	
Bottom Edge (Lu)	22' 3" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 22' 6 1/2"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 23'	1' 5"	15.0	50.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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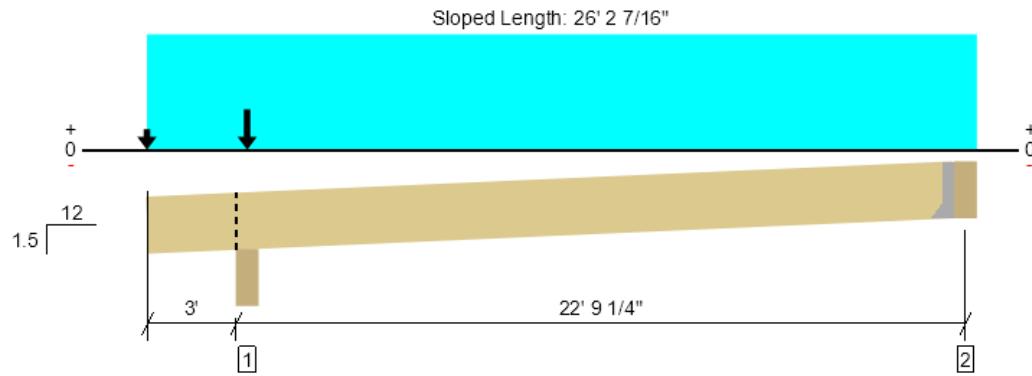
ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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S2.2, S14

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1284 @ 25' 6 1/2"	1969 (1.50")	Passed (65%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	1208 @ 4' 5 15/16"	4541	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	7023 @ 14' 7 1/4"	10263	Passed (68%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.985 @ 14' 5 5/16"	1.124	Passed (L/274)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	1.338 @ 14' 5 9/16"	1.499	Passed (L/202)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 25' 10 3/8"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	3.46"	686	1783	2470	Blocking
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	357	979	1335	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 7" o/c	
Bottom Edge (Lu)	25' 9" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 25' 6 1/2"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 26'	1' 8 1/2"	15.0	50.0	Default Load
2 - Point (lb)	0	N/A	29	59	Linked from: S17, Support 2
3 - Point (lb)	3' 2 3/4"	N/A	186	466	Linked from: S15, Support 2

- Side loads are assumed to not induce cross-grain tension.

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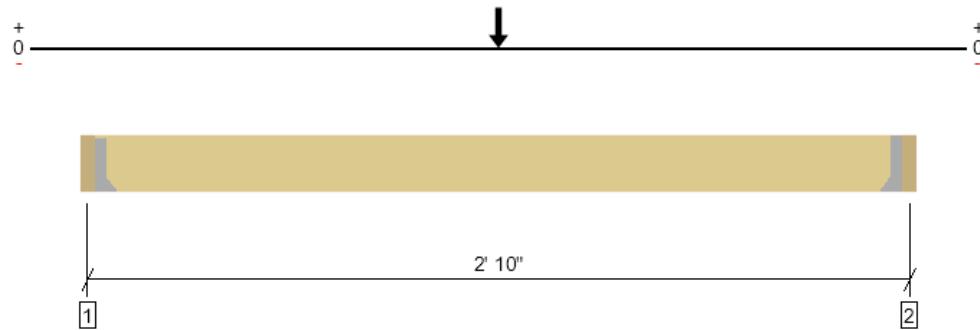
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S2.2, S15
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Overall Length: 3' 1 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	652 @ 3 1/2"	1969 (1.50")	Passed (33%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	646 @ 1' 3 3/8"	4541	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	823 @ 1' 6 3/4"	10263	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.004 @ 1' 6 3/4"	0.085	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.006 @ 1' 6 3/4"	0.127	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 6 1/2"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	186	466	652	See note ¹
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	186	466	652	See note ¹

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 7" o/c	
Bottom Edge (Lu)	2' 7" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	
2 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 2' 10"	N/A	6.1	--	
1 - Point (lb)	1' 6 3/4" (Front)	N/A	42	117	Linked from: S16, Support 2
2 - Point (lb)	1' 6 3/4" (Front)	N/A	314	815	Linked from: S13, Support 1

- Side loads are assumed to not induce cross-grain tension.

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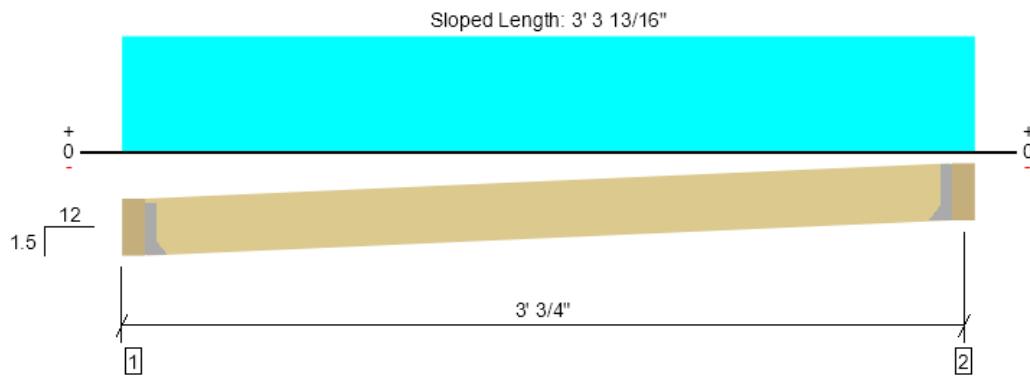
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S2.2, S16
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	117 @ 5 1/2"	1969 (1.50")	Passed (6%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	20 @ 1' 5 5/16"	4541	Passed (0%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	69 @ 1' 7 3/4"	10263	Passed (1%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.000 @ 1' 7 3/4"	0.120	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.001 @ 1' 7 3/4"	0.160	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 6 3/16"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	42	117	159	See note ¹
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	42	117	159	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 5" o/c	
Bottom Edge (Lu)	2' 5" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 2' 10"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 3' 3 1/2"	1' 5"	15.0	50.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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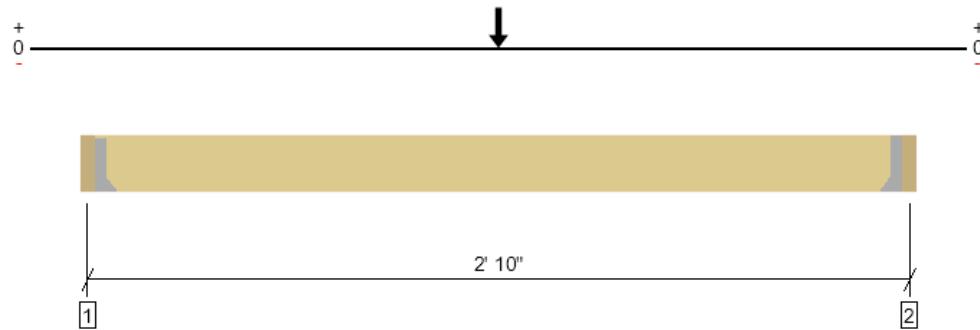
ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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S2.2, S17
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Overall Length: 3' 1 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	87 @ 3 1/2"	1969 (1.50")	Passed (4%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	81 @ 1' 3 3/8"	4541	Passed (2%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	106 @ 1' 6 3/4"	10263	Passed (1%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.001 @ 1' 6 3/4"	0.085	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.001 @ 1' 6 3/4"	0.127	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 6 1/2"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	29	59	87	See note ¹
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	29	59	87	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 7" o/c	
Bottom Edge (Lu)	2' 7" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	
2 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 2' 10"	N/A	6.1	--	
1 - Point (lb)	1' 6 3/4" (Front)	N/A	42	117	Linked from: S16, Support 1

• Side loads are assumed to not induce cross-grain tension.

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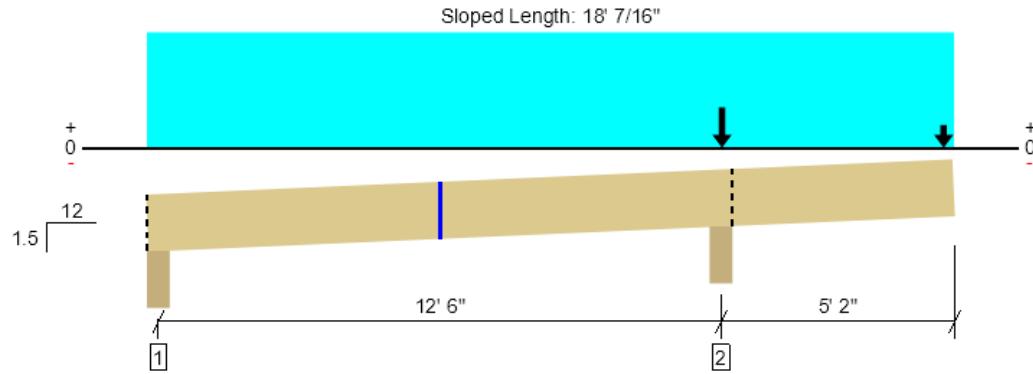
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S2.2, S18

1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	11513 @ 12' 8 3/4"	12125 (5.50")	Passed (95%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2232 @ 13' 11 5/16"	9241	Passed (24%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-10471 @ 12' 8 3/4"	22888	Passed (46%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.379 @ 17' 10 3/4"	0.521	Passed (2L/330)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.496 @ 17' 10 3/4"	0.694	Passed (2L/252)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 18' 1 7/8"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 454 lbs uplift at support located at 4". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - SPF	5.50"	5.50"	1.50"	-17	67/-437	51/-454	Blocking
2 - Column - DF	5.50"	5.50"	5.22"	2956	8557	11513	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	18' o/c	
Bottom Edge (Lu)	18' o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 17' 10 3/4"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 17' 10 3/4"	1' 2"	15.0	50.0	Default Load
2 - Point (lb)	17' 8"	N/A	220	716	Linked from: S10, Support 2
3 - Point (lb)	17' 8"	N/A	243	701	Linked from: S20, Support 1
4 - Point (lb)	12' 9"	N/A	1027	3040	Linked from: S11, Support 2
5 - Point (lb)	12' 9"	N/A	899	2810	Linked from: S19, Support 1

• Side loads are assumed to not induce cross-grain tension.

Location Analysis	Shear (lbs)			Moment (Ft-lbs)			Deflection (in)		Comments
	Actual	Allowed	LDF	Actual	Allowed	LDF	Live Load	Total	
1 - 6' 6"	-843	9241	1.15	-4059	22888	1.15	-0.106	-0.131	

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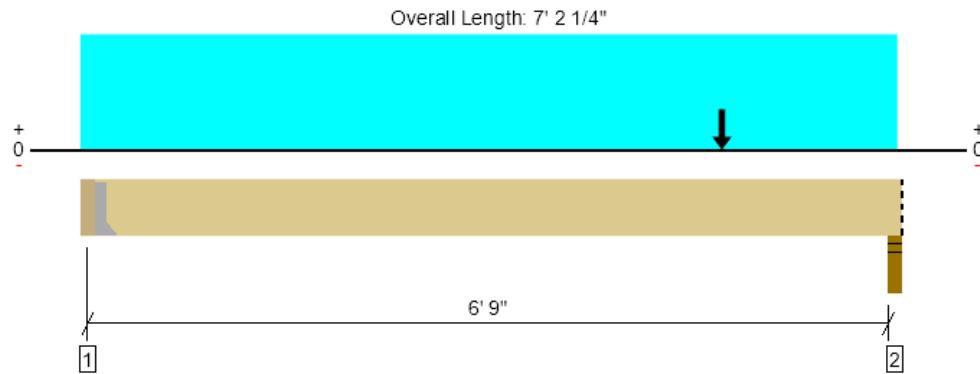
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S2.2, S19

1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3442 @ 3 1/2"	3442 (1.57")	Passed (100%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3281 @ 5' 10 7/8"	9241	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6394 @ 4' 1/16"	22888	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.049 @ 3' 8 11/16"	0.224	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.065 @ 3' 8 11/16"	0.336	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 6' 10 3/4"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" PSL beam	3.50"	Hanger ¹	1.57"	899	2810	3709	See note ¹
2 - Stud wall - HF	3.50"	3.50"	3.12"	1094	3335	4430	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 11" o/c	
Bottom Edge (Lu)	6' 11" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HHUS48	3.00"	N/A	22-10d	8-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 7' 2 1/4"	N/A	13.0	--	
1 - Uniform (PLF)	0 to 7' 1 3/4" (Front)	N/A	40.5	134.5	Linked from: R1, Support 1
2 - Uniform (PLF)	0 to 7' 1 3/4" (Front)	N/A	170.0	568.5	Linked from: R3, Support 2
3 - Point (lb)	5' 7" (Front)	N/A	399	1122	Linked from: S21, Support 2

• Side loads are assumed to not induce cross-grain tension.

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S2.2, S20

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Overall Length: 10' 6 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	913 @ 10' 3"	1969 (1.50")	Passed (46%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	734 @ 9' 3 1/8"	4541	Passed (16%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2301 @ 5' 2 1/2"	10263	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.074 @ 5' 2 1/2"	0.336	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.099 @ 5' 2 1/2"	0.504	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 10' 3"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beam - LVL	3.50"	3.50"	1.50"	243	701	943	Blocking
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	247	717	964	See note 1

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 3" o/c	
Bottom Edge (Lu)	10' 3" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10d	2-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 10' 3"	N/A	6.1	--	
1 - Uniform (PLF)	0 to 10' 6 1/2" (Front)	N/A	40.5	134.5	Linked from: R1, Support 2

• Side loads are assumed to not induce cross-grain tension.

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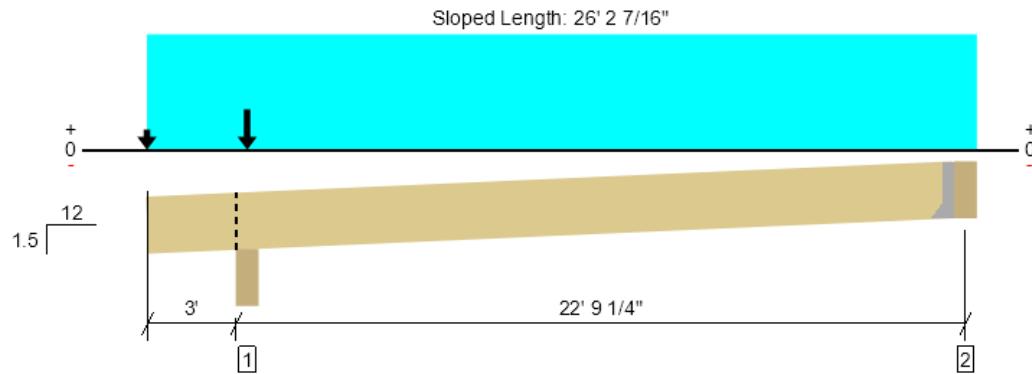
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S2.2, S21

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1463 @ 25' 6 1/2"	1969 (1.50")	Passed (74%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	1372 @ 4' 5 15/16"	4541	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	8011 @ 14' 7 1/8"	10263	Passed (78%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	1.131 @ 14' 5 1/4"	1.124	Passed (L/239)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	1.527 @ 14' 5 1/2"	1.499	Passed (L/177)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 25' 10 3/8"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	3.76"	731	1955	2686	Blocking
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	399	1122	1522	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 7" o/c	
Bottom Edge (Lu)	25' 9" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 25' 6 1/2"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 26'	1' 11 1/2"	15.0	50.0	Default Load
2 - Point (lb)	0	N/A	28	52	Linked from: S26, Support 1
3 - Point (lb)	3' 2 3/4"	N/A	177	464	Linked from: S24, Support 1

- Side loads are assumed to not induce cross-grain tension.

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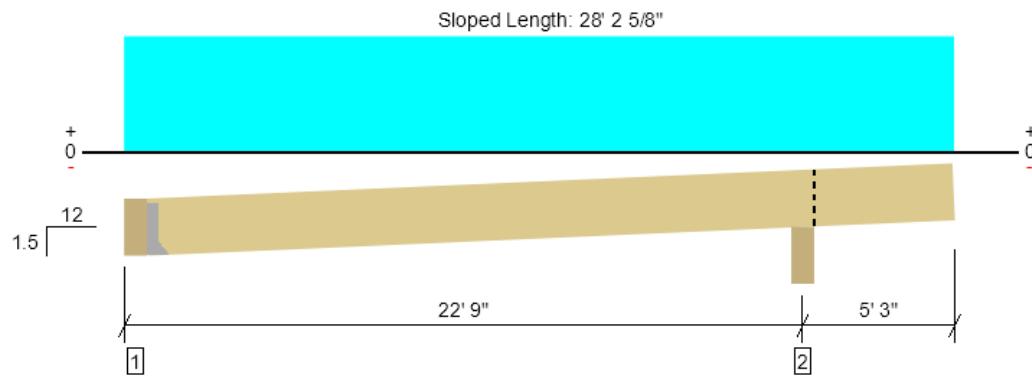
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S2.2, S22
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1263 @ 5 1/2"	1969 (1.50")	Passed (64%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	1240 @ 21' 6 7/16"	4541	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6790 @ 11' 2 9/16"	10263	Passed (66%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.952 @ 11' 5 15/16"	1.123	Passed (L/283)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	1.283 @ 11' 5 9/16"	1.498	Passed (L/210)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 27' 10 9/16"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Upward deflection on right cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on right cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	348	966	1314	See note ¹
2 - Beam - LVL	5.50"	5.50"	1.51"	544	1455	1998	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 10" o/c	
Bottom Edge (Lu)	27' 9" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 28'	N/A	6.1	--	
1 - Uniform (PSF)	0 to 28'	1' 8 1/2"	15.0	50.0	Default Load

- Side loads are assumed to not induce cross-grain tension.

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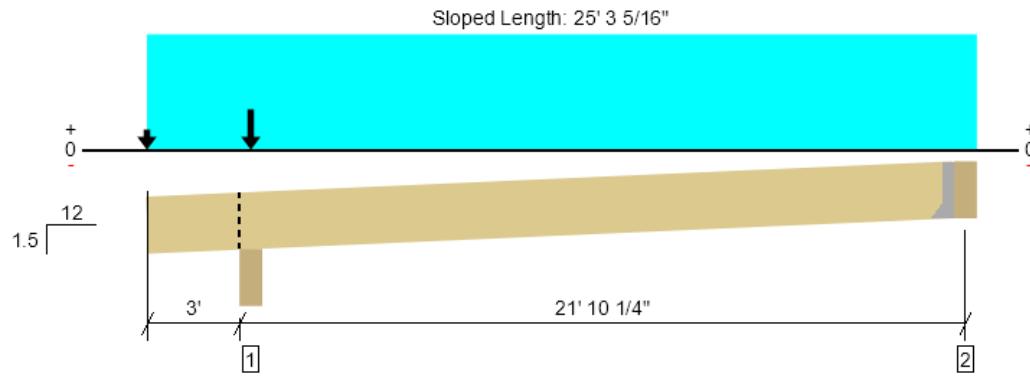
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S2.2, S23

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2430 @ 3' 2 3/4"	3928 (5.50")	Passed (62%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1013 @ 4' 5 15/16"	4541	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5581 @ 14' 2 1/4"	10263	Passed (54%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.717 @ 13' 11 15/16"	1.078	Passed (L/361)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.979 @ 14' 1/4"	1.437	Passed (L/264)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 24' 11 5/16"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	3.40"	678	1753	2430	Blocking
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	303	811	1113	See note ¹

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 6" o/c	
Bottom Edge (Lu)	24' 10" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 24' 7 1/2"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 25' 1"	1' 5 3/4"	15.0	50.0	Default Load
2 - Point (lb)	0	N/A	35	70	Linked from: S26, Support 2
3 - Point (lb)	3' 2 3/4"	N/A	234	624	Linked from: S24, Support 2

• Side loads are assumed to not induce cross-grain tension.

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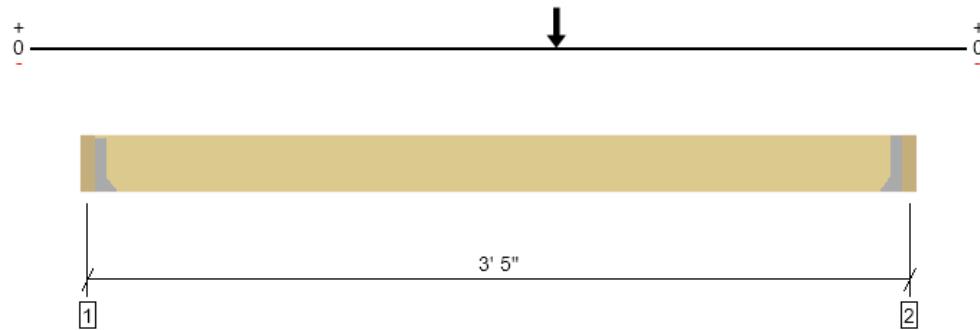
ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 lnavarre@harriettvalentine.com	



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S2.2, S24
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Overall Length: 3' 8 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	858 @ 3' 5"	1969 (1.50")	Passed (44%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	852 @ 2' 5 1/8"	4541	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1139 @ 2' 1"	10263	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.007 @ 2' 1"	0.104	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.010 @ 2' 1"	0.156	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 3' 1 1/2"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	177	464	641	See note ¹
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	234	624	858	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 2" o/c	
Bottom Edge (Lu)	3' 2" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	
2 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 3' 5"	N/A	6.1	--	
1 - Point (lb)	2' 1" (Front)	N/A	44	122	Linked from: S25, Support 2
2 - Point (lb)	2' 1" (Front)	N/A	348	966	Linked from: S22, Support 1

• Side loads are assumed to not induce cross-grain tension.

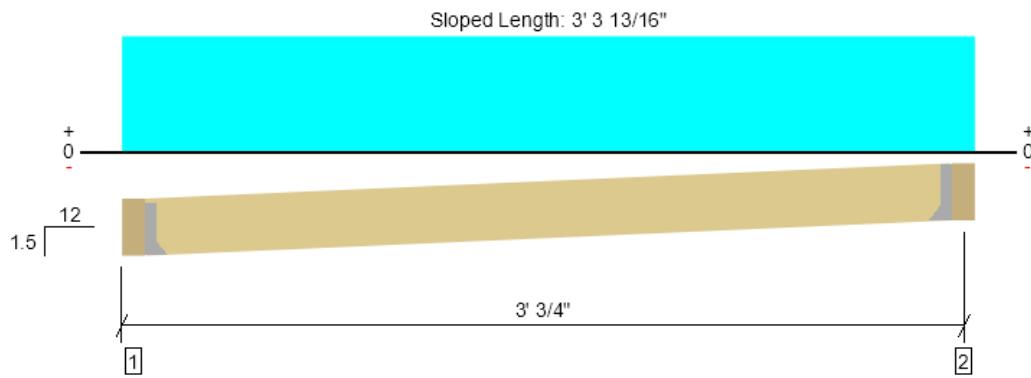
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ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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S2.2, S25
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	122 @ 5 1/2"	1969 (1.50")	Passed (6%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	21 @ 1' 5 5/16"	4541	Passed (0%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	72 @ 1' 7 3/4"	10263	Passed (1%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.000 @ 1' 7 3/4"	0.120	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.001 @ 1' 7 3/4"	0.160	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 6 3/16"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	44	122	166	See note ¹
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	44	122	166	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 5" o/c	
Bottom Edge (Lu)	2' 5" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 2' 10"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 3' 3 1/2"	1' 5 3/4"	15.0	50.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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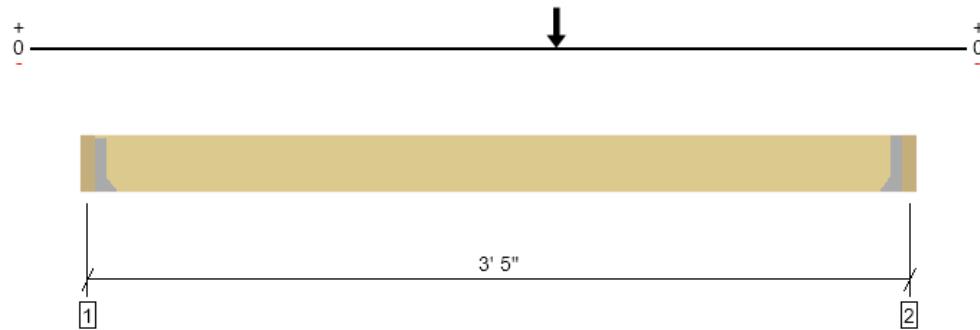
ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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S2.2, S26
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Overall Length: 3' 8 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	105 @ 3' 5"	1969 (1.50")	Passed (5%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	99 @ 2' 5 1/8"	4541	Passed (2%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	134 @ 2' 1"	10263	Passed (1%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.001 @ 2' 1"	0.104	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.001 @ 2' 1"	0.156	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 3' 1 1/2"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	28	52	80	See note ¹
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	35	70	105	See note ¹

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 2" o/c	
Bottom Edge (Lu)	3' 2" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	
2 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 3' 5"	N/A	6.1	--	
1 - Point (lb)	2' 1" (Front)	N/A	44	122	Linked from: S25, Support 1

- Side loads are assumed to not induce cross-grain tension.

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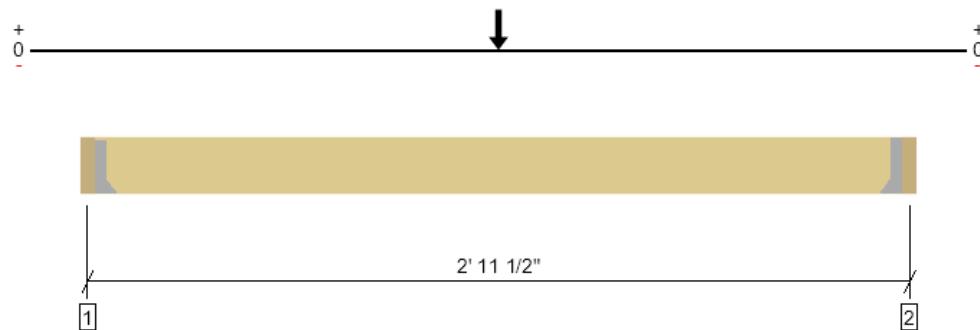


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S2.2, S27

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Overall Length: 3' 3"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	565 @ 3 1/2"	1969 (1.50")	Passed (29%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	559 @ 1' 3 3/8"	4541	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	748 @ 1' 7 1/2"	10263	Passed (7%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.004 @ 1' 7 1/2"	0.089	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.006 @ 1' 7 1/2"	0.133	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 8"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	160	406	565	See note ¹
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	160	406	565	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 8" o/c	
Bottom Edge (Lu)	2' 8" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	
2 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 2' 11 1/2"	N/A	6.1	--	
1 - Point (lb)	1' 7 1/2" (Front)	N/A	303	811	Linked from: S23, Support 2

• Side loads are assumed to not induce cross-grain tension.

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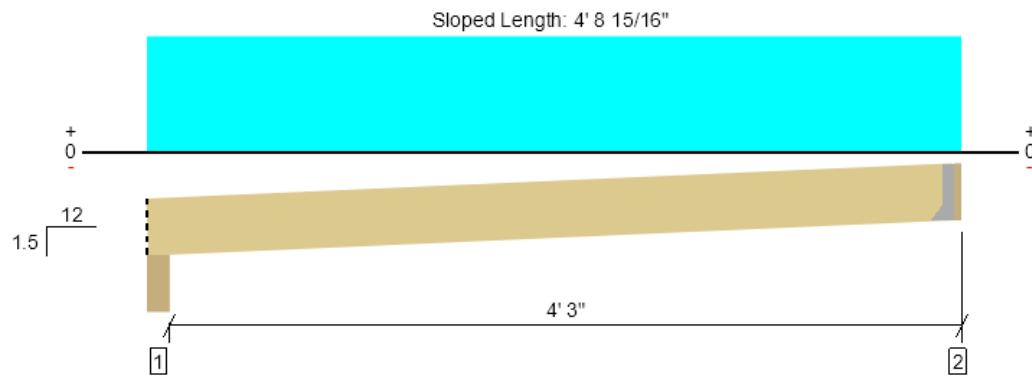
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S2.2, S28
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	148 @ 4' 6 3/4"	1969 (1.50")	Passed (8%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	79 @ 3' 6 15/16"	4541	Passed (2%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	156 @ 2' 5 3/8"	10263	Passed (2%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.001 @ 2' 5 3/8"	0.213	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.002 @ 2' 5 3/8"	0.284	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 4' 8 11/16"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	1.50"	51	120	171	Blocking
2 - Hanger on 11 7/8" LVL beam	1.75"	Hanger ¹	1.50"	46	111	157	See note 1

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 7" o/c	
Bottom Edge (Lu)	4' 7" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	U14X SLD7	2.00"	N/A	14-10dx1.5	6-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 4' 6 3/4"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 4' 8 1/2"	11 3/4"	15.0	50.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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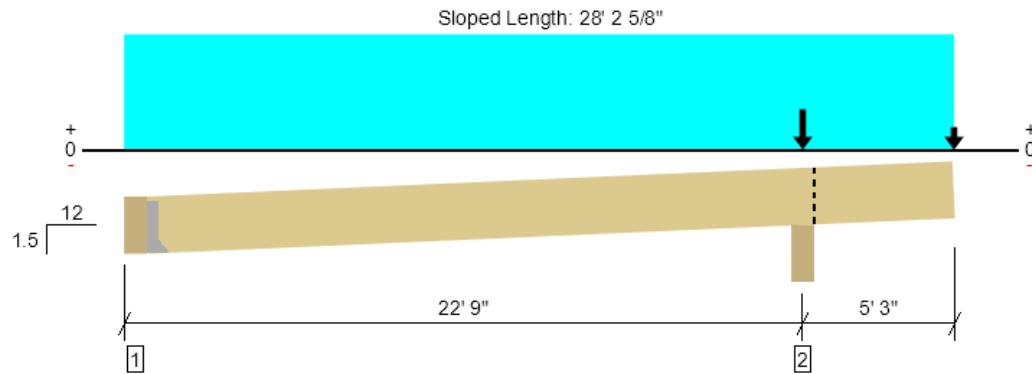
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Lexee Navarre Harriott Valentine Engineers (206) 697-1700 lnavarre@harriottvalentine.com	



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S2.2, S29

1 piece(s) 7" x 11 7/8" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	15482 @ 22' 9"	24250 (5.50")	Passed (64%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3484 @ 23' 11 9/16"	18481	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-17273 @ 22' 9"	45776	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.416 @ 28'	0.529	Passed (2L/306)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.511 @ 28'	0.705	Passed (2L/248)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 27' 10 9/16"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Member should be side-loaded from both sides of the member or braced to prevent rotation.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	372	715/-39	1086	See note ¹
2 - Beam - LVL	5.50"	5.50"	3.51"	4448	11034	15482	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	27' 9" o/c	
Bottom Edge (Lu)	27' 9" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HU410-2X SLU7	2.50"	N/A	14-10dx1.5	6-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 28'	N/A	26.0	--	
1 - Uniform (PSF)	0 to 28'	1' 8 1/2"	15.0	50.0	Default Load
2 - Point (lb)	28'	N/A	247	717	Linked from: S20, Support 2
3 - Point (lb)	28'	N/A	550	1415	Linked from: S35, Support 1
4 - Point (lb)	22' 9"	N/A	2578	6945	Linked from: S34, Support 1

- Side loads are assumed to not induce cross-grain tension.

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

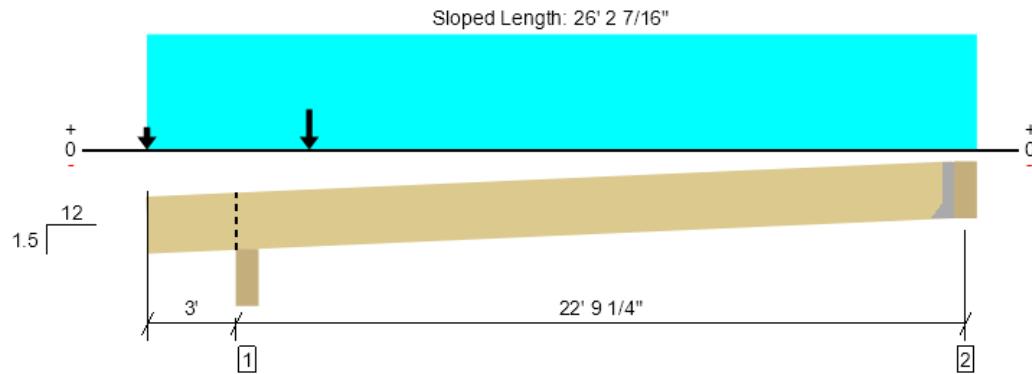
ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 lnavarre@harriettvalentine.com	



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S2.2, S30

2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6184 @ 3' 2 3/4"	7857 (5.50")	Passed (79%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4726 @ 4' 5 15/16"	9081	Passed (52%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	11417 @ 12' 10 9/16"	20525	Passed (56%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.826 @ 13' 11 1/2"	1.124	Passed (L/327)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	1.125 @ 14' 3/16"	1.499	Passed (L/240)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 25' 10 3/8"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	4.33"	1622	4563	6184	Blocking
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	522	1341	1863	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 7" o/c	
Bottom Edge (Lu)	25' 9" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LSSR410Z	1.88"	N/A	22-16dx2.5	18-16dx2.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 25' 6 1/2"	N/A	12.1	--	
1 - Uniform (PSF)	0 to 26'	2'	15.0	50.0	Default Load
2 - Point (lb)	0	N/A	208	618	Linked from: S31, Support 1
3 - Point (lb)	5' 2 3/4"	N/A	838	2629	Linked from: S32, Support 1

- Side loads are assumed to not induce cross-grain tension.

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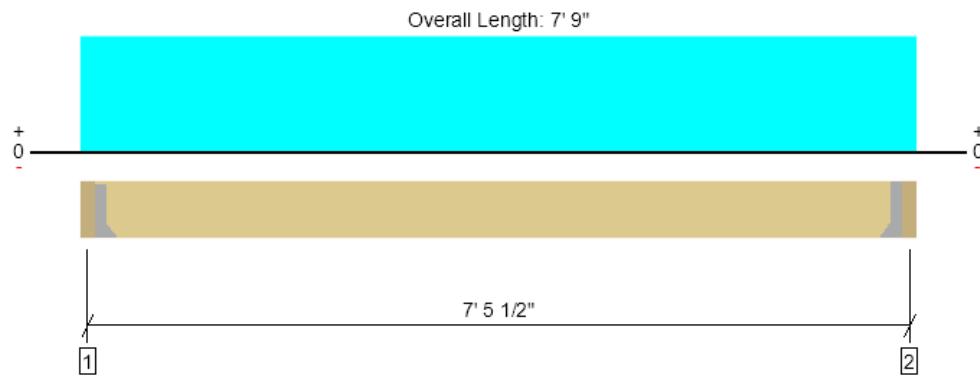
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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File Name: Sitka

S2.2, S31
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	765 @ 3 1/2"	1969 (1.50")	Passed (39%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	554 @ 1' 3 3/8"	4541	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1371 @ 3' 10 1/2"	10263	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.025 @ 3' 10 1/2"	0.239	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.034 @ 3' 10 1/2"	0.358	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 7' 2"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	208	618	826	See note ¹
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	208	618	826	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 2" o/c	
Bottom Edge (Lu)	7' 2" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	
2 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 7' 5 1/2"	N/A	6.1	--	
1 - Uniform (PLF)	0 to 7' 9" (Front)	N/A	48.0	159.5	Linked from: R2, Support 1

• Side loads are assumed to not induce cross-grain tension.

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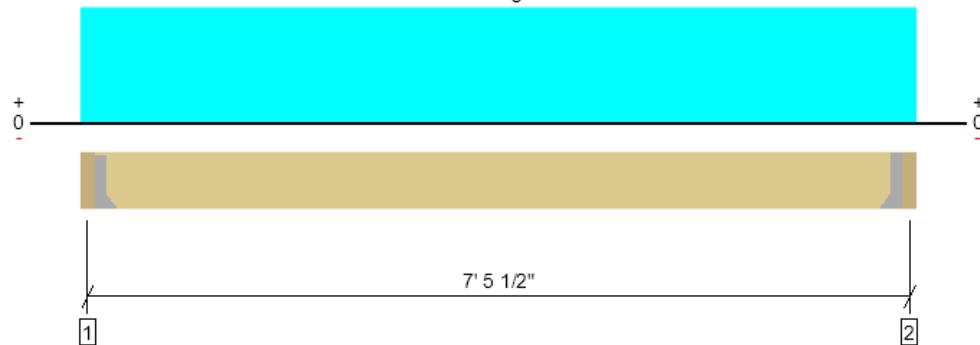


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S2.2, S32

2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Overall Length: 7' 9"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3209 @ 3 1/2"	3938 (1.50")	Passed (82%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2323 @ 1' 3 3/8"	9081	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5750 @ 3' 10 1/2"	20525	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.053 @ 3' 10 1/2"	0.239	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.070 @ 3' 10 1/2"	0.358	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 7' 2"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
 - Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	838	2629	3467	See note ¹
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	838	2629	3467	See note ¹

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger.

- ^{• 1} See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 2" o/c	
Bottom Edge (Lu)	7' 2" o/c	

- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HHUS48	3.00"	N/A	22-10d	8-10d	
2 - Face Mount Hanger	HHUS48	3.00"	N/A	22-10d	8-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 7' 5 1/2"	N/A	12.1	--	
1 - Uniform (PLF)	0 to 7' 9" (Front)	N/A	48.0	159.5	Linked from: R2, Support 2
2 - Uniform (PLF)	0 to 7' 9" (Front)	N/A	157.0	519.0	Linked from: R4, Support 1

- Side loads are assumed to not induce cross-grain tension.

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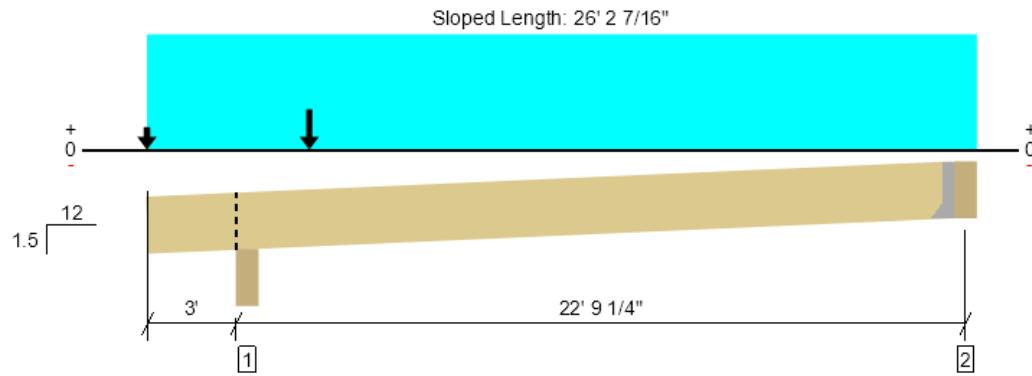


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S2.2, S33

2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6184 @ 3' 2 3/4"	7857 (5.50")	Passed (79%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4726 @ 4' 5 15/16"	9081	Passed (52%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	11417 @ 12' 10 9/16"	20525	Passed (56%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.826 @ 13' 11 1/2"	1.124	Passed (L/327)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	1.125 @ 14' 3/16"	1.499	Passed (L/240)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 25' 10 3/8"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	4.33"	1622	4563	6184	Blocking
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	522	1341	1863	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 7" o/c	
Bottom Edge (Lu)	25' 9" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LSSR410Z	1.88"	N/A	22-16dx2.5	18-16dx2.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 25' 6 1/2"	N/A	12.1	--	
1 - Uniform (PSF)	0 to 26'	2'	15.0	50.0	Default Load
2 - Point (lb)	0	N/A	208	618	Linked from: S31, Support 2
3 - Point (lb)	5' 2 3/4"	N/A	838	2629	Linked from: S32, Support 2

- Side loads are assumed to not induce cross-grain tension.

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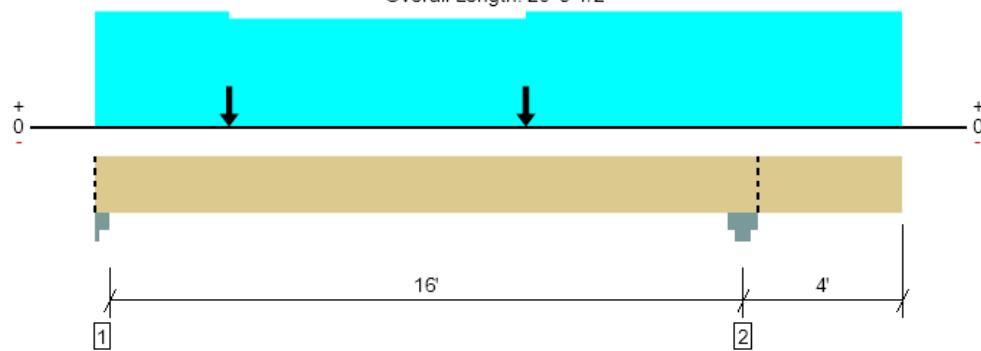


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S2.2, S34

1 piece(s) 7" x 24" 2.2E Parallam® PSL

Overall Length: 20' 3 1/2"



use W10x100
(forte doesn't
allow steel to
cantilever yet,
see capacity
sheet on
following page)

Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	9523 @ 2"	15313 (3.50")	Passed (62%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	7462 @ 13' 11 7/8"	37352	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	35719 @ 8' 2 5/8"	172930	Passed (21%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.087 @ 8' 2 1/8"	0.538	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.118 @ 8' 1 7/8"	0.806	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 20' 3 1/2"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).

- Overhang deflection criteria: LL (2L/360) and TL (2L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

- Member should be side-loaded from both sides of the member or braced to prevent rotation.

$$EI = 1.774 \times 10^{10} \text{ LB-IN}^2$$

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Column Cap - steel	3.50"	3.50"	2.18"	2578	6945	9523	Blocking
2 - Column Cap - steel	7.25"	7.25"	3.10"	3714	9837	13550	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	20' 4" o/c	
Bottom Edge (Lu)	20' 4" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 20' 3 1/2"	N/A	52.5	--	
1 - Uniform (PLF)	0 to 20' 3 1/2" (Front)	N/A	40.5	134.5	Linked from: R1, Support 1
2 - Uniform (PLF)	0 to 3' 4 1/2" (Front)	N/A	170.0	568.5	Linked from: R3, Support 2
3 - Uniform (PLF)	10' 10" to 20' 3 1/2" (Front)	N/A	170.0	568.5	Linked from: R3, Support 2
4 - Uniform (PLF)	3' 4 1/2" to 10' 10" (Front)	N/A	158.0	523.0	Linked from: R4, Support 2
5 - Point (lb)	3' 4 1/2" (Front)	N/A	522	1341	Linked from: S30, Support 2
6 - Point (lb)	10' 10" (Front)	N/A	522	1341	Linked from: S33, Support 2

- Side loads are assumed to not induce cross-grain tension.

ForteWEB Software Operator	Job Notes
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FLEXURAL CAPACITY

WF, M, S, & HP SECTIONS

Section: W10x100

$f_y =$	50 ksi	$I_x =$	623 in ⁴
$L_b =$	16 ft	$E =$	29000000 psi
	192 in	$EI =$	1.807E+10 lb-in ²
$A =$	29.4 in ²		
$S_x =$	112 in ³		
$Z_x =$	130 in ³		

Moment Capacity:

LTB Check: Inelastic LTB Controls

Plastic Limit

L_p		L_b		L_r
112.3	<	192	<	693.7

$M_n =$ 512.20 kft
 $\Omega =$ 1.67

$M_n/\Omega =$ 306.71 kft

Shear Capacity:

Slenderness Check

$h/t_w/\sqrt{E/F_y} =$ 0.48

$k_v =$	1.00
$C_{v1} =$	1.00

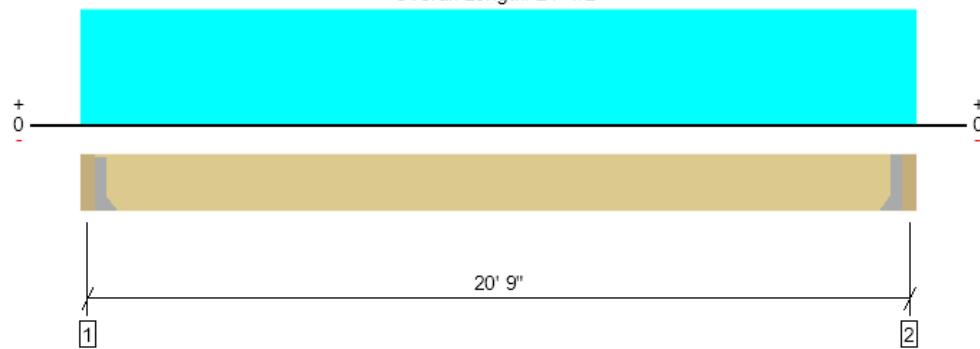
$V_n =$ 226.44 k
 $\Omega =$ 1.5

$V_n/\Omega =$ 150.96 k

S2.2, S35

2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Overall Length: 21' 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1914 @ 3 1/2"	3938 (1.50")	Passed (49%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1729 @ 1' 3 3/8"	9081	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	9790 @ 10' 6 1/4"	20525	Passed (48%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.562 @ 10' 6 1/4"	0.682	Passed (L/437)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.782 @ 10' 6 1/4"	1.023	Passed (L/314)	--	1.0 D + 1.0 S (All Spans)

Member Length : 20' 5 1/2"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	550	1415	1965	See note ¹
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	550	1415	1965	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	15' 2" o/c	
Bottom Edge (Lu)	20' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-16d	6-16d	
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-16d	6-16d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 20' 9"	N/A	12.1	--	
1 - Uniform (PLF)	0 to 21' 1/2" (Front)	N/A	40.5	134.5	Linked from: R1, Support 2

• Side loads are assumed to not induce cross-grain tension.

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ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



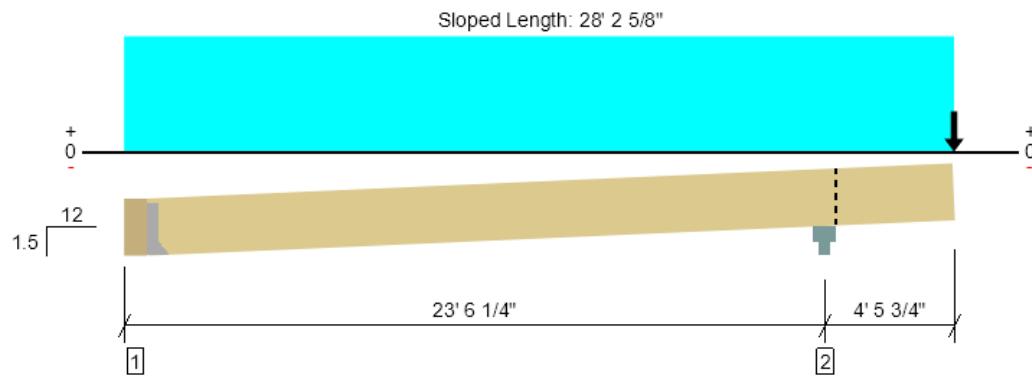
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S2.2, S36
1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1368 @ 5 1/2"	3281 (1.50")	Passed (42%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	2433 @ 24' 8 13/16"	9241	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-10239 @ 23' 6 1/4"	22888	Passed (45%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.322 @ 28'	0.451	Passed (2L/336)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.361 @ 28'	0.602	Passed (2L/300)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 27' 10 9/16"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	388	1040	1427	See note ¹
2 - Column Cap - steel	5.50"	5.50"	2.13"	1369	3334	4704	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	27' 9" o/c	
Bottom Edge (Lu)	27' 9" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LSSR410Z	1.88"	N/A	22-16dx2.5	18-16dx2.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 28'	N/A	13.0	--	
1 - Uniform (PSF)	0 to 28'	2'	15.0	50.0	Default Load
2 - Point (lb)	28'	N/A	550	1415	Linked from: S35, Support 2

- Side loads are assumed to not induce cross-grain tension.

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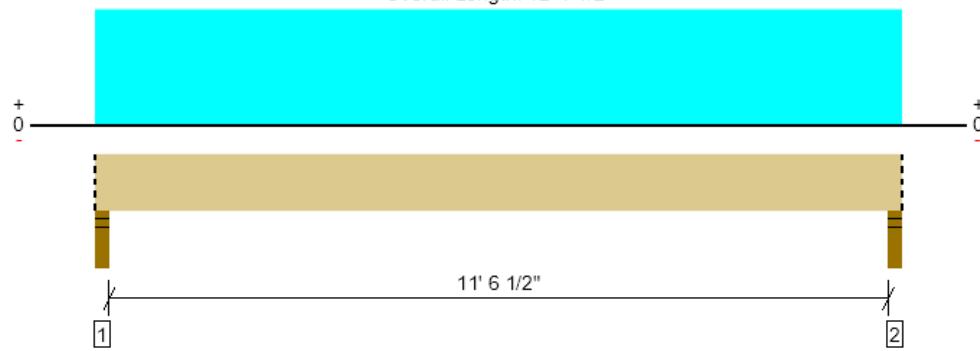


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S2.2, S37

1 piece(s) 5 1/4" x 11 1/4" 2.2E Parallam® PSL

Overall Length: 12' 1 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6808 @ 2"	7809 (3.50")	Passed (87%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	5428 @ 1' 2 3/4"	13132	Passed (41%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	19517 @ 6' 3/4"	30998	Passed (63%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.296 @ 6' 3/4"	0.393	Passed (L/478)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.391 @ 6' 3/4"	0.590	Passed (L/362)	--	1.0 D + 1.0 S (All Spans)

Member Length : 12' 1 1/2"
 System : Roof
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - SPF	3.50"	3.50"	3.05"	1658	5150	6808	Blocking
2 - Stud wall - SPF	3.50"	3.50"	3.05"	1658	5150	6808	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 2" o/c	
Bottom Edge (Lu)	12' 2" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 12' 1 1/2"	N/A	18.5	--	
1 - Uniform (PLF)	0 to 12' 1 1/2" (Front)	N/A	255.0	849.5	Linked from: R5, Support 2

- Side loads are assumed to not induce cross-grain tension.

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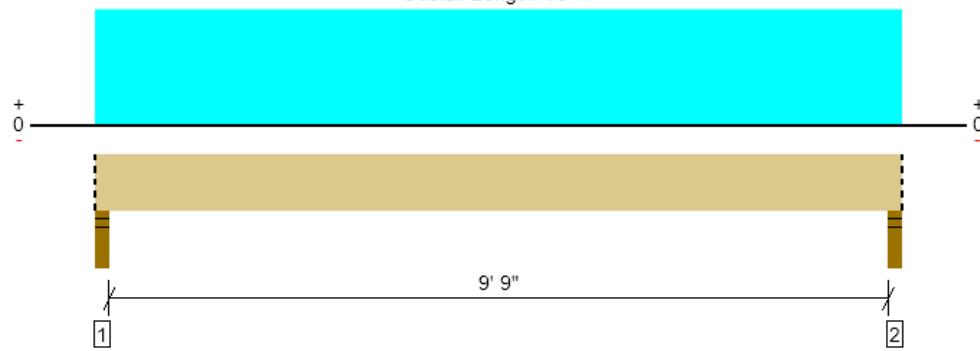


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S2.2, S38

1 piece(s) 5 1/4" x 11 1/4" 2.2E Parallam® PSL

Overall Length: 10' 4"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5802 @ 2"	7809 (3.50")	Passed (74%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4422 @ 1' 2 3/4"	13132	Passed (34%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	14037 @ 5' 2"	30998	Passed (45%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.158 @ 5' 2"	0.333	Passed (L/758)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.209 @ 5' 2"	0.500	Passed (L/573)	--	1.0 D + 1.0 S (All Spans)

Member Length : 10' 4"
 System : Roof
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - SPF	3.50"	3.50"	2.60"	1413	4389	5802	Blocking
2 - Stud wall - SPF	3.50"	3.50"	2.60"	1413	4389	5802	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 4" o/c	
Bottom Edge (Lu)	10' 4" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 10' 4"	N/A	18.5	--	
1 - Uniform (PLF)	0 to 10' 4" (Front)	N/A	255.0	849.5	Linked from: R5, Support 2

- Side loads are assumed to not induce cross-grain tension.

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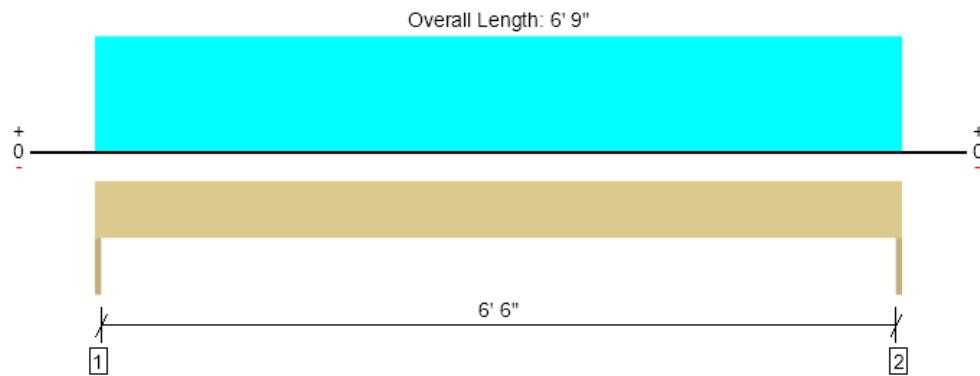
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S2.2, S39
2 piece(s) 2 x 4 HF No.2



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	93 @ 0	1823 (1.50")	Passed (5%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	82 @ 5"	1050	Passed (8%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	158 @ 3' 4 1/2"	651	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.042 @ 3' 4 1/2"	0.225	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.093 @ 3' 4 1/2"	0.313	Passed (L/874)	--	1.0 D + 1.0 L (All Spans)

Member Length : 6' 9"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (5/16").
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	51	42	93	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	51	42	93	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 9" o/c	
Bottom Edge (Lu)	6' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 6' 9"	N/A	2.7	--	
1 - Uniform (PSF)	0 to 6' 9"	1' 3"	10.0	10.0	CEILING

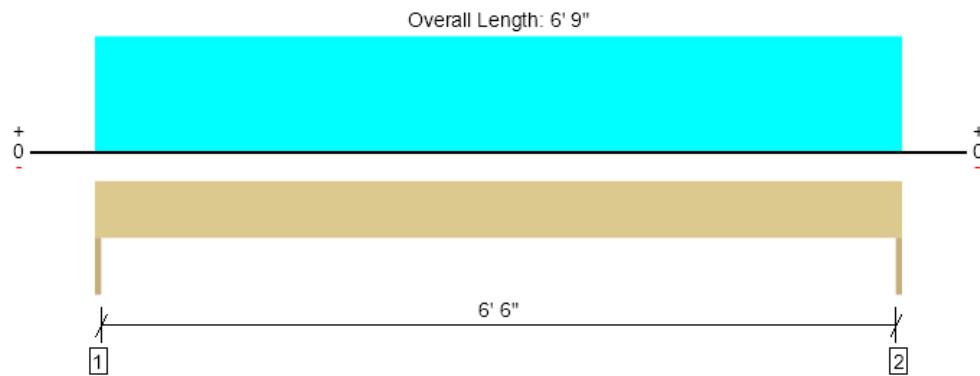
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S2.2, S40
2 piece(s) 2 x 4 HF No.2



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	93 @ 0	1823 (1.50")	Passed (5%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	82 @ 5"	1050	Passed (8%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	158 @ 3' 4 1/2"	651	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.042 @ 3' 4 1/2"	0.225	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.093 @ 3' 4 1/2"	0.313	Passed (L/874)	--	1.0 D + 1.0 L (All Spans)

Member Length : 6' 9"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (5/16").
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	51	42	93	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	51	42	93	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 9" o/c	
Bottom Edge (Lu)	6' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 6' 9"	N/A	2.7	--	
1 - Uniform (PSF)	0 to 6' 9"	1' 3"	10.0	10.0	CEILING

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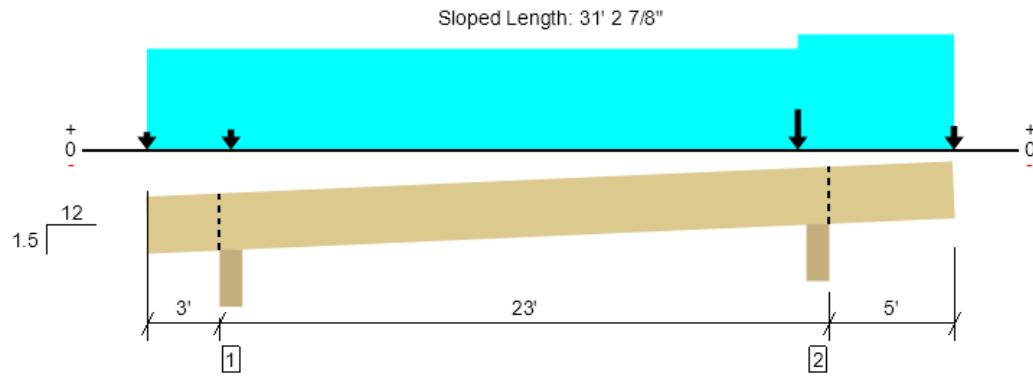
ForteWEB Software Operator	Job Notes
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S2.2, S41

1 piece(s) 5 1/4" x 11 7/8" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	8636 @ 25' 9 1/4"	11785 (5.50")	Passed (73%)	--	1.0 D + 1.0 S (Adj Spans)
Shear (lbs)	4254 @ 24' 6 11/16"	13861	Passed (31%)	1.15	1.0 D + 1.0 S (Adj Spans)
Moment (Ft-lbs)	-9202 @ 25' 9 1/4"	34332	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.208 @ 31'	0.527	Passed (2L/608)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.409 @ 14' 3 5/8"	1.514	Passed (L/666)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 31' 4 3/8"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	1.50"	830	1765	2595	Blocking
2 - Beveled Plate - HF	5.50"	5.50"	4.03"	2522	6115	8636	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	31' 3" o/c	
Bottom Edge (Lu)	31' 3" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 31'	N/A	19.5	--	
1 - Uniform (PSF)	0 to 25'	1' 9"	15.0	50.0	Default Load
2 - Uniform (PSF)	25' to 31'	2'	15.0	50.0	Default Load
3 - Point (lb)	0	N/A	29	59	Linked from: S17, Support 1
4 - Point (lb)	3' 2 3/4"	N/A	178	443	Linked from: S44, Support 1
5 - Point (lb)	31'	N/A	331	1037	Linked from: S56, Support 1
6 - Point (lb)	25'	N/A	1362	3388	Linked from: S53, Support 1

• Side loads are assumed to not induce cross-grain tension.

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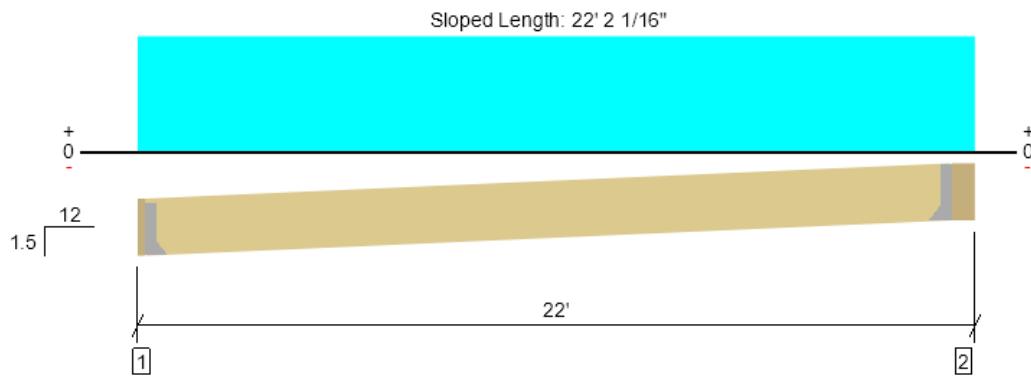
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S2.2, S42
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1052 @ 1 3/4"	1969 (1.50")	Passed (53%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	956 @ 1' 1 9/16"	4541	Passed (21%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5628 @ 10' 10 1/8"	10263	Passed (55%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.717 @ 10' 10 1/8"	1.078	Passed (L/361)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.996 @ 10' 10 1/8"	1.437	Passed (L/260)	--	1.0 D + 1.0 S (All Spans)

Member Length : 21' 8 1/4"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	1.75"	Hanger ¹	1.50"	298	768	1066	See note ¹
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	304	790	1094	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 5" o/c	
Bottom Edge (Lu)	21' 7" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U14X SLU7	2.00"	N/A	14-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 3/4" to 21' 6 1/2"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 22'	1' 5"	15.0	50.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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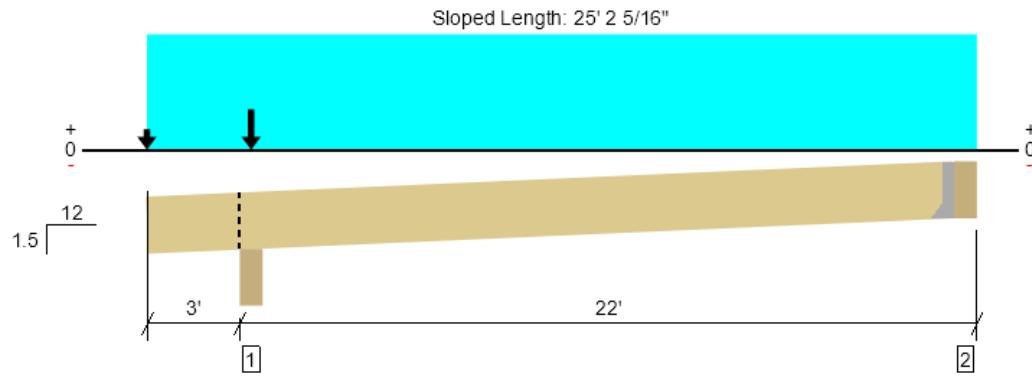
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S2.2, S43

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1225 @ 24' 6 1/2"	1969 (1.50")	Passed (62%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	1151 @ 4' 5 1/16"	4541	Passed (25%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6383 @ 14' 1 3/8"	10263	Passed (62%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.820 @ 13' 11 3/8"	1.074	Passed (L/314)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	1.112 @ 13' 11 5/8"	1.432	Passed (L/232)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 24' 10 1/4"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	3.33"	663	1719	2382	Blocking
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	340	935	1275	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 4" o/c	
Bottom Edge (Lu)	24' 9" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 24' 6 1/2"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 25'	1' 8 1/2"	15.0	50.0	Default Load
2 - Point (lb)	0	N/A	29	59	Linked from: S17, Support 2
3 - Point (lb)	3' 2 3/4"	N/A	178	443	Linked from: S44, Support 2

- Side loads are assumed to not induce cross-grain tension.

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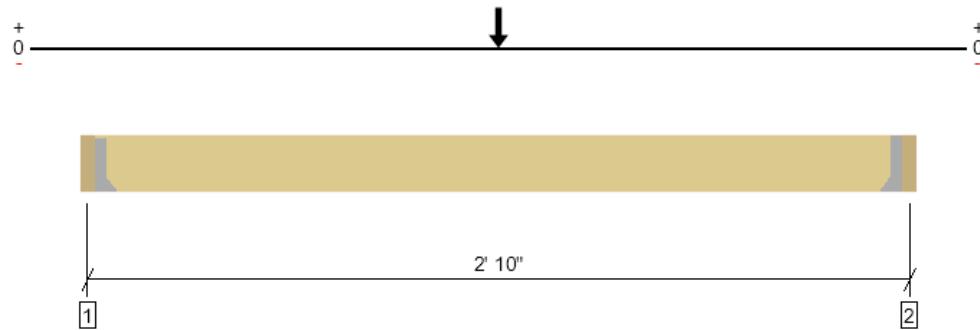
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S2.2, S44
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Overall Length: 3' 1 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	620 @ 3 1/2"	1969 (1.50")	Passed (32%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	614 @ 1' 3 3/8"	4541	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	783 @ 1' 6 3/4"	10263	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.004 @ 1' 6 3/4"	0.085	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.006 @ 1' 6 3/4"	0.127	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 6 1/2"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	178	443	620	See note ¹
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	178	443	620	See note ¹

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 7" o/c	
Bottom Edge (Lu)	2' 7" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	
2 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 2' 10"	N/A	6.1	--	
1 - Point (lb)	1' 6 3/4" (Front)	N/A	42	117	Linked from: S16, Support 2
2 - Point (lb)	1' 6 3/4" (Front)	N/A	298	768	Linked from: S42, Support 1

- Side loads are assumed to not induce cross-grain tension.

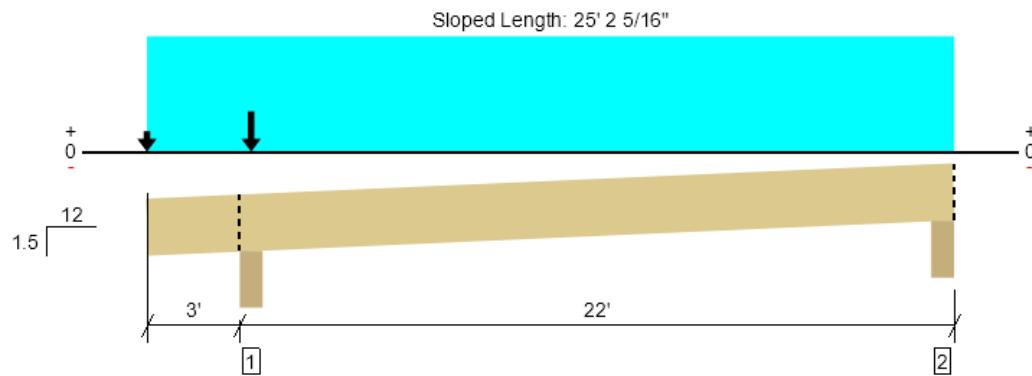
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S2.2, S45
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2426 @ 3' 2 3/4"	3928 (5.50")	Passed (62%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1184 @ 4' 5 5/16"	4541	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6607 @ 14' 2 1/8"	10263	Passed (64%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.859 @ 14' 1/16"	1.080	Passed (L/302)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	1.164 @ 14' 5/16"	1.440	Passed (L/223)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 25' 3 13/16"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	3.40"	673	1753	2426	Blocking
2 - Beveled Plate - HF	5.50"	5.50"	1.83"	348	952	1300	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 1" o/c	
Bottom Edge (Lu)	25' 2" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 25'	N/A	6.1	--	
1 - Uniform (PSF)	0 to 25'	1' 9"	15.0	50.0	Default Load
2 - Point (lb)	0	N/A	29	59	Linked from: S17, Support 1
3 - Point (lb)	3' 2 3/4"	N/A	178	443	Linked from: S44, Support 1

• Side loads are assumed to not induce cross-grain tension.

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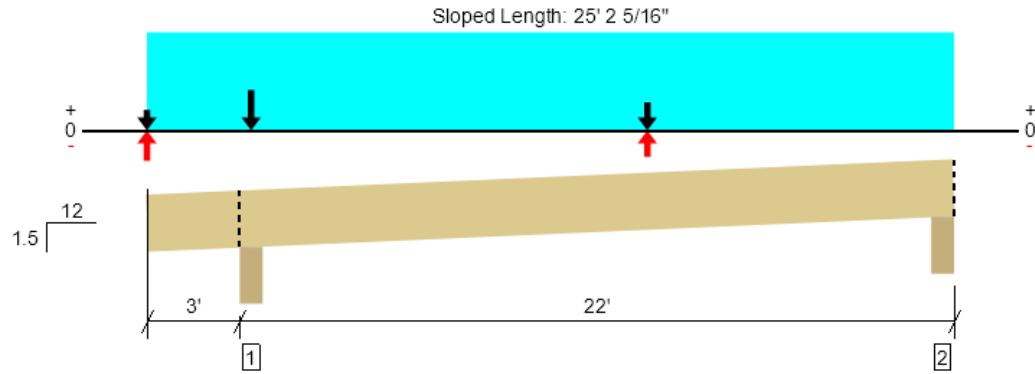
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S2.2, S46

1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	2245 @ 3' 2 3/4"	7857 (5.50")	Passed (29%)	--	1.0 D + 1.0 S (All Spans) [1]
Shear (lbs)	1393 @ 23' 6 11/16"	9241	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Moment (Ft-lbs)	8752 @ 14' 10 1/8"	22888	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Live Load Defl. (in)	0.512 @ 14' 1/4"	1.080	Passed (L/506)	--	1.0 D + 1.0 S (All Spans) [1]
Total Load Defl. (in)	0.694 @ 14'	1.440	Passed (L/374)	--	1.0 D + 1.0 S (All Spans) [1]

Member Length : 25' 3 13/16"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	1.57"	654	1590	2245	Blocking
2 - Beveled Plate - HF	5.50"	5.50"	1.50"	434	1142	1576	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	25' 2" o/c	
Bottom Edge (Lu)	25' 2" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 25'	N/A	13.0	--	
1 - Uniform (PSF)	0 to 25'	1' 9"	15.0	50.0	Default Load
2 - Point (lb)	0	N/A	29	59	Linked from: S17, Support 2
3 - Point (lb)	3' 2 3/4"	N/A	178	443	Linked from: S44, Support 2
4 - Point (lb)	0	N/A	-100	-250	Linked from: S47, Support 1
5 - Point (lb)	15' 6"	N/A	-7	293/-232	Linked from: S51, Support 1

• Side loads are assumed to not induce cross-grain tension.

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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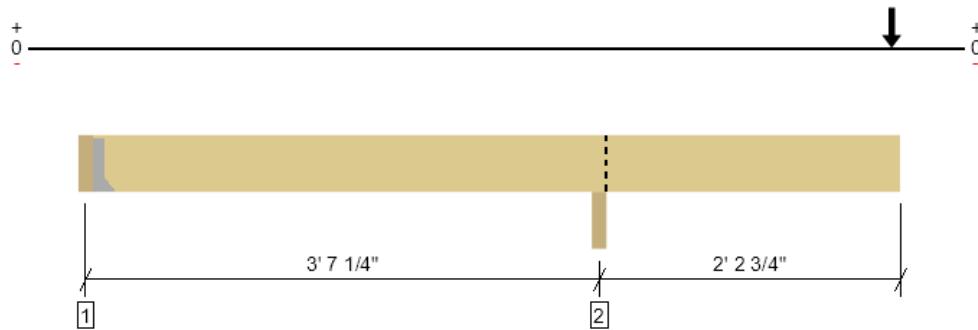
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S2.2, S47

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Overall Length: 5' 11 3/4"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	936 @ 3' 9"	4594 (3.50")	Passed (20%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	559 @ 4' 10 5/8"	4541	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1246 @ 3' 9"	10263	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.018 @ 5' 11 3/4"	0.200	Passed (2L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.025 @ 5' 11 3/4"	0.223	Passed (2L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 5' 8 1/4"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Right cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 350 lbs uplift at support located at 3 1/2". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	-100	-250	-350	See note ¹
2 - Beam - LVL	3.50"	3.50"	1.50"	298	638	936	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 8" o/c	
Bottom Edge (Lu)	5' 8" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HUS1.81/10	3.00"	N/A	30-10dx1.5	10-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 5' 11 3/4"	N/A	6.1	--	
1 - Point (lb)	5' 11" (Front)	N/A	164	388	Linked from: S50, Support 1

• Side loads are assumed to not induce cross-grain tension.

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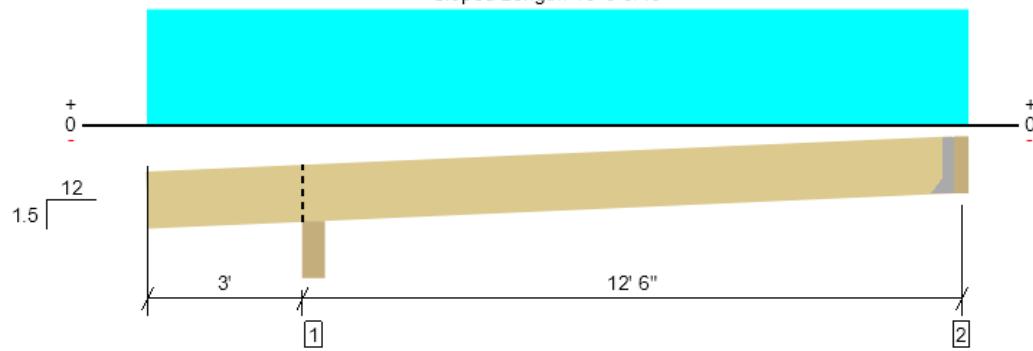
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S2.2, S48
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Sloped Length: 15' 9 3/16"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	789 @ 15' 4 1/4"	1969 (1.50")	Passed (40%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	720 @ 4' 5 5/16"	4541	Passed (16%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2286 @ 9' 6 3/4"	10263	Passed (22%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.103 @ 9' 4 3/8"	0.611	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.137 @ 9' 4 5/8"	0.815	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 15' 7 3/16"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	1.86"	353	972	1325	Blocking
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	213	614	827	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	15' 6" o/c	
Bottom Edge (Lu)	15' 6" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 15' 4 1/4"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 15' 7 3/4"	2'	15.0	50.0	Default Load

- Side loads are assumed to not induce cross-grain tension.

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

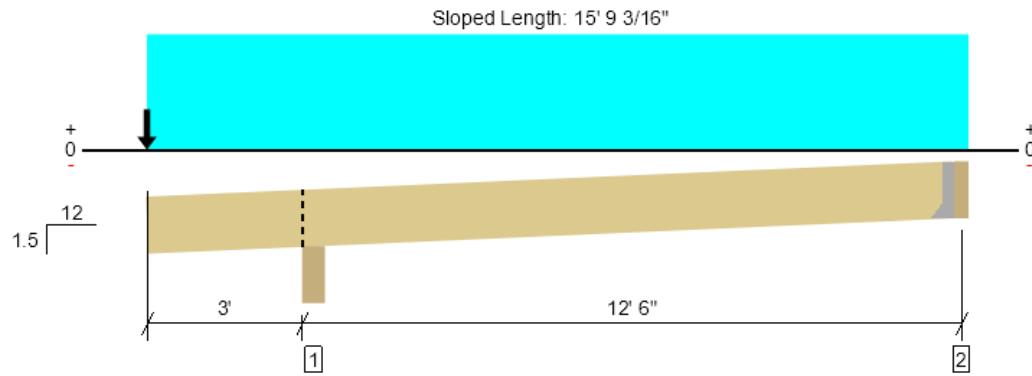
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Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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S2.2, S49

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2511 @ 3' 2 3/4"	3928 (5.50")	Passed (64%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1211 @ 2' 3/16"	4541	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-3733 @ 3' 2 3/4"	10263	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.123 @ 0	0.325	Passed (2L/636)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.166 @ 0	0.434	Passed (2L/472)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 15' 7 3/16"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	3.52"	731	1780	2511	Blocking
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	134	529	663	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	15' 6" o/c	
Bottom Edge (Lu)	12' 6" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 15' 4 1/4"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 15' 7 3/4"	2'	15.0	50.0	Default Load
2 - Point (lb)	0	N/A	298	638	Linked from: S47, Support 2

- Side loads are assumed to not induce cross-grain tension.

ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 lnavarre@harriettvalentine.com	



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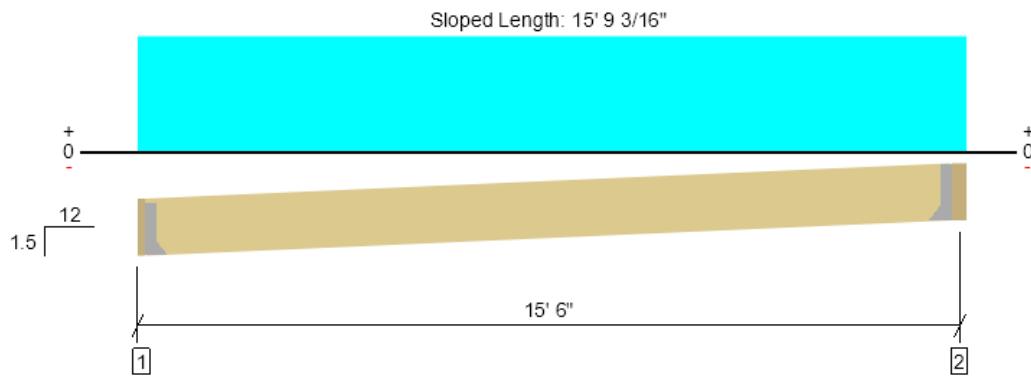
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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Lexee Navarre Harriett Valentine Engineers (206) 697-1700 lnavarre@harriettvalentine.com	



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S2.2, S50
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	542 @ 1 3/4"	1969 (1.50")	Passed (28%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	472 @ 1' 1 9/16"	4541	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2059 @ 7' 9"	10263	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.133 @ 7' 9"	0.766	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.190 @ 7' 9"	1.022	Passed (L/970)	--	1.0 D + 1.0 S (All Spans)

Member Length : 15' 5 3/8"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	1.75"	Hanger ¹	1.50"	164	388	551	See note ¹
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	166	395	561	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	15' 4" o/c	
Bottom Edge (Lu)	15' 4" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U14X SLU7	2.00"	N/A	14-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 3/4" to 15' 4 1/4"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 15' 7 3/4"	1'	15.0	50.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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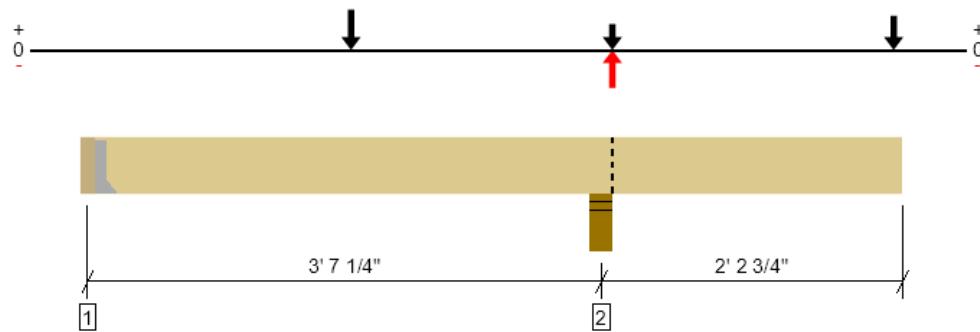


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S2.2, S51

1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL

Overall Length: 5' 11 3/4"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1959 @ 3' 9"	7796 (5.50")	Passed (25%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1453 @ 2' 6 3/8"	9241	Passed (16%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-2513 @ 3' 9"	22888	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.015 @ 5' 11 3/4"	0.200	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.021 @ 5' 11 3/4"	0.223	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 5' 8 1/4"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Right cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 240 lbs uplift at support located at 3 1/2". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	-7	293/-232	285/-240	See note ¹
2 - Stud wall - HF	5.50"	5.50"	1.50"	633	1326	1959	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 8" o/c	
Bottom Edge (Lu)	5' 8" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

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Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 5' 11 3/4"	N/A	13.0	--	
1 - Point (lb)	5' 11" (Front)	N/A	166	395	Linked from: S50, Support 2
2 - Point (lb)	2' (Front)	N/A	213	614	Linked from: S48, Support 2
3 - Point (lb)	3' 10" (Front)	N/A	134	529	Linked from: S49, Support 2
4 - Point (lb)	2' (Front)	N/A	167	463	Linked from: S52, Support 1
5 - Point (lb)	5' 11" (Front)	N/A	164	388	Linked from: S55, Support 1
6 - Point (lb)	3' 10" (Front)	N/A	-292	-1023	Linked from: S54, Support 1

• Side loads are assumed to not induce cross-grain tension.

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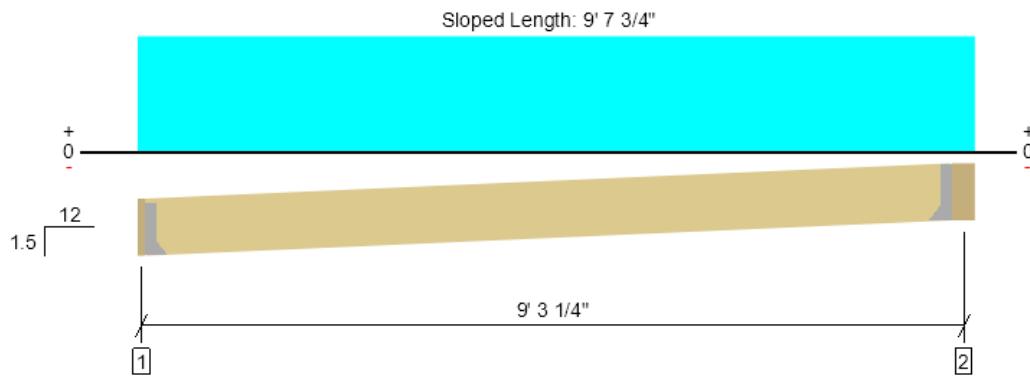
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 lnavarre@harriettvalentine.com	



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S2.2, S52
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	611 @ 1 3/4"	1969 (1.50")	Passed (31%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	478 @ 1' 1 9/16"	4541	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1371 @ 4' 7 9/16"	10263	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.036 @ 4' 7 9/16"	0.452	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.049 @ 4' 7 9/16"	0.603	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 9' 1 15/16"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	1.75"	Hanger ¹	1.50"	167	463	630	See note ¹
2 - Hanger on 11 7/8" LVL beam	5.50"	Hanger ¹	1.50"	177	494	671	See note ¹

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' o/c	
Bottom Edge (Lu)	9' o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U14X SLU7	2.00"	N/A	14-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 3/4" to 9' 1 3/8"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 9' 6 7/8"	2'	15.0	50.0	Default Load

- Side loads are assumed to not induce cross-grain tension.

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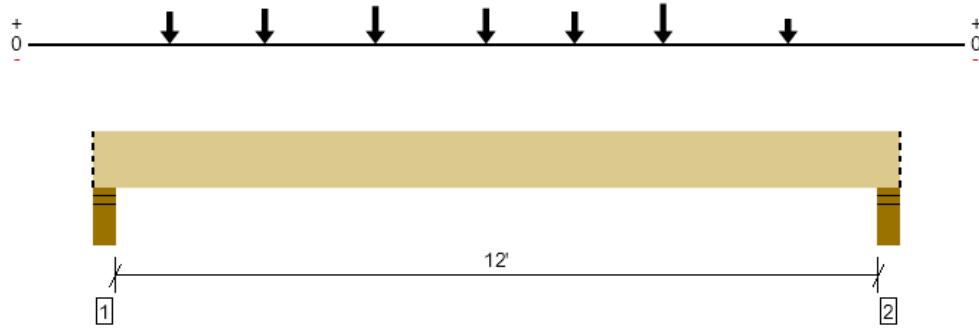
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S2.2, S53

1 piece(s) 5 1/4" x 14" 2.2E Parallam® PSL

use W10x19
see capacity
on following
page

Overall Length: 12' 11"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4750 @ 4"	11694 (5.50")	Passed (41%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4368 @ 1' 7 1/2"	16342	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	15274 @ 6' 3 1/2"	46854	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.125 @ 6' 3 1/2"	0.408	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.175 @ 6' 5 5/16"	0.613	Passed (L/840)	--	1.0 D + 1.0 S (All Spans)

Member Length : 12' 11"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

$$EI = 2.641 \times 10^9 \text{ LB-IN}^2$$

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	5.50"	5.50"	2.23"	1362	3388	4750	Blocking
2 - Stud wall - HF	5.50"	5.50"	1.87"	1169	2810	3979	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 11" o/c	
Bottom Edge (Lu)	12' 11" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 12' 11"	N/A	23.0	--	
1 - Point (lb)	4' 6 1/4" (Front)	N/A	327	1095	Linked from: R6, Support 2
2 - Point (lb)	1' 2 3/4" (Front)	N/A	304	790	Linked from: S42, Support 2
3 - Point (lb)	7' 8 1/2" (Front)	N/A	304	790	Linked from: S42, Support 2
4 - Point (lb)	2' 9" (Front)	N/A	340	935	Linked from: S43, Support 2
5 - Point (lb)	6' 3 1/2" (Front)	N/A	348	952	Linked from: S45, Support 2
6 - Point (lb)	11' 1 1/2" (Front)	N/A	177	494	Linked from: S52, Support 2
7 - Point (lb)	9' 1 1/2" (Front)	N/A	434	1142	Linked from: S46, Support 2

- Side loads are assumed to not induce cross-grain tension.

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FLEXURAL CAPACITY

WF, M, S, & HP SECTIONS

Section: W10x19

fy = 50 ksi lx = 96.3 in
 Lb = 13 ft E = 29000000 psi
 156 in EI = 2.793E+09 lb-in²

$$\begin{aligned} A &= 5.62 \text{ in}^2 \\ S_x &= 18.8 \text{ in}^3 \\ Z_x &= 21.6 \text{ in}^3 \end{aligned}$$

Moment Capacity:

LTB Check: Elastic LTB Controls

Plastic Limit

Lp

370

Lb

Elastic Limit

> 1167

Shear Capacity:

Slenderness Check

$$h/t_w / \sqrt{E/F_y} = 1.47$$

$$k_v = 1.00$$

$$C_{v1} = 1.00$$

$$V_p = 76.50 \text{ k}$$

"
Ω = 1.5

$$M_n/\Omega = \boxed{21.95 \text{ kft}}$$

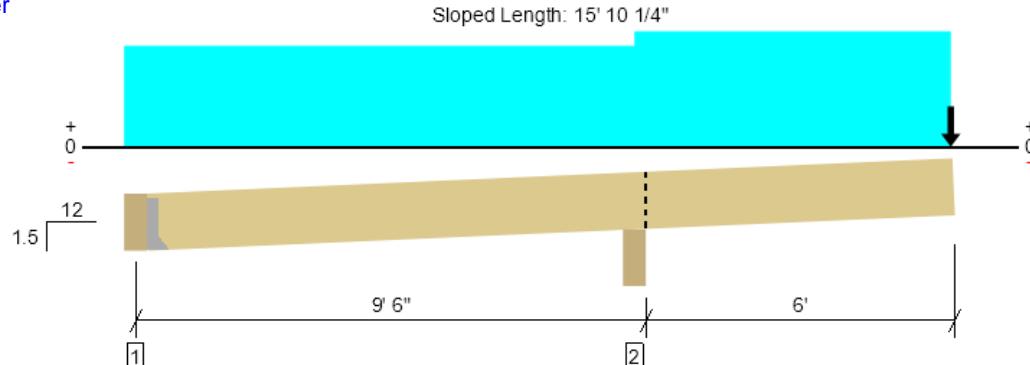
$$V_n/\Omega = \boxed{51.00} \text{ k}$$

S2.2, S54

1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL

An excessive uplift of -1315 lbs at support located at 5 1/2" failed this product.

use HGLT hanger



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5296 @ 9' 6"	7857 (5.50")	Passed (67%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2804 @ 10' 8 9/16"	9241	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-15768 @ 9' 6"	22888	Passed (69%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.595 @ 15' 8 3/4"	0.628	Passed (2L/254)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.816 @ 15' 8 3/4"	0.837	Passed (2L/184)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 15' 6 3/16"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Right cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" PSL beam	5.50"	Hanger ¹	1.50"	-292	-1023	-1315	See note ¹
2 - Beveled Plate - HF	5.50"	5.50"	3.71"	1498	3799	5296	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	15' 5" o/c	
Bottom Edge (Lu)	15' 5" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 15' 8 3/4"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 9' 6"	1' 9"	15.0	50.0	Default Load
2 - Uniform (PSF)	9' 6" to 15' 8"	2'	15.0	50.0	Default Load
3 - Point (lb)	15' 8"	N/A	566	1519	Linked from: S56, Support 2

- Side loads are assumed to not induce cross-grain tension.

ForteWEB Software Operator	Job Notes
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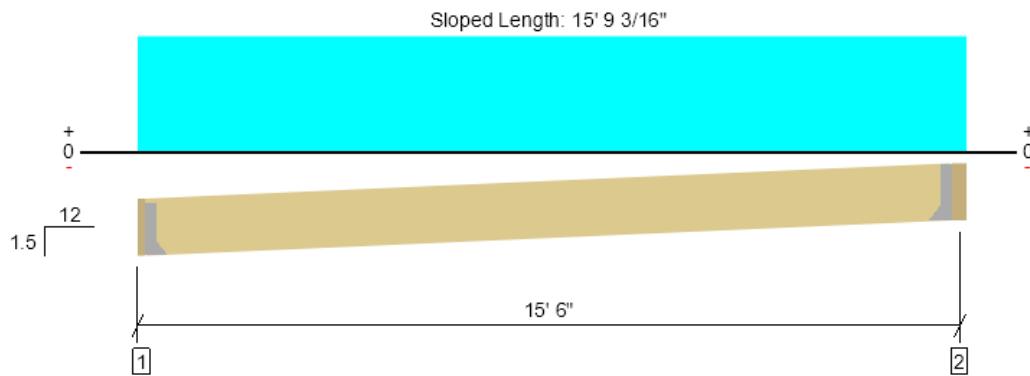
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S2.2, S55
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	542 @ 1 3/4"	1969 (1.50")	Passed (28%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	472 @ 1' 1 9/16"	4541	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2059 @ 7' 9"	10263	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.133 @ 7' 9"	0.766	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.190 @ 7' 9"	1.022	Passed (L/970)	--	1.0 D + 1.0 S (All Spans)

Member Length : 15' 5 3/8"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 1.5/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	1.75"	Hanger ¹	1.50"	164	388	551	See note ¹
2 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	166	395	561	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	15' 4" o/c	
Bottom Edge (Lu)	15' 4" o/c	

• Maximum allowable bracing intervals based on applied load.

• Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U14X SLU7	2.00"	N/A	14-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 3/4" to 15' 4 1/4"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 15' 7 3/4"	1'	15.0	50.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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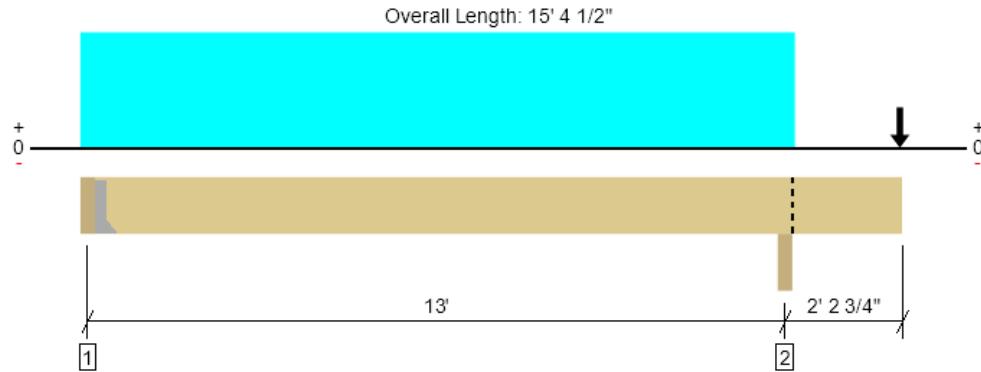
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S2.2, S56

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1308 @ 3 1/2"	1969 (1.50")	Passed (66%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	1229 @ 12' 1/8"	4541	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4007 @ 6' 5"	10263	Passed (39%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.203 @ 6' 7 3/4"	0.428	Passed (L/761)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.263 @ 6' 7 3/8"	0.643	Passed (L/587)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 15' 1"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" LVL beam	3.50"	Hanger ¹	1.50"	331	1037	1369	See note ¹
2 - Beam - LVL	3.50"	3.50"	1.59"	566	1519	2085	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	11' 6" o/c	
Bottom Edge (Lu)	15' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/11.88	2.00"	N/A	10-10d	2-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 15' 4 1/2"	N/A	6.1	--	
1 - Uniform (PLF)	0 to 13' 4" (Front)	N/A	48.0	159.5	Linked from: R2, Support 2
2 - Point (lb)	15' 4" (Front)	N/A	166	395	Linked from: S55, Support 2

• Side loads are assumed to not induce cross-grain tension.

ForteWEB Software Operator	Job Notes
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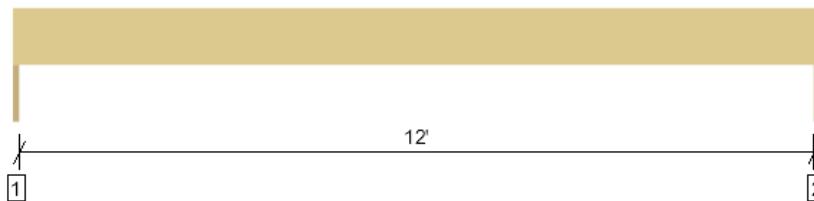


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S2.2, 12'-0" WB

1 piece(s) 3 1/2" x 5 1/4" 1.8E Parallam® PSL (Plank)

Overall Length: 12' 3"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	35 @ 0	4292 (1.50")	Passed (1%)	--	1.0 D (All Spans)
Shear (lbs)	33 @ 5"	2095	Passed (2%)	0.90	1.0 D (All Spans)
Moment (Ft-lbs)	108 @ 6' 1 1/2"	2212	Passed (5%)	0.90	1.0 D (All Spans)
Vert Live Load Defl. (in)	0.000 @ 0	0.408	Passed (2L/999+)	--	1.0 D (All Spans)
Vert Total Load Defl. (in)	0.087 @ 6' 1 1/2"	0.313	Passed (L/999+)	--	1.0 D (All Spans)
Lat Member Reaction (lbs)	1130 @ 12' 3"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	1027 @ 6 3/4"	4508	Passed (23%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	3462 @ mid-span	5668	Passed (61%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	0.878 @ mid-span	1.225	Passed (L/167)	--	1.0 D + 0.6 W
Bi-Axial Bending	0.64	1.00	Passed (64%)	1.60	1.0 D + 0.6 W

Member Length : 12' 3"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (5/16").
- Wall deflection criteria: TL (L/120)
- Member has been designed in flat (plank) orientation.

Supports	Bearing Length			Loads to Supports (lbs)		Accessories
	Total	Available	Required	Dead	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	35	35	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	35	35	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Lateral Connections: Simpson Strong-Tie						
Supports	Stud Size	Stud Material	Connector	Type/Model	Quantity	Nailing
Left	2X	Spruce-Pine-Fir	Angle Connectors	A34	3	(8) - 8d x 1 1/2"
Right	2X	Spruce-Pine-Fir	Angle Connectors	A34	3	(8) - 8d x 1 1/2"

Vertical Load	Location	Tributary Width	Dead (0.90)	Comments
0 - Self Weight (PLF)	0 to 12' 3"	N/A	5.7	

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	5'	61.5	

- ASCE/SEI 7 Sec. 30.4: Exposure Category (D), Mean Roof Height (22'), Topographic Factor (1.0), Wind Directionality Factor (0.85), Basic Wind Speed (150), Risk Category(II), Wind Zone (4), GCpi (+/- 0.18), Effective Wind Area determined using full member span and trib. width.
- IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

ForteWEB Software Operator	Job Notes
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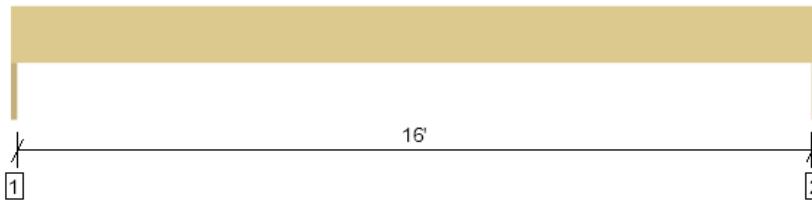
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S2.2, 16'-0" WB

1 piece(s) 3 1/2" x 5 1/4" 1.8E Parallam® PSL (Plank)

use HSS 5x3x0.250 FLAT, see capacity sheet on following page

Overall Length: 16' 3"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	47 @ 0	4292 (1.50")	Passed (1%)	--	1.0 D (All Spans)
Shear (lbs)	44 @ 5"	2095	Passed (2%)	0.90	1.0 D (All Spans)
Moment (Ft-lbs)	189 @ 8' 1 1/2"	2212	Passed (9%)	0.90	1.0 D (All Spans)
Vert Live Load Defl. (in)	0.000 @ 0	0.542	Passed (2L/999+)	--	1.0 D (All Spans)
Vert Total Load Defl. (in)	0.268 @ 8' 1 1/2"	0.313	Passed (L/729)	--	1.0 D (All Spans)
Lat Member Reaction (lbs)	1463 @ 16' 3"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	1362 @ 6 3/4"	4508	Passed (30%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	5943 @ mid-span	5549	Failed (107%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	2.632 @ mid-span	1.625	Failed (L/74)	--	1.0 D + 0.6 W
Bi-Axial Bending	1.14	1.00	Failed (114%)	1.60	1.0 D + 0.6 W

Member Length : 16' 3"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (5/16").
- Wall deflection criteria: TL (L/120)
- Member has been designed in flat (plank) orientation.

Supports	Bearing Length			Loads to Supports (lbs)		Accessories
	Total	Available	Required	Dead	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	47	47	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	47	47	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Lateral Connections: Simpson Strong-Tie						
Supports	Stud Size	Stud Material	Connector	Type/Model	Quantity	Nailing
Left	2X	Spruce-Pine-Fir	Angle Connectors	A34	4	(8) - 8d x 1 1/2"
Right	2X	Spruce-Pine-Fir	Angle Connectors	A34	4	(8) - 8d x 1 1/2"

Vertical Load	Location	Tributary Width	Dead (0.90)	Comments
0 - Self Weight (PLF)	0 to 16' 3"	N/A	5.7	

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	5'	60.0	

- ASCE/SEI 7 Sec. 30.4: Exposure Category (D), Mean Roof Height (22'), Topographic Factor (1.0), Wind Directionality Factor (0.85), Basic Wind Speed (150), Risk Category(II), Wind Zone (4), GCpi (+/- 0.18), Effective Wind Area determined using full member span and trib. width.
- IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

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FLEXURAL CAPACITY

HSS SECTIONS

Section: HSS5x3x1/4

$f_y = 50$ ksi
 $L_b = 18$ ft
216 in

$A = 3.37$ in²
 $S_x = 4.29$ in³
 $Z_x = 5.38$ in³

Moment Capacity:

Flange Slenderness Check:

Plastic Limit
 $1.12\sqrt{E/F_y}$
27.0 > 9.88

Compact Flanges

Elastic Limit
 $1.4\sqrt{E/F_y}$
33.7

Shear Capacity:

Slenderness Check
 $k_v = 5.00$
 $d/t/\sqrt{k_v E/F_y} = 0.34$
 $C_{v2} = 1.00$
 $A_v = 2.01$ in²

Web Slenderness Check:

Compact Web

Plastic Limit
 $2.42\sqrt{E/F_y}$
58.3 > 18.5

Elastic Limit
 $5.7\sqrt{E/F_y}$
137.3

$M_n = 22.42$ kft
 $\Omega = 1.67$

$V_n = 60.26$ k
 $\Omega = 1.67$

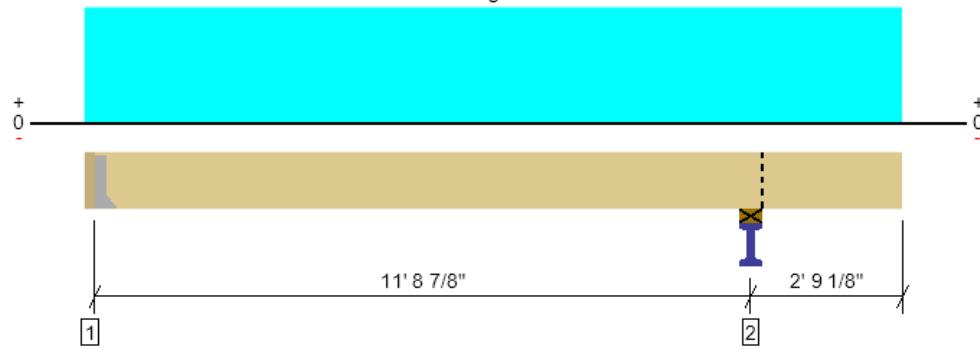
$M_n/\Omega = 13.42$ kft

$V_n/\Omega = 36.08$ k

S2.1, D1

1 piece(s) 2 x 10 HF No.2 @ 16" OC

Overall Length: 14' 8 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	558 @ 2 1/2"	911 (1.50")	Passed (61%)	--	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	499 @ 10' 11 3/8"	1388	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1623 @ 6' 5/16"	1917	Passed (85%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.266 @ 6' 15/16"	0.391	Passed (L/530)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.312 @ 6' 3/4"	0.587	Passed (L/452)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 14' 6"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Upward deflection on right cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 9 1/4" HF Ledger	2.50"	Hanger ¹	1.50"	92	486/-9	578	See note ¹
2 - Plate on steel - HF	5.50"	5.50"	1.50"	143	716	860	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 9" o/c	
Bottom Edge (Lu)	14' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS28	1.75"	N/A	6-10dx1.5	3-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 14' 8 1/2"	16"	12.0	60.0	Default Load

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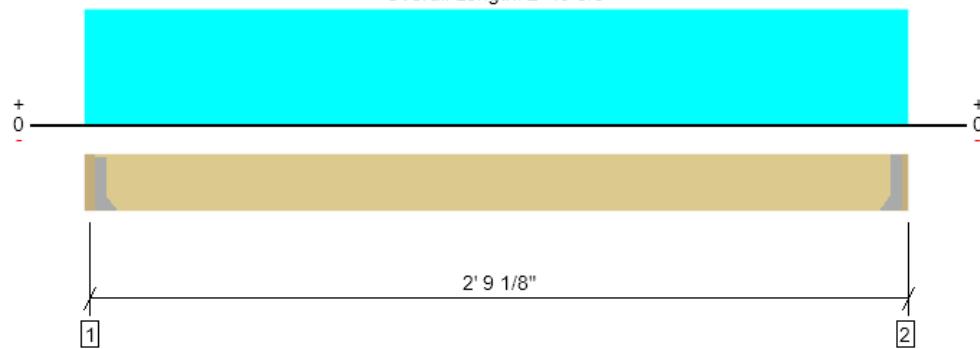
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S2.1, D2

1 piece(s) 2 x 10 HF No.2 @ 16" OC

Overall Length: 2' 10 3/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	122 @ 2 1/2"	911 (1.50")	Passed (13%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	48 @ 11 3/4"	1388	Passed (3%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	77 @ 1' 5 11/16"	1917	Passed (4%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.001 @ 1' 5 11/16"	0.084	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.001 @ 1' 5 11/16"	0.127	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 2' 6 3/8"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 9 1/4" HF Ledger	2.50"	Hanger ¹	1.50"	24	118	142	See note ¹
2 - Hanger on 9 1/4" HF beam	1.50"	Hanger ¹	1.50"	22	111	134	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 6" o/c	
Bottom Edge (Lu)	2' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS28	1.75"	N/A	6-10dx1.5	3-10d	
2 - Face Mount Hanger	LU28	1.50"	N/A	8-10dx1.5	6-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 2' 10 3/8"	16"	12.0	60.0	Default Load

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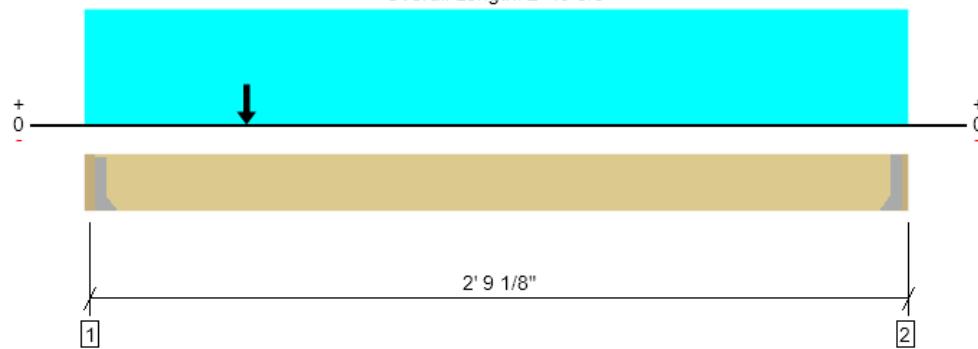
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S2.1, D3

1 piece(s) 2 x 10 HF No.2 @ 16" OC

Overall Length: 2' 10 3/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1829 @ 2 1/2"	1829 (3.01")	Passed (100%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1084 @ 11 3/4"	1596	Passed (68%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	837 @ 8"	2204	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.004 @ 1' 4 5/8"	0.084	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.005 @ 1' 4 5/8"	0.127	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 2' 6 3/8"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Hanger on 9 1/4" HF Ledger	2.50"	Hanger ¹	3.01"	441	118	1391	1833	See note ¹
2 - Hanger on 9 1/4" HF beam	1.50"	Hanger ¹	1.50"	115	111	308	429	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 6" o/c	
Bottom Edge (Lu)	2' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie

Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HTU28	3.50"	N/A	26-10dx1.5	14-10dx1.5	
2 - Face Mount Hanger	LU28	1.50"	N/A	8-10dx1.5	6-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 2' 10 3/8"	16"	12.0	60.0	--	Default Load
2 - Point (lb)	8"	N/A	510	--	1699	Linked from: R5, Support 2

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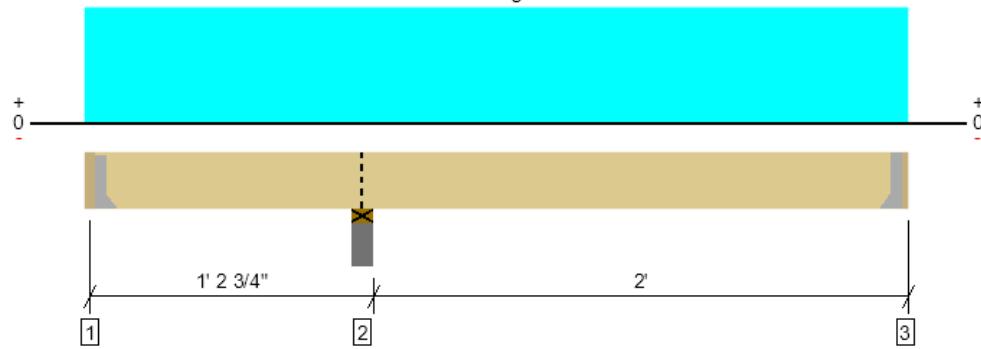


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S2.1, D4

1 piece(s) 2 x 10 HF No.2 @ 16" OC

Overall Length: 3' 4"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	83 @ 3' 2 1/2"	911 (1.50")	Passed (9%)	--	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	76 @ 11 3/4"	1388	Passed (5%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-40 @ 1' 1 1/4"	1917	Passed (2%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.000 @ 2' 3 3/8"	0.070	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.000 @ 2' 3 3/8"	0.105	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 3'
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 9 1/4" HF Ledger	2.50"	Hanger ¹	1.50"	3	50/-18	53/-15	See note ¹
2 - Plate on concrete - HF	5.50"	5.50"	1.50"	35	173	208	Blocking
3 - Hanger on 9 1/4" HF beam	1.50"	Hanger ¹	1.50"	16	79	95	See note ¹

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' o/c	
Bottom Edge (Lu)	3' o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HTU28	3.50"	N/A	26-10dx1.5	14-10dx1.5	
3 - Face Mount Hanger	LU28	1.50"	N/A	8-10dx1.5	6-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 3' 4"	16"	12.0	60.0	Default Load

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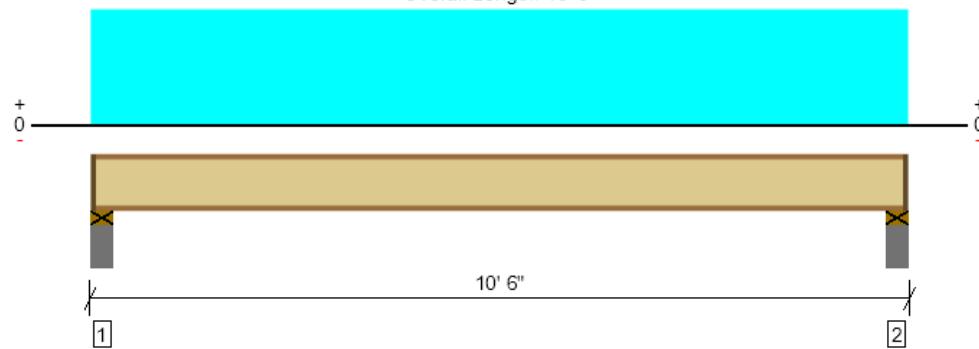


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S2.1, J1

1 piece(s) 14" TJI® 110 @ 16" OC

Overall Length: 10' 6"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	377 @ 4 1/2"	1375 (3.50")	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	351 @ 5 1/2"	1860	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	871 @ 5' 3"	3740	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.032 @ 5' 3"	0.325	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.044 @ 5' 3"	0.488	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	65	50	Passed	--	--

Member Length : 10' 3 1/2"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Floor Live	Factored		
1 - Plate on concrete - HF	5.50"	4.25"	1.75"	105	280	385	1 1/4" Rim Board	A3
2 - Plate on concrete - HF	5.50"	4.25"	1.75"	105	280	385	1 1/4" Rim Board	A3

Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 9" o/c	
Bottom Edge (Lu)	10' 4" o/c	

TJI joists are only analyzed using Maximum Allowable bracing solutions.

Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 10' 6"	16"	15.0	40.0	Default Load

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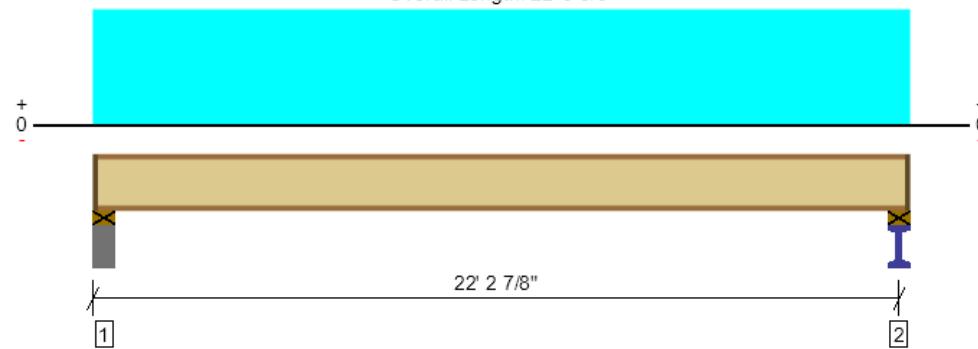


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S2.1, J2

1 piece(s) 14" TJI® 560 @ 16" OC

Overall Length: 22' 5 5/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	816 @ 4 1/2"	1725 (3.50")	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	790 @ 5 1/2"	2390	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4324 @ 11' 2 13/16"	11275	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.297 @ 11' 2 13/16"	0.724	Passed (L/877)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.408 @ 11' 2 13/16"	1.086	Passed (L/638)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	45	40	Passed	--	--

Member Length : 22' 3 1/8"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Floor Live	Factored		
1 - Plate on concrete - HF	5.50"	4.25"	1.75"	225	599	824	1 1/4" Rim Board	A3
2 - Plate on steel - HF	5.50"	4.25"	1.75"	225	599	824	1 1/4" Rim Board	A3

Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 4" o/c	
Bottom Edge (Lu)	22' 3" o/c	

TJI joists are only analyzed using Maximum Allowable bracing solutions.

Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 22' 5 5/8"	16"	15.0	40.0	Default Load

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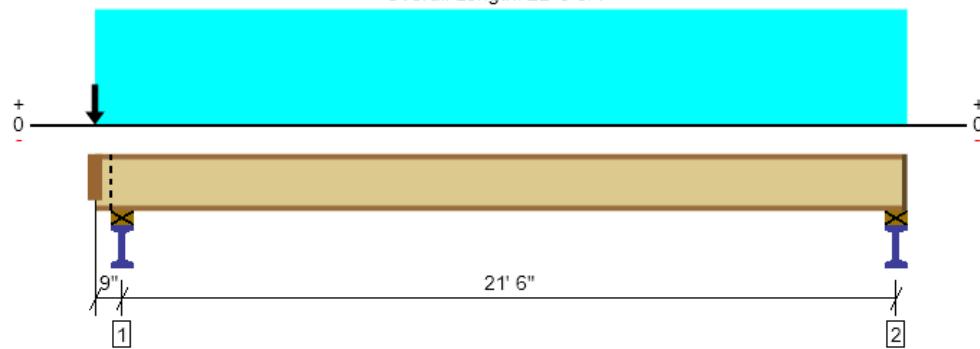


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S2.1, J3

1 piece(s) 14" TJI® 560 @ 16" OC

Overall Length: 22' 5 3/4"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2283 @ 9"	3973 (5.25")	Passed (57%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1919 @ 6 1/4"	2749	Passed (70%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4013 @ 11' 7 11/16"	11275	Passed (36%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.279 @ 11' 5 1/8"	0.712	Passed (L/919)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.368 @ 11' 6"	1.068	Passed (L/697)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	46	40	Passed	--	--

Member Length : 22' 4 1/2"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories	Details
	Total	Available	Required	Dead	Floor Live	Snow	Factored		
1 - Plate on steel - HF	5.50"	5.50"	3.50"	687	610	1517	2283	Blocking	E1
2 - Plate on steel - HF	5.50"	4.25"	1.75"	205	589	-51	795	1 1/4" Rim Board	A3

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 9" o/c	
Bottom Edge (Lu)	14' 7" o/c	

• TJI joists are only analyzed using Maximum Allowable bracing solutions.

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Details	Comments
1 - Uniform (PSF)	0 to 22' 5 3/4"	16"	15.0	40.0	--	--	Default Load
2 - Point (lb)	0	N/A	443	--	1466	W	Linked from: R3, Support 1

• Web stiffeners required at location 0 due to loads.

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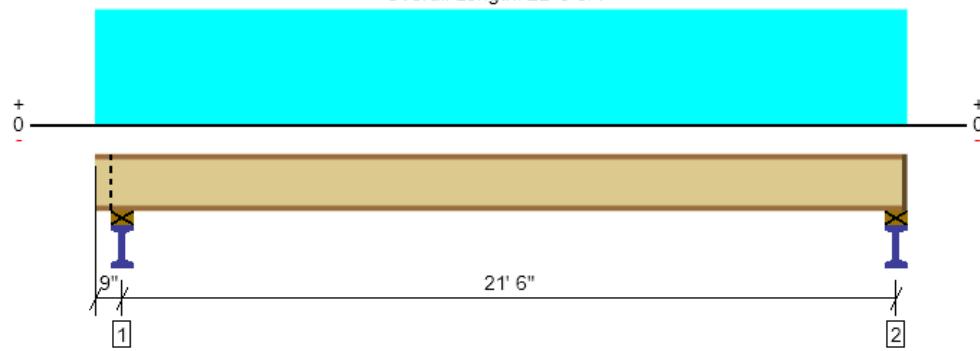
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S2.1, J4

1 piece(s) 14" TJI® 560 @ 16" OC

Overall Length: 22' 5 3/4"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	803 @ 22' 1 1/4"	1725 (3.50")	Passed (47%)	1.00	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	777 @ 22' 1/4"	2390	Passed (32%)	1.00	1.0 D + 1.0 L (Alt Spans)
Moment (Ft-lbs)	4177 @ 11' 5 3/16"	11275	Passed (37%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.279 @ 11' 5 1/8"	0.712	Passed (L/919)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.383 @ 11' 5 1/8"	1.068	Passed (L/669)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	46	40	Passed	--	--

Member Length : 22' 4 1/2"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Floor Live	Factored		
1 - Plate on steel - HF	5.50"	5.50"	3.50"	229	610	839	Blocking	E1
2 - Plate on steel - HF	5.50"	4.25"	1.75"	221	589	810	1 1/4" Rim Board	A3

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 7" o/c	
Bottom Edge (Lu)	14' 7" o/c	

• TJI joists are only analyzed using Maximum Allowable bracing solutions.

• Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 22' 5 3/4"	16"	15.0	40.0	Default Load

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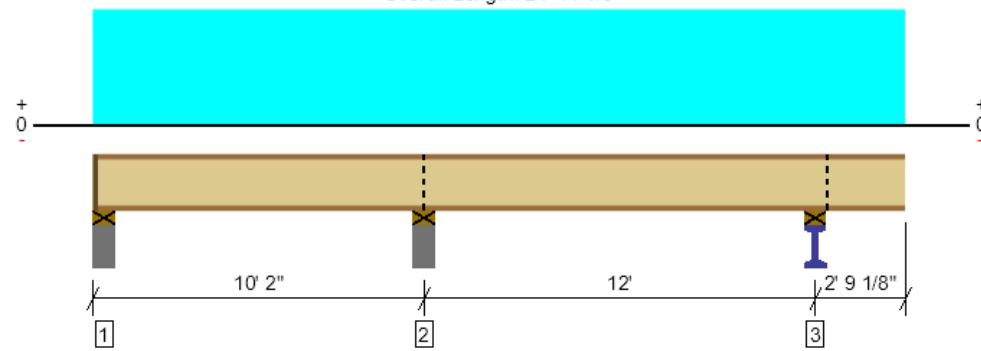


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S2.1, J5

1 piece(s) 14" TJI® 210 @ 16" OC

Overall Length: 24' 11 1/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	997 @ 10' 2"	2565 (5.25")	Passed (39%)	1.00	1.0 D + 1.0 L (Adj Spans)
Shear (lbs)	486 @ 10' 4 3/4"	1945	Passed (25%)	1.00	1.0 D + 1.0 L (Adj Spans)
Moment (Ft-lbs)	-1101 @ 10' 2"	4490	Passed (25%)	1.00	1.0 D + 1.0 L (Adj Spans)
Live Load Defl. (in)	0.044 @ 16' 6 5/16"	0.400	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.057 @ 16' 6 13/16"	0.600	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	61	40	Passed	--	--

Member Length : 24' 9 7/8"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Floor Live	Factored		
1 - Plate on concrete - HF	5.50"	4.25"	1.75"	76	257/-48	334	1 1/4" Rim Board	A3
2 - Plate on concrete - HF	5.50"	5.50"	3.50"	264	732	997	Blocking	B1
3 - Plate on steel - HF	5.50"	5.50"	3.50"	158	445	603	Blocking	E1

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 7" o/c	
Bottom Edge (Lu)	7' 9" o/c	

• TJI joists are only analyzed using Maximum Allowable bracing solutions.

• Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 24' 11 1/8"	16"	15.0	40.0	Default Load

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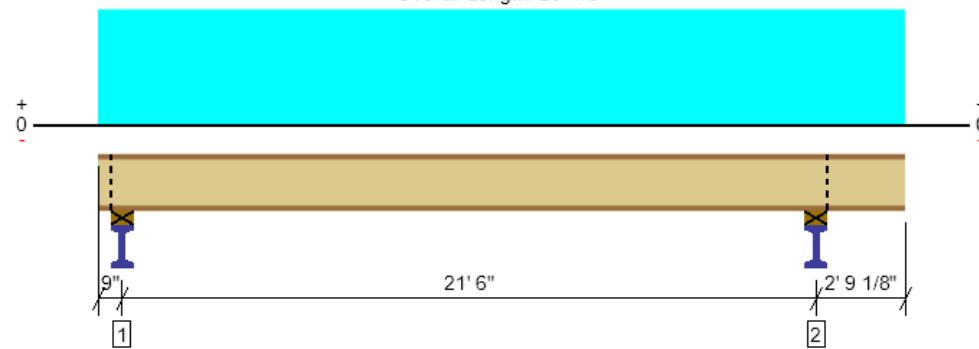


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S2.1, J6

1 piece(s) 14" TJI® 560 @ 16" OC

Overall Length: 25' 1/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1003 @ 22' 3"	3455 (5.25")	Passed (29%)	1.00	1.0 D + 1.0 L (Adj Spans)
Shear (lbs)	756 @ 22' 1/4"	2390	Passed (32%)	1.00	1.0 D + 1.0 L (Adj Spans)
Moment (Ft-lbs)	4196 @ 11' 5 7/16"	11275	Passed (37%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.286 @ 11' 6"	0.717	Passed (L/902)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.389 @ 11' 5 13/16"	1.075	Passed (L/663)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	45	40	Passed	--	--

Member Length : 25' 1/8"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Floor Live	Factored		
1 - Plate on steel - HF	5.50"	5.50"	3.50"	227	614	841	Blocking	E1
2 - Plate on steel - HF	5.50"	5.50"	3.50"	273	730	1003	Blocking	E1

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 6" o/c	
Bottom Edge (Lu)	14' 7" o/c	

• TJI joists are only analyzed using Maximum Allowable bracing solutions.

• Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 25' 1/8"	16"	15.0	40.0	Default Load

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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Lexee Navarre Harriott Valentine Engineers (206) 697-1700 Inavarre@harriottvalentine.com	

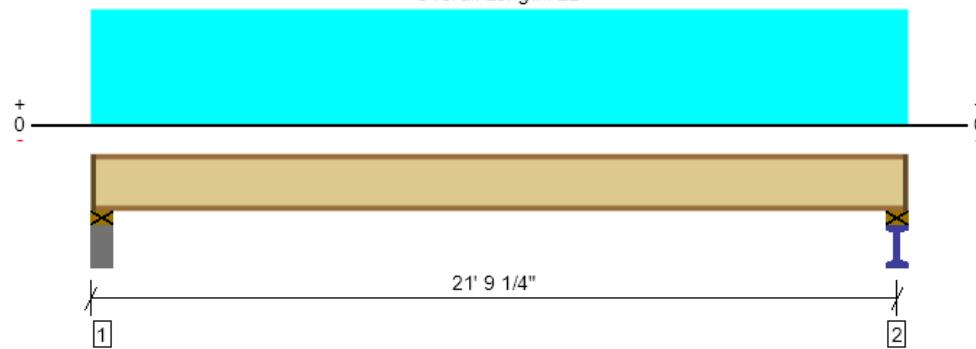


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S2.1, J7

1 piece(s) 14" TJI® 560 @ 16" OC

Overall Length: 22'



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	799 @ 4 1/2"	1725 (3.50")	Passed (46%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	773 @ 5 1/2"	2390	Passed (32%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4139 @ 11'	11275	Passed (37%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.274 @ 11'	0.708	Passed (L/931)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.377 @ 11'	1.063	Passed (L/677)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	46	40	Passed	--	--

Member Length : 21' 9 1/2"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Floor Live	Factored		
1 - Plate on concrete - HF	5.50"	4.25"	1.75"	220	587	807	1 1/4" Rim Board	A3
2 - Plate on steel - HF	5.50"	4.25"	1.75"	220	587	807	1 1/4" Rim Board	A3

Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 7" o/c	
Bottom Edge (Lu)	21' 10" o/c	

TJI joists are only analyzed using Maximum Allowable bracing solutions.

Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 22'	16"	15.0	40.0	Default Load

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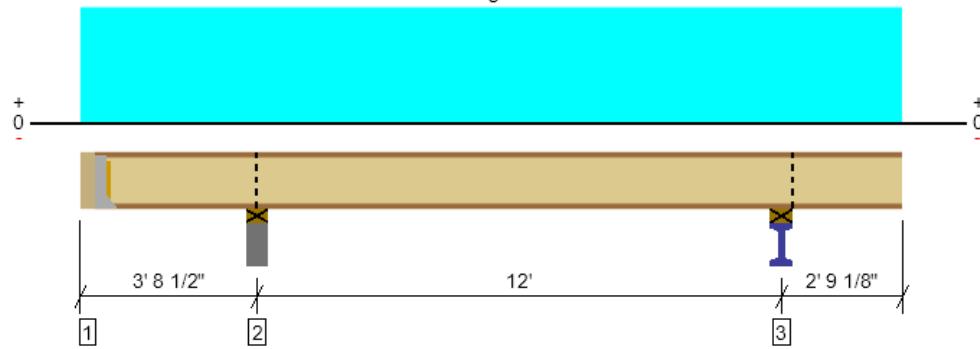


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S2.1, J8

1 piece(s) 14" TJI® 210 @ 16" OC

Overall Length: 18' 5 5/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	943 @ 3' 8 1/2"	2565 (5.25")	Passed (37%)	1.00	1.0 D + 1.0 L (Adj Spans)
Shear (lbs)	480 @ 3' 11 1/4"	1945	Passed (25%)	1.00	1.0 D + 1.0 L (Adj Spans)
Moment (Ft-lbs)	-1022 @ 3' 8 1/2"	4490	Passed (23%)	1.00	1.0 D + 1.0 L (Adj Spans)
Live Load Defl. (in)	0.038 @ 10' 3 3/4"	0.400	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.051 @ 10' 3 5/16"	0.600	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	61	40	Passed	--	--

Member Length : 18' 2 1/8"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 238 lbs uplift at support located at 3 1/2". Strapping or other restraint may be required.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Floor Live	Factored		
1 - Hanger on 14" HF beam	3.50"	Hanger ¹	1.75" / - ²	-35	125/-203	90/-238	See note ¹	W
2 - Plate on concrete - HF	5.50"	5.50"	3.50"	244	699	943	Blocking	B1
3 - Plate on steel - HF	5.50"	5.50"	3.50"	160	428	589	Blocking	E1

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.
- ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 8" o/c	
Bottom Edge (Lu)	8' 1" o/c	

• TJI joists are only analyzed using Maximum Allowable bracing solutions.

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LSSR2.1Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	Web Stiffeners

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 18' 5 5/8"	16"	15.0	40.0	Default Load

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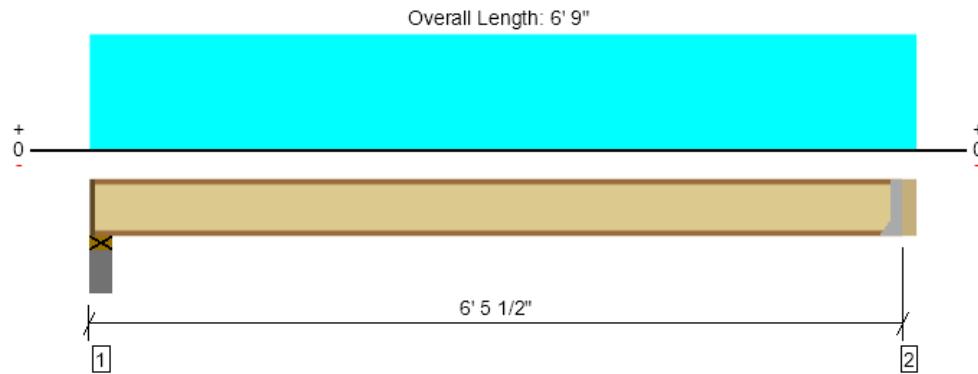
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S2.1, J9

1 piece(s) 9 1/2" TJI® 110 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	223 @ 6' 5 1/2"	910 (1.75")	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	223 @ 6' 5 1/2"	1220	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	339 @ 3' 5"	2500	Passed (14%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.014 @ 3' 5"	0.203	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.019 @ 3' 5"	0.304	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	65	40	Passed	--	--

Member Length : 6' 4 1/4"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Floor Live	Factored		
1 - Plate on concrete - HF	5.50"	4.25"	1.75"	68	182	251	1 1/4" Rim Board	A3
2 - Hanger on 9 1/2" HF beam	3.50"	Hanger ¹	1.75" / - ²	67	178	244	See note ¹	--

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.
- ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 4" o/c	
Bottom Edge (Lu)	6' 4" o/c	

• TJI joists are only analyzed using Maximum Allowable bracing solutions.

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-Strong-Grip	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 6' 9"	16"	15.0	40.0	Default Load

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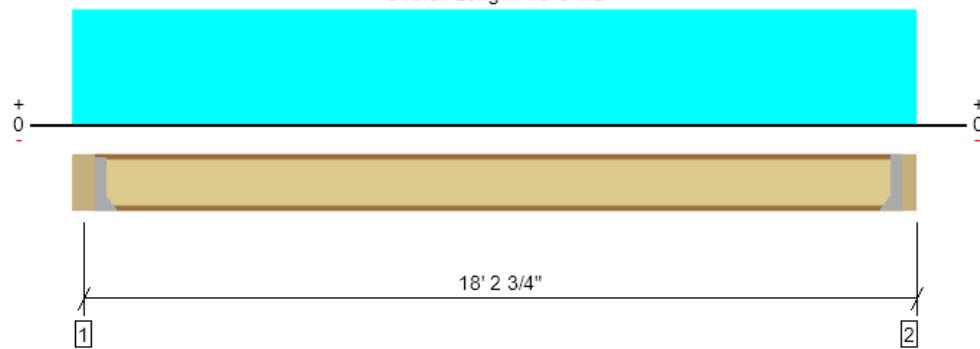
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S2.1, J10

1 piece(s) 14" TJI® 560 @ 16" OC

Overall Length: 18' 5 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	649 @ 5 1/2"	1265 (1.75")	Passed (51%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	649 @ 5 1/2"	2390	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2875 @ 9' 3 3/4"	11275	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.140 @ 9' 3 3/4"	0.590	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.193 @ 9' 3 3/4"	0.885	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	54	40	Passed	--	--

Member Length : 17' 8 1/2"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.75" / - ²	186	497	683	See note ¹
2 - Hanger on 14" HF beam	3.50"	Hanger ¹	1.75" / - ²	183	488	671	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

• ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	11' 7" o/c	
Bottom Edge (Lu)	17' 9" o/c	

• TJI joists are only analyzed using Maximum Allowable bracing solutions.

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS3.56/14	2.00"	N/A	12-10dx1.5	2-Strong-Grip	
2 - Face Mount Hanger	IUS3.56/14	2.00"	N/A	12-10dx1.5	2-Strong-Grip	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 18' 5 1/2"	16"	15.0	40.0	Default Load

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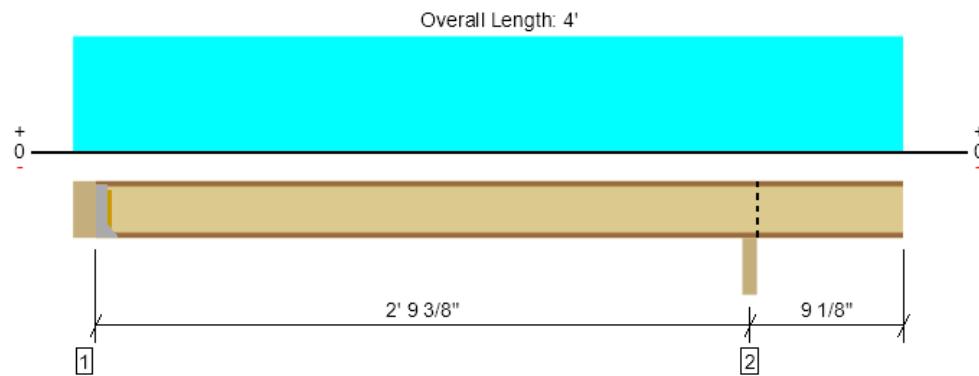
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S2.1, J11
1 piece(s) 9 1/2" TJI® 110 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	100 @ 5 1/2"	910 (1.75")	Passed (11%)	1.00	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	100 @ 5 1/2"	1220	Passed (8%)	1.00	1.0 D + 1.0 L (Alt Spans)
Moment (Ft-lbs)	68 @ 1' 9 7/8"	2500	Passed (3%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.002 @ 1' 10 3/16"	0.093	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.002 @ 1' 10"	0.139	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	73	40	Passed	--	--

Member Length : 3' 6 1/2"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories	Details
	Total	Available	Required	Dead	Floor Live	Factored		
1 - Hanger on 9 1/2" HF beam	5.50"	Hanger ¹	1.75" / - ²	35	99	134	See note ¹	W
2 - Beam - HF	3.50"	3.50"	3.50"	45	120	165	Blocking	E1

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

• ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 7" o/c	
Bottom Edge (Lu)	3' 7" o/c	

• TJI joists are only analyzed using Maximum Allowable bracing solutions.

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HU7	2.50"	N/A	12-10dx1.5	4-10dx1.5	Web Stiffeners

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 4'	16"	15.0	40.0	Default Load

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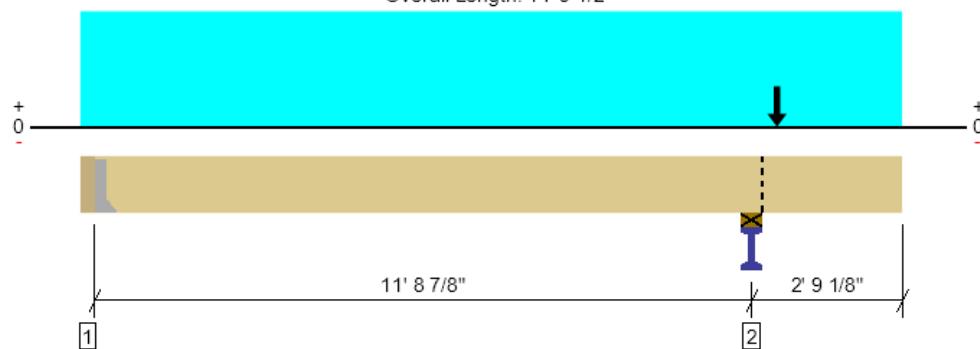
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S2.1, M1
1 piece(s) 6 x 14 HF No.2

Overall Length: 14' 9 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4188 @ 12' 3/8"	12251 (5.50")	Passed (34%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	846 @ 13' 4 5/8"	7970	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1882 @ 12' 3/8"	10666	Passed (18%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.020 @ 14' 9 1/2"	0.200	Passed (2L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.023 @ 14' 9 1/2"	0.276	Passed (2L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 14' 6"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Hanger on 13 1/2" HF Ledger	3.50"	Hanger ¹	1.50"	106	246/-1	-107	352/-1	See note ¹
2 - Plate on steel - HF	5.50"	5.50"	1.88"	1411	358	2777	4188	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 6" o/c	
Bottom Edge (Lu)	14' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U610	2.00"	N/A	14-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 14' 9 1/2"	N/A	18.8	--	--	
1 - Uniform (PSF)	0 to 14' 9 1/2" (Front)	8"	12.0	60.0	--	Default Load
2 - Point (lb)	12' 6" (Front)	N/A	1126	--	2670	Linked from: S8, Support 2

• Side loads are assumed to not induce cross-grain tension.

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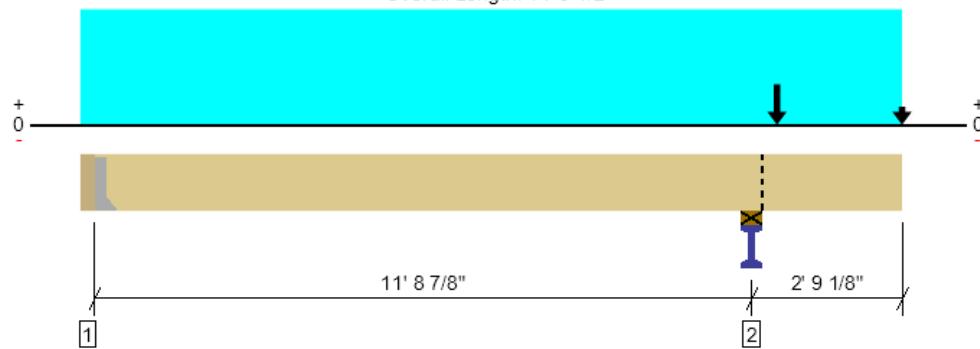
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S2.1, M2
1 piece(s) 6 x 14 HF No.2

Overall Length: 14' 9 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	12381 @ 12' 3/8"	12251 (5.50")	Passed (101%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2568 @ 13' 4 5/8"	7970	Passed (32%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-5714 @ 12' 3/8"	10666	Passed (54%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.064 @ 14' 9 1/2"	0.200	Passed (2L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.082 @ 14' 9 1/2"	0.276	Passed (2L/808)	--	1.0 D + 1.0 S (All Spans)

Member Length : 14' 6"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 265 lbs uplift at support located at 3 1/2". Strapping or other restraint may be required.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Hanger on 13 1/2" HF Ledger	3.50"	Hanger ¹	1.50"	76	411/-57	-342	487/-265	See note ¹
2 - Plate on steel - HF	5.50"	5.50"	5.50"	3483	885	8899	12381	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 6" o/c	
Bottom Edge (Lu)	14' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U610	2.00"	N/A	14-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 14' 9 1/2"	N/A	18.8	--	--	
1 - Uniform (PSF)	0 to 14' 9 1/2" (Front)	8"	12.0	60.0	--	Default Load
2 - Uniform (PSF)	0 to 14' 9 1/2" (Front)	8"	15.0	40.0	--	Default Load
3 - Point (lb)	14' 9 1/2" (Front)	N/A	64	233	--	Linked from: M3, Support 1
4 - Point (lb)	12' 6" (Front)	N/A	2956	--	8557	Linked from: S18, Support 2

• Side loads are assumed to not induce cross-grain tension.

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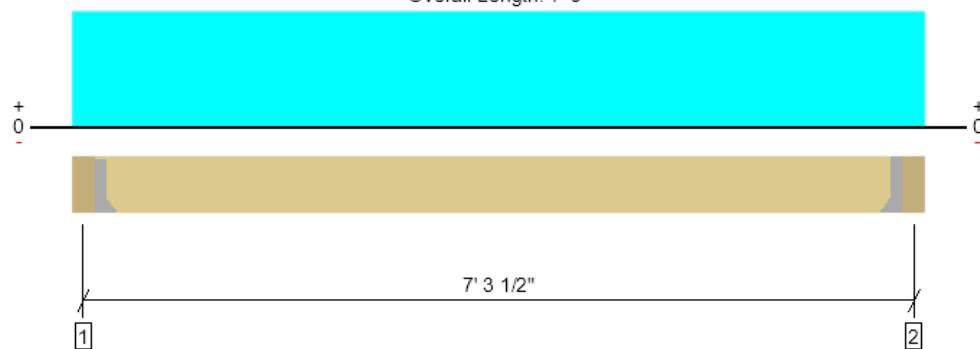
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S2.1, M3
1 piece(s) 2 x 14 HF No.2

Overall Length: 7' 9"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	263 @ 5 1/2"	911 (1.50")	Passed (29%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	178 @ 1' 6 3/4"	1988	Passed (9%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	450 @ 3' 10 1/2"	2798	Passed (16%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.008 @ 3' 10 1/2"	0.228	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.010 @ 3' 10 1/2"	0.342	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 6' 10"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 13 1/4" HF beam	5.50"	Hanger ¹	1.50"	64	233	296	See note ¹
2 - Hanger on 13 1/4" HF beam	5.50"	Hanger ¹	1.50"	64	233	296	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 10" o/c	
Bottom Edge (Lu)	6' 10" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LU210	1.50"	N/A	10-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	LU210	1.50"	N/A	10-10dx1.5	6-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	5 1/2" to 7' 3 1/2"	N/A	5.0	--	
1 - Uniform (PSF)	0 to 7' 9" (Front)	1'	12.0	60.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

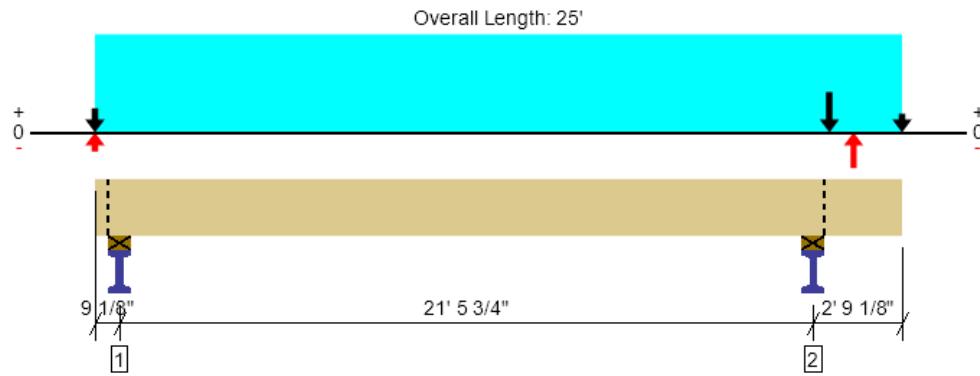
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S2.1, M4
1 piece(s) 6 x 14 HF No.2



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	8460 @ 22' 2 7/8"	12251 (5.50")	Passed (69%)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (Adj Spans) [1]
Shear (lbs)	3209 @ 23' 7 1/8"	11088	Passed (29%)	1.60	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans) [1]
Moment (Ft-lbs)	4554 @ 11' 3/8"	9275	Passed (49%)	1.00	1.0 D + 1.0 L (Alt Spans) [1]
Live Load Defl. (in)	0.088 @ 25'	0.200	Passed (2L/750)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [1]
Total Load Defl. (in)	0.294 @ 11' 3 13/16"	1.074	Passed (L/877)	--	1.0 D + 1.0 L (Alt Spans) [1]

Member Length : 25'
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 857 lbs uplift at support located at 22' 2 7/8". Strapping or other restraint may be required.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories	
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic		
1 - Plate on steel - HF	5.50"	5.50"	1.50"	790	614/-11	1239	125/-262	435/-435	2326	Blocking
2 - Plate on steel - HF	5.50"	5.50"	3.80"	2296	1109	4882	9/-2263	3192/-319 ₂	8460/-857	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	25' o/c	
Bottom Edge (Lu)	25' o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 25'	N/A	18.8	--	--	--	--	
1 - Uniform (PSF)	0 to 25' (Front)	1' 4"	15.0	40.0	--	--	--	Default Load
2 - Point (lb)	23' 6" (Front)	N/A	--	--	--	-2138	-3007	SW WC1 END POST REACTION
3 - Point (lb)	25' (Front)	N/A	64	233	--	--	--	Linked from: M3, Support 2
4 - Point (lb)	25' (Front)	N/A	27	103	--	--	--	Linked from: M5, Support 1
5 - Point (lb)	0 (Front)	N/A	387	--	1252	-253	250/-250	Linked from: M7, Support 1
6 - Point (lb)	22' 9" (Front)	N/A	544	--	1455	--	--	Linked from: S22, Support 2
7 - Point (lb)	22' 9" (Front)	N/A	1094	--	3335	--	--	Linked from: S19, Support 2

- Side loads are assumed to not induce cross-grain tension.

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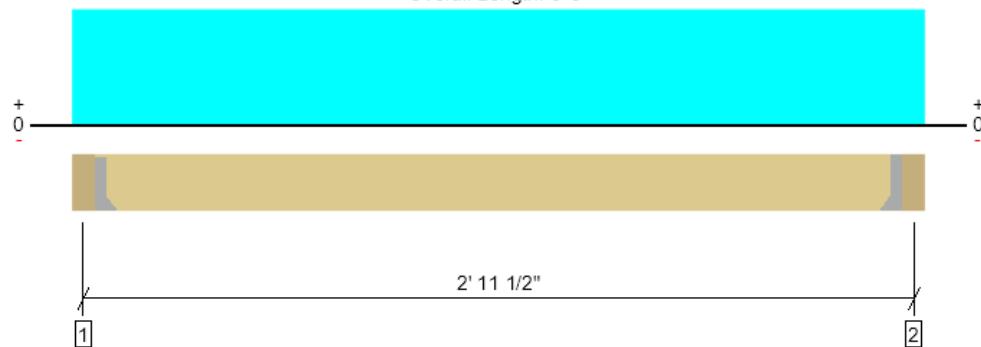
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S2.1, M5
1 piece(s) 2 x 14 HF No.2

Overall Length: 3' 5"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	96 @ 5 1/2"	911 (1.50")	Passed (11%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	11 @ 1' 6 3/4"	1988	Passed (1%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	60 @ 1' 8 1/2"	2798	Passed (2%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.000 @ 1' 8 1/2"	0.083	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.000 @ 1' 8 1/2"	0.125	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 2' 6"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 13 1/4" HF beam	5.50"	Hanger ¹	1.50"	27	103	129	See note ¹
2 - Hanger on 13 1/4" HF beam	5.50"	Hanger ¹	1.50"	27	103	129	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 6" o/c	
Bottom Edge (Lu)	2' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LU210	1.50"	N/A	10-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	LU210	1.50"	N/A	10-10dx1.5	6-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	5 1/2" to 2' 11 1/2"	N/A	5.0	--	
1 - Uniform (PSF)	0 to 3' 5" (Front)	1'	12.0	60.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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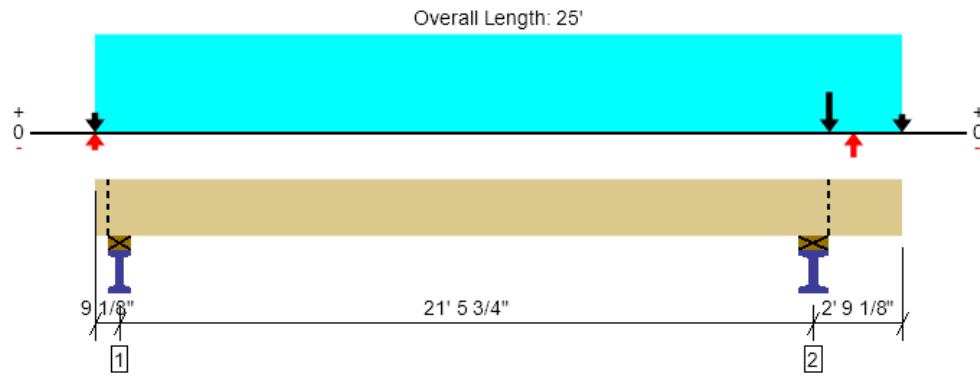


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S2.1, M6
1 piece(s) 8 x 14 HF No.2



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	16612 @ 22' 2 7/8"	22022 (7.25")	Passed (75%)	--	1.0 D + 1.0 S (Adj Spans) [1]
Shear (lbs)	4418 @ 23' 8"	15120	Passed (29%)	1.60	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans) [1]
Moment (Ft-lbs)	-8501 @ 22' 2 7/8"	14545	Passed (58%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Live Load Defl. (in)	0.127 @ 25'	0.200	Passed (2L/522)	--	1.0 D + 1.0 S (All Spans) [1]
Total Load Defl. (in)	0.138 @ 25'	0.276	Passed (2L/480)	--	1.0 D + 1.0 S (All Spans) [1]

Member Length : 25'
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Plate on steel - HF	5.50"	5.50"	1.50"	793	614/-45	1165	128/-72	248/-248	2165	Blocking
2 - Plate on steel - HF	7.25"	7.25"	5.47"	5338	1405	11274	2/-2311	3186/-3186	16612	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	25' o/c	
Bottom Edge (Lu)	25' o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 25'	N/A	25.6	--	--	--	--	
1 - Uniform (PSF)	0 to 25' (Front)	1' 4"	15.0	40.0	--	--	--	Default Load
2 - Point (lb)	23' 6" (Front)	N/A	--	--	--	-2183	-3007	SW WC1 END POST REACTION
3 - Point (lb)	25' (Front)	N/A	27	103	--	--	--	Linked from: M5, Support 2
4 - Point (lb)	25' (Front)	N/A	127	496	--	--	--	Linked from: M9, Support 1
5 - Point (lb)	22' 9" (Front)	N/A	4448	--	11034	--	--	Linked from: S29, Support 2
6 - Point (lb)	0 (Front)	N/A	387	--	1252	-70	69/-69	Linked from: M7, Support 2

- Side loads are assumed to not induce cross-grain tension.

ForteWEB Software Operator	Job Notes
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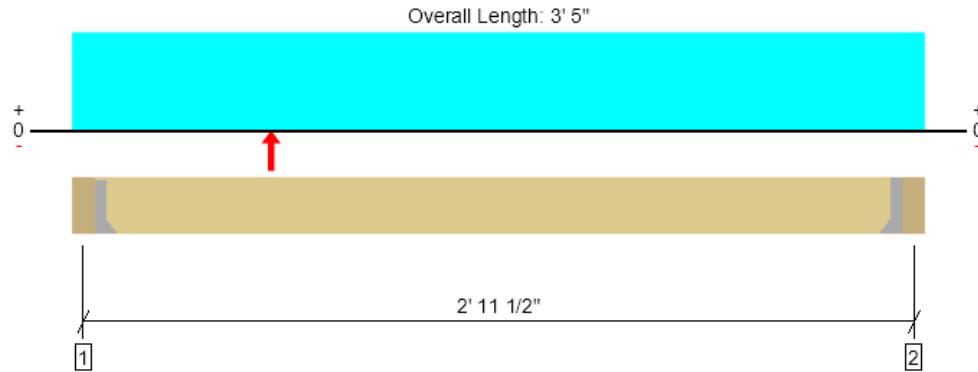
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S2.1, M7

1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1202 @ 5 1/2"	1969 (1.50")	Passed (61%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	126 @ 1' 7 1/2"	7448	Passed (2%)	1.60	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	751 @ 1' 8 1/2"	13949	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.003 @ 1' 8 1/4"	0.083	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.005 @ 1' 8 1/4"	0.125	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 6"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Snow	Wind	Seismic	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	387	1252	-253	250/-250	1640	See note ¹
2 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	387	1252	-70	69/-69	1640	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 6" o/c	
Bottom Edge (Lu)	2' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/14	2.00"	N/A	14-10dx1.5	2-10dx1.5	
2 - Face Mount Hanger	IUS1.81/14	2.00"	N/A	14-10dx1.5	2-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 2' 11 1/2"	N/A	7.2	--	--	--	
1 - Point (lb)	1' (Front)	N/A	--	--	-323	-319	SW WA3 END POST REACTION
2 - Uniform (PLF)	0 to 3' 5" (Front)	N/A	221.5	733.0	--	--	Linked from: R3, Support 1

• Side loads are assumed to not induce cross-grain tension.

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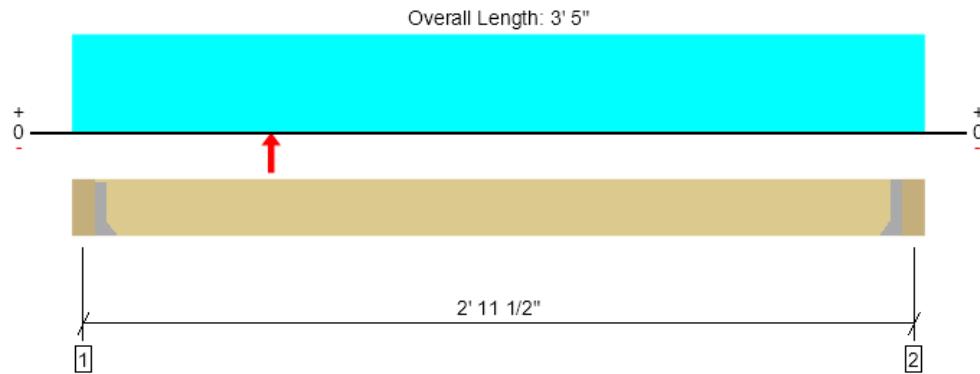
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S2.1, M7 (OS)
1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1500 @ 5 1/2"	2363 (1.50")	Passed (63%)	--	1.0 D + 0.525 Ev - 0.525 Emh + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	329 @ 1' 7 1/2"	8938	Passed (4%)	1.60	1.0 D + 0.7 Ev - 0.7 Emh (All Spans)
Moment (Ft-lbs)	751 @ 1' 8 1/2"	13949	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.003 @ 1' 8 1/4"	0.083	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.005 @ 1' 8 1/4"	0.125	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 6"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 484 lbs uplift at support located at 5 1/2". Strapping or other restraint may be required.
- An allowable stress increase factor of 1.2 is used for seismic overstrength load combinations.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Snow	Wind	Seismic	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	387	1252	-253	378/-378	1864/-484	See note 1
2 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	387	1252	-70	105/-105	1640/-5	See note 1

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 6" o/c	
Bottom Edge (Lu)	2' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HUS1.81/10	3.00"	N/A	30-10dx1.5	10-10d	
2 - Face Mount Hanger	IUS1.81/14	2.00"	N/A	14-10dx1.5	2-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Seismic (QE) (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 2' 11 1/2"	N/A	7.2	--	--	--	
1 - Point (lb)	1' (Front)	N/A	--	--	-323	-483	SW WA3 END POST REACTION
2 - Uniform (PLF)	0 to 3' 5" (Front)	N/A	221.5	733.0	--	--	Linked from: R3, Support 1

• ASCE/SEI 7 Sec. 12.4.3: Overstrength Factor (2.5), Design Parameter at Short Periods (1.000), Seismic Design Category (D) are used to determine Ev and Emh.

• Axial load affects on the member from QE loads are not considered.

• Side loads are assumed to not induce cross-grain tension.

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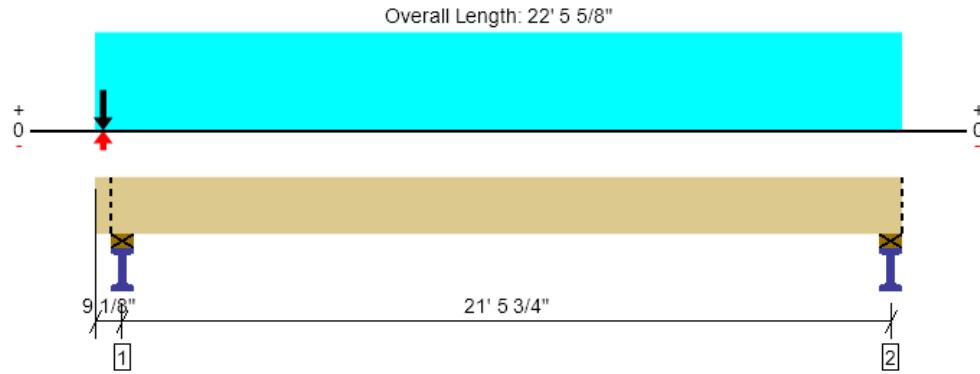
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S2.1, M8

1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6743 @ 9 1/8"	7796 (5.50")	Passed (86%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1601 @ 0	10894	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4636 @ 11' 10 7/8"	27162	Passed (17%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.149 @ 11' 5 3/8"	0.712	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.223 @ 11' 7 3/8"	1.069	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 22' 5 5/8"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	
1 - Plate on steel - HF	5.50"	5.50"	4.76"	2067	611	4676	-331	327/-327	6743 Blocking
2 - Plate on steel - HF	5.50"	5.50"	1.50"	348	588/-1	-113	8	8/-8	936 Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	22' 6" o/c	
Bottom Edge (Lu)	22' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 22' 5 5/8"	N/A	15.3	--	--	--	--	
1 - Uniform (PSF)	0 to 22' 5 5/8" (Front)	1' 4"	15.0	40.0	--	--	--	Default Load
2 - Point (lb)	2 3/4" (Front)	N/A	--	--	--	-323	-319	SW WA3 END POST REACTION
3 - Point (lb)	2 3/4" (Front)	N/A	1622	--	4563	--	--	Linked from: S30, Support 1

- Side loads are assumed to not induce cross-grain tension.

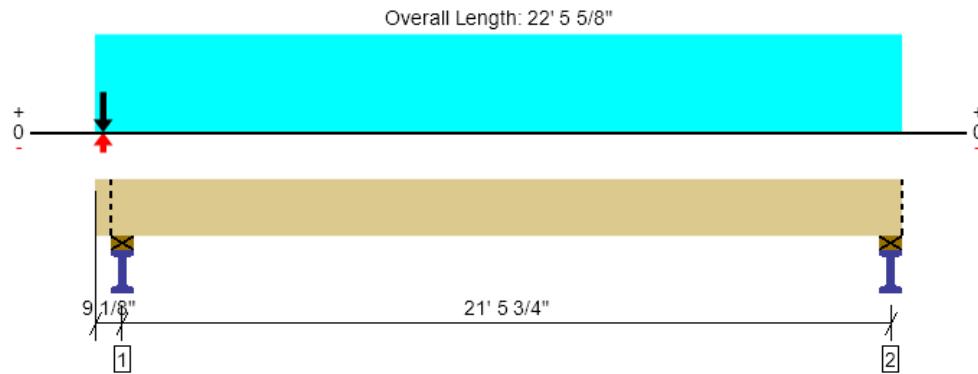
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S2.1, M8 (OS)
1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6743 @ 9 1/8"	7796 (5.50")	Passed (86%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1601 @ 0	10894	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4636 @ 11' 10 7/8"	27162	Passed (17%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.149 @ 11' 5 3/8"	0.712	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.223 @ 11' 7 3/8"	1.069	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 22' 5 5/8"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- An allowable stress increase factor of 1.2 is used for seismic overstrength load combinations.

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Plate on steel - HF	5.50"	5.50"	4.76"	2067	611	4676	-331	495/-495	6900	Blocking
2 - Plate on steel - HF	5.50"	5.50"	1.50"	348	588/-1	-113	8	12/-12	936	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	22' 6" o/c	
Bottom Edge (Lu)	22' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (Qe) (1.60)	Comments
0 - Self Weight (PLF)	0 to 22' 5 5/8"	N/A	15.3	--	--	--	--	
1 - Uniform (PSF)	0 to 22' 5 5/8" (Front)	1' 4"	15.0	40.0	--	--	--	Default Load
2 - Point (lb)	2 3/4" (Front)	N/A	1622	--	4563	-323	-483	SW WA3 END POST REACTION & Linked from: S30, Support 1

• ASCE/SEI 7 Sec. 12.4.3: Overstrength Factor (2.5), Design Parameter at Short Periods (1.000), Seismic Design Category (D) are used to determine E_v and E_{mh} .

• Axial load affects on the member from Q_e loads are not considered.

• Side loads are assumed to not induce cross-grain tension.

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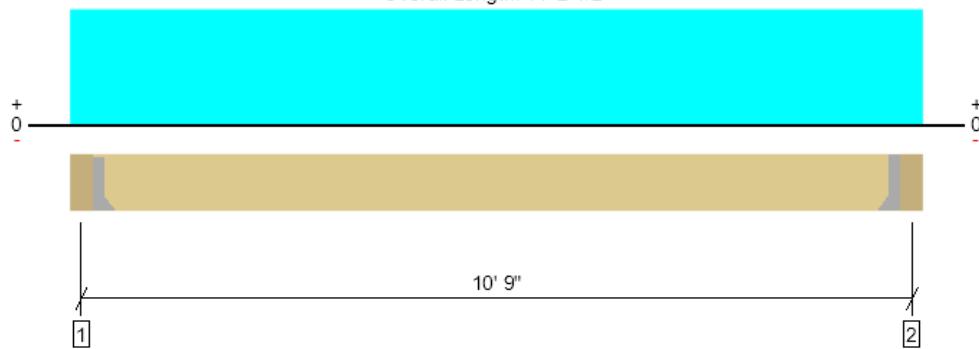
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S2.1, M9
1 piece(s) 2 x 14 HF No.2

Overall Length: 11' 2 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	574 @ 5 1/2"	911 (1.50")	Passed (63%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	451 @ 1' 6 3/4"	1988	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1477 @ 5' 7 1/4"	2798	Passed (53%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.059 @ 5' 7 1/4"	0.343	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.074 @ 5' 7 1/4"	0.515	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 10' 3 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 13 1/4" HF beam	5.50"	Hanger ¹	1.50"	127	496	623	See note ¹
2 - Hanger on 13 1/4" HF beam	5.50"	Hanger ¹	1.50"	127	496	623	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 5" o/c	
Bottom Edge (Lu)	10' 4" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LU210	1.50"	N/A	10-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	LU210	1.50"	N/A	10-10dx1.5	6-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	5 1/2" to 10' 9"	N/A	5.0	--	
1 - Uniform (PLF)	0 to 11' 2 1/2" (Front)	N/A	18.0	88.5	Linked from: D2, Support 1

• Side loads are assumed to not induce cross-grain tension.

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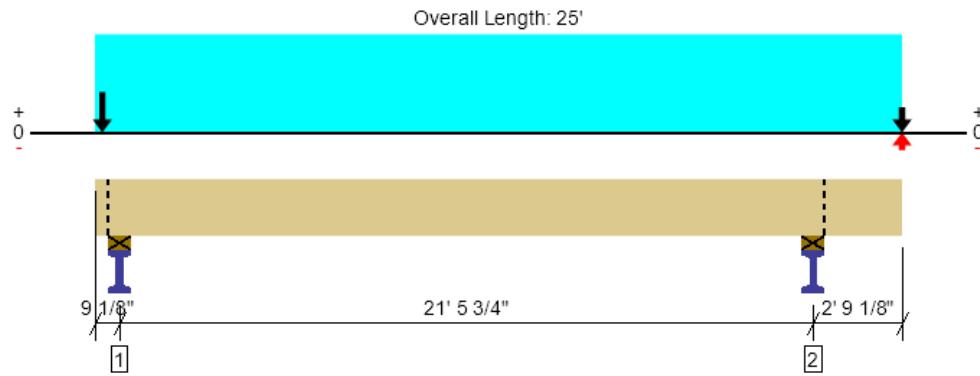


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File Name: Sitka

S2.1, M10
1 piece(s) 6 x 14 HF No.2



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	10252 @ 9 1/8"	12251 (5.50")	Passed (84%)	--	1.0 D + 1.0 S (Adj Spans) [1]
Shear (lbs)	2777 @ 23' 7 1/8"	7970	Passed (35%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Moment (Ft-lbs)	-7660 @ 22' 2 7/8"	10666	Passed (72%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Live Load Defl. (in)	0.200 @ 25'	0.200	Passed (2L/332)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [1]
Total Load Defl. (in)	0.235 @ 25'	0.276	Passed (2L/282)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [1]

Member Length : 25'
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Plate on steel - HF	5.50"	5.50"	4.60"	2913	614/-131	7339	12	17/-17	10252	Blocking
2 - Plate on steel - HF	5.50"	5.50"	1.81"	1436	2157	1204	-105	148/-148	4034	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	25' o/c	
Bottom Edge (Lu)	25' o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 25'	N/A	18.8	--	--	--	--	
1 - Uniform (PSF)	0 to 25' (Front)	1' 4"	15.0	40.0	--	--	--	Default Load
2 - Point (lb)	25' (Front)	N/A	127	496	--	--	--	Linked from: M9, Support 2
3 - Point (lb)	2 3/4" (Front)	N/A	1622	--	4563	--	--	Linked from: S33, Support 1
4 - Point (lb)	2 3/4" (Front)	N/A	899	--	2671	--	--	Linked from: M11, Support 1
5 - Point (lb)	25' (Front)	N/A	731	769	1146	-93	131/-131	Linked from: M13, Support 1

• Side loads are assumed to not induce cross-grain tension.

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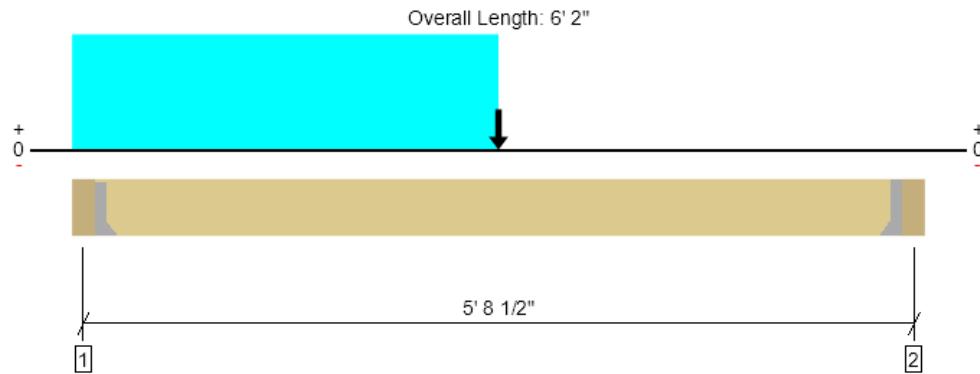
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File Name: Sitka

S2.1, M11

1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3132 @ 5 1/2"	3132 (2.39")	Passed (100%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2011 @ 1' 7 1/2"	5353	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4909 @ 3' 1"	13949	Passed (35%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.036 @ 3' 1"	0.175	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.050 @ 3' 1"	0.262	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 5' 3"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	2.39"	899	2671	3570	See note ¹
2 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	507	1373	1880	See note ¹

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 3" o/c	
Bottom Edge (Lu)	5' 3" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HUS1.81/10	3.00"	N/A	30-10dx1.5	10-10d	
2 - Face Mount Hanger	HUS1.81/10	3.00"	N/A	30-10dx1.5	10-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 5' 8 1/2"	N/A	7.2	--	
1 - Point (lb)	3' 1" (Front)	N/A	686	1783	Linked from: S12, Support 1
2 - Uniform (PLF)	0 to 3' 1" (Front)	N/A	221.5	733.0	Linked from: R3, Support 1

- Side loads are assumed to not induce cross-grain tension.

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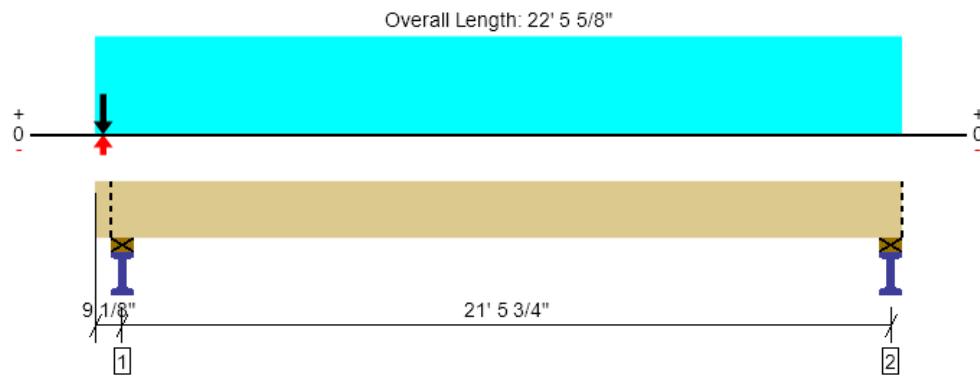
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File Name: Sitka

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S2.1, M12
1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4862 @ 9 1/8"	7796 (5.50")	Passed (62%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1126 @ 0	10894	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4746 @ 11' 9 7/16"	27162	Passed (17%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.149 @ 11' 5 3/8"	0.712	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.229 @ 11' 6 13/16"	1.069	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 22' 5 5/8"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	
1 - Plate on steel - HF	5.50"	5.50"	3.43"	1627	611	3234	-331	327/-327	4862 Blocking
2 - Plate on steel - HF	5.50"	5.50"	1.50"	359	588/-1	-78	8	8/-8	947 Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	22' 6" o/c	
Bottom Edge (Lu)	22' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 22' 5 5/8"	N/A	15.3	--	--	--	--	
1 - Uniform (PSF)	0 to 22' 5 5/8" (Front)	1' 4"	15.0	40.0	--	--	--	Default Load
2 - Point (lb)	2 3/4" (Front)	N/A	--	--	--	-323	-319	SW WA3 END POST REACTION
3 - Point (lb)	2 3/4" (Front)	N/A	686	--	1783	--	--	Linked from: S14, Support 1
4 - Point (lb)	2 3/4" (Front)	N/A	507	--	1373	--	--	Linked from: M11, Support 2

• Side loads are assumed to not induce cross-grain tension.

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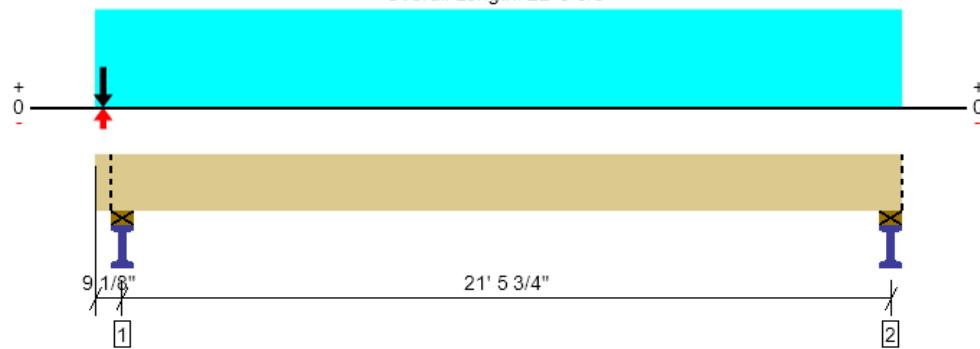


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 File Name: Sitka
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S2.1, M12 (OS)

1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL

Overall Length: 22' 5 5/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4862 @ 9 1/8"	7796 (5.50")	Passed (62%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1126 @ 0	10894	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4746 @ 11' 9 7/16"	27162	Passed (17%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.149 @ 11' 5 3/8"	0.712	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.229 @ 11' 6 13/16"	1.069	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 22' 5 5/8"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- An allowable stress increase factor of 1.2 is used for seismic overstrength load combinations.

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Plate on steel - HF	5.50"	5.50"	3.43"	1627	611	3234	-331	495/-495	5332/-118	Blocking
2 - Plate on steel - HF	5.50"	5.50"	1.50"	359	588/-1	-78	8	12/-12	947	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	22' 6" o/c	
Bottom Edge (Lu)	22' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (QE) (1.60)	Comments
0 - Self Weight (PLF)	0 to 22' 5 5/8"	N/A	15.3	--	--	--	--	
1 - Uniform (PSF)	0 to 22' 5 5/8" (Front)	1' 4"	15.0	40.0	--	--	--	Default Load
2 - Point (lb)	2 3/4" (Front)	N/A	1193	--	3156	-323	-483	SW WA3 END POST REACTION & Linked from: S14, Support 1 & Linked from: M11, Support 2

• ASCE/SEI 7 Sec. 12.4.3: Overstrength Factor (2.5), Design Parameter at Short Periods (1.000), Seismic Design Category (D) are used to determine E_v and E_{mh} .

• Axial load affects on the member from Q_E loads are not considered.

• Side loads are assumed to not induce cross-grain tension.

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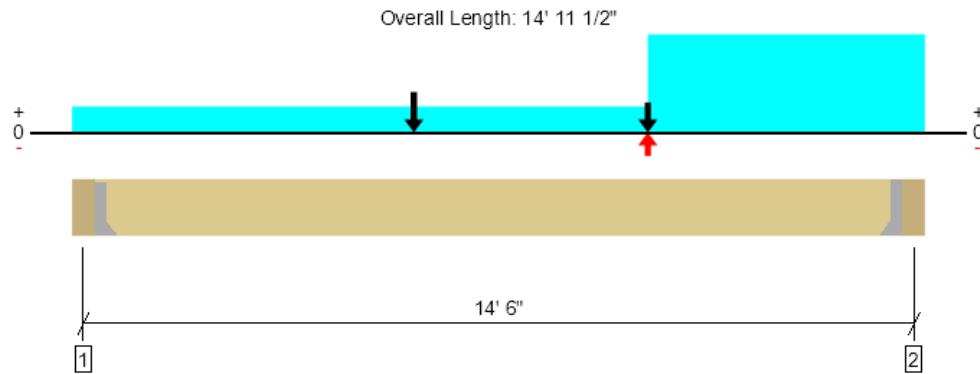
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File Name: Sitka

S2.1, M13
1 piece(s) 6 x 14 HF No.2



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	2892 @ 14' 6"	3341 (1.50")	Passed (87%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	2358 @ 13' 4 1/2"	7970	Passed (30%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Moment (Ft-lbs)	10209 @ 6'	10666	Passed (96%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Live Load Defl. (in)	0.187 @ 7' 5 15/16"	0.468	Passed (L/899)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Total Load Defl. (in)	0.282 @ 7' 5 7/8"	0.702	Passed (L/597)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]

Member Length : 14' 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories	
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic		
1 - Hanger on 13 1/2" HF beam	5.50"	Hanger ¹	1.50"	731	769	1146	-93	131/-131	2236	See note 1
2 - Hanger on 13 1/2" HF beam	5.50"	Hanger ¹	1.50"	937	770	1833	-203	286/-286	3039	See note 1

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 1" o/c	
Bottom Edge (Lu)	14' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HU612	2.50"	N/A	22-10dx1.5	8-10d	
2 - Face Mount Hanger	HU612	2.50"	N/A	22-16d	8-16d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 14' 6"	N/A	18.8	--	--	--	--	
1 - Uniform (PLF)	0 to 10' 1" (Front)	N/A	18.0	88.5	--	--	--	Linked from: D2, Support 1
2 - Uniform (PLF)	10' 1" to 14' 11 1/2" (Front)	N/A	86.3	83.3	231.0	--	--	Linked from: D3, Support 2
3 - Point (lb)	6' (Front)	N/A	566	120	1384	--	--	Linked from: M14A, Support 2
4 - Point (lb)	10' 1" (Front)	N/A	236	120	469	-296	417/-417	Linked from: M14B, Support 2

• Side loads are assumed to not induce cross-grain tension.

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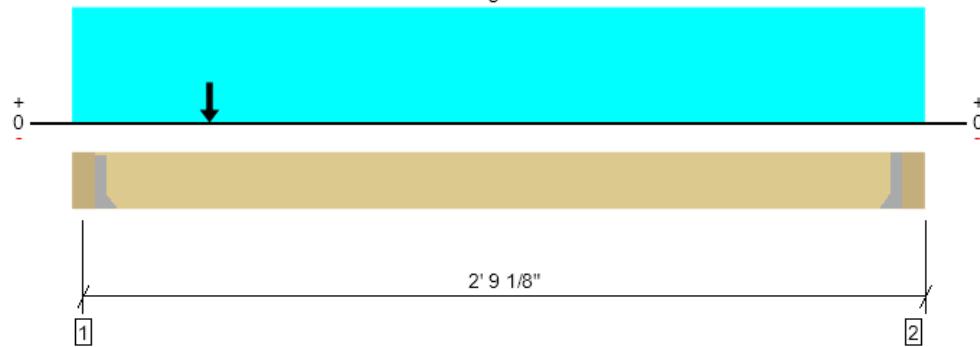
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File Name: Sitka

S2.1, M14A
1 piece(s) 6 x 14 HF No.2

Overall Length: 2' 11 7/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	11680 @ 5 1/2"	11680 (5.24")	Passed (100%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3016 @ 1' 7"	7970	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3405 @ 9"	10666	Passed (32%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.001 @ 1' 4 15/16"	0.069	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.001 @ 1' 4 15/16"	0.104	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 7/8"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Hanger on 13 1/2" HF beam	5.50"	Hanger ¹	5.24"	3235	120	8453	11688	See note ¹
2 - Hanger on 13 1/2" HF beam	5.50"	Hanger ¹	1.50"	566	120	1384	1950	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 1" o/c	
Bottom Edge (Lu)	2' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HHGU5.50-SDS H=13	5.25"	N/A	44-SDS25212	28-SDS25212	
2 - Face Mount Hanger	U610	2.00"	N/A	14-16d	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 2' 6 3/8"	N/A	18.8	--	--	
1 - Uniform (PSF)	0 to 2' 11 7/8" (Front)	1' 4"	12.0	60.0	--	
2 - Point (lb)	9" (Front)	N/A	3714	--	9837	Linked from: S34, Support 2

• Side loads are assumed to not induce cross-grain tension.

ForteWEB Software Operator	Job Notes
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

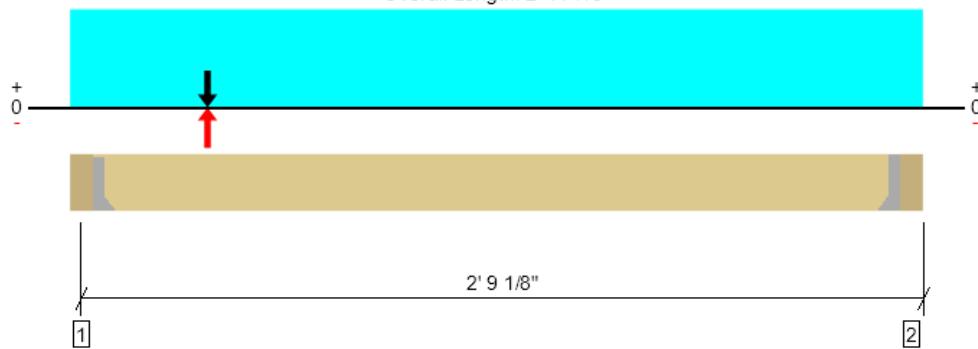
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S2.1, M14B
1 piece(s) 6 x 14 HF No.2

Overall Length: 2' 11 7/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4759 @ 5 1/2"	4759 (2.14")	Passed (100%)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1045 @ 1' 7"	7970	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1188 @ 9"	10666	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.000 @ 1' 4 15/16"	0.069	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.001 @ 1' 4 15/16"	0.104	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 7/8"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- An excessive uplift of -1049 lbs detected at support located at 0".
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	
1 - Hanger on 13 1/2" HF beam	5.50"	Hanger ¹	2.14"	1220	120	2865	-1810	2544/-254 4	4794/-1049 See note 1
2 - Hanger on 13 1/2" HF beam	5.50"	Hanger ¹	1.50"	236	120	469	-296	417/-417	896/-150 See note 1

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 1" o/c	
Bottom Edge (Lu)	2' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HGUS5.50/10	4.00"	N/A	46-10d	16-10d	
2 - Face Mount Hanger	U610	2.00"	N/A	14-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 2' 6 3/8"	N/A	18.8	--	--	--	--	
1 - Uniform (PSF)	0 to 2' 11 7/8" (Front)	1' 4"	12.0	60.0	--	--	--	
2 - Point (lb)	9" (Front)	N/A	--	--	--	-2106	-2961	SW WC2 END POST REACTION
3 - Point (lb)	9" (Front)	N/A	1369	--	3334	--	--	Linked from: S36, Support 2

• Side loads are assumed to not induce cross-grain tension.

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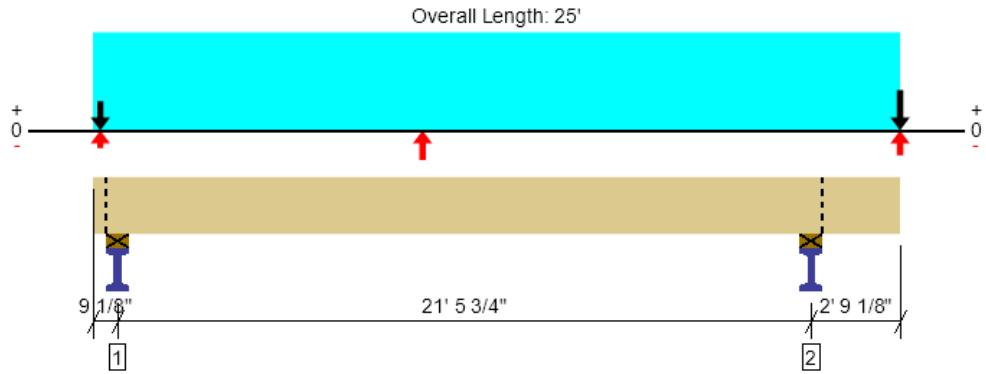
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S2.1, M15

1 piece(s) 7" x 14" 2.2E Parallam® PSL



use W12x35
(forte doesn't
allow steel to
cantilever yet,
see capacity
sheet on
following page)

Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	7250 @ 9 1/8"	15593 (5.50")	Passed (46%)	--	1.0 D + 1.0 S (Adj Spans) [1]
Shear (lbs)	5590 @ 23' 7 5/8"	30315	Passed (18%)	1.60	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans) [1]
Moment (Ft-lbs)	-17334 @ 10' 2 1/2"	86918	Passed (20%)	1.60	0.6 D + 0.6 W (Adj Spans) [8]
Live Load Defl. (in)	0.183 @ 25'	0.200	Passed (2L/362)	--	1.0 D + 0.45 W + 0.75 L + 0.75 S (All Spans) [1]
Total Load Defl. (in)	0.196 @ 25'	0.276	Passed (2L/338)	--	1.0 D + 0.45 W + 0.75 L + 0.75 S (All Spans) [1]

Member Length : 25'
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 581 lbs uplift at support located at 9 1/8". Strapping or other restraint may be required.
- An excessive uplift of -2621 lbs detected at support located at 22' 2 7/8".
- Member should be side-loaded from both sides of the member or braced to prevent rotation.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	
1 - Plate on steel - HF	5.50"	5.50"	2.56"	2271	614/-72	4978	-3240	1804/-180 4	7250/-581 Blocking
2 - Plate on steel - HF	5.50"	5.50"	2.41"	1803	1641	2007	3527/-217 0	5290/-529 0	6840/-2621 Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	25' o/c	
Bottom Edge (Lu)	25' o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 25'	N/A	30.6	--	--	--	--	
1 - Uniform (PSF)	0 to 25' (Front)	1' 4"	15.0	40.0	--	--	--	Default Load
2 - Point (lb)	10' 2 1/2" (Front)	N/A	--	--	--	-4933	-2144	SW W2A END POST REACTION
3 - Point (lb)	25' (Front)	N/A	--	--	--	4933	2144	SW W2A END POST REACTION
4 - Point (lb)	2 3/4" (Front)	N/A	163	--	410	-74	73/-73	Linked from: M16, Support 1
5 - Point (lb)	2 3/4" (Front)	N/A	1622	--	4563	--	--	Linked from: S33, Support 1
6 - Point (lb)	25' (Front)	N/A	87	38	--	-1606	2259/-2259	Linked from: M17, Support 1
7 - Point (lb)	25' (Front)	N/A	937	770	1833	-203	286/-286	Linked from: M13, Support 2

• Side loads are assumed to not induce cross-grain tension.

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FLEXURAL CAPACITY

WF, M, S, & HP SECTIONS

Section: W12x35

$f_y =$	50 ksi	$I_x =$	285 in ⁴
$L_b =$	21.5 ft	$E =$	29000000 psi
	258 in	$EI =$	8.265E+09 lb-in ²
$A =$	10.3 in ²		
$S_x =$	45.6 in ³		
$Z_x =$	51.2 in ³		

Moment Capacity:

LTB Check: Elastic LTB Controls

Plastic Limit		Elastic Limit	
L_p	L_b	L_r	
65.3	258	> 200.3	
$M_n =$	93.89 kft		
$\Omega =$	1.67		
$M_n/\Omega =$	56.22 kft		

Shear Capacity:

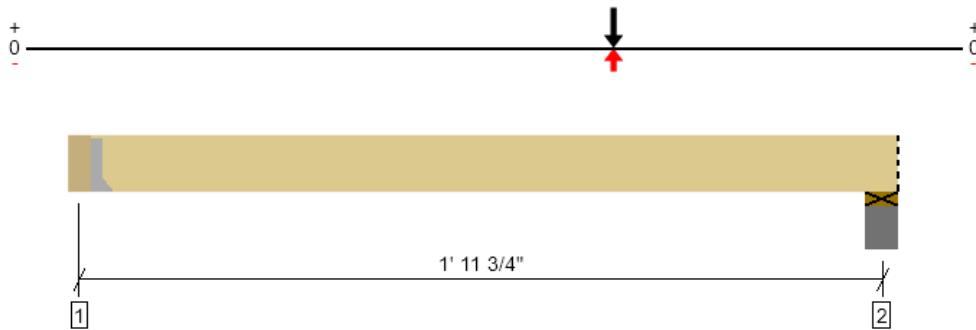
Slenderness Check

$h/t_w/\sqrt{E/F_y} =$	1.50
$k_v =$	1.00
$C_{v1} =$	1.00
$V_n =$	112.50 k
$\Omega =$	1.5
$V_n/\Omega =$	75.00 k

S2.1, M16

1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL

Overall Length: 2' 6 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1911 @ 2'	5670 (8.00")	Passed (34%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	564 @ 1' 7 1/2"	5353	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	675 @ 1' 7 3/4"	13949	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.002 @ 1' 7 3/4"	0.051	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.003 @ 1' 7 3/4"	0.077	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 1"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Snow	Wind	Seismic	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	163	410	-74	73/-73	573	See note ¹
2 - Plate on concrete - HF	8.00"	8.00"	2.70"	538	1373	-249	246/-246	1911	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 1" o/c	
Bottom Edge (Lu)	2' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 2' 6 1/2"	N/A	7.2	--	--	--	
1 - Point (lb)	1' 7 3/4" (Front)	N/A	--	--	-323	-319	SW WA4 END POST REACTION
2 - Point (lb)	1' 7 3/4" (Front)	N/A	686	1783	--	--	Linked from: S12, Support 1

• Side loads are assumed to not induce cross-grain tension.

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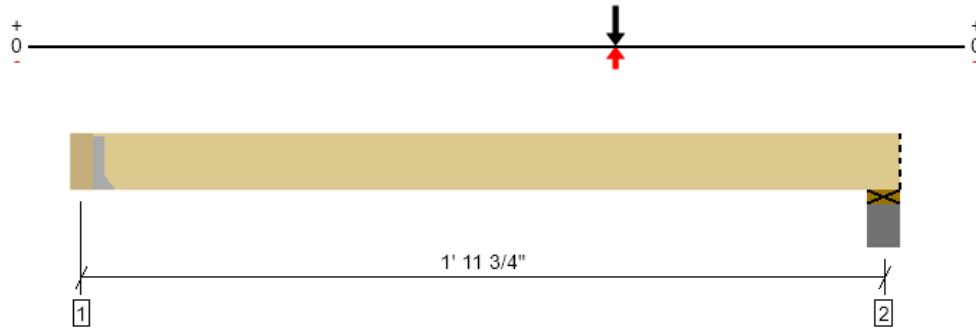
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S2.1, M16 (OS)

1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL

Overall Length: 2' 6 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1911 @ 2'	5670 (8.00")	Passed (34%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	564 @ 1' 7 1/2"	5353	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	675 @ 1' 7 3/4"	13949	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.002 @ 1' 7 3/4"	0.051	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.003 @ 1' 7 3/4"	0.077	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 1"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 404 lbs uplift at support located at 2'. Strapping or other restraint may be required.
- An allowable stress increase factor of 1.2 is used for seismic overstrength load combinations.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Snow	Wind	Seismic	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	163	410	-74	111/-111	633/-119	See note ¹
2 - Plate on concrete - HF	8.00"	8.00"	2.70"	538	1373	-249	372/-372	2113/-404	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 1" o/c	
Bottom Edge (Lu)	2' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Seismic (QE) (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 2' 6 1/2"	N/A	7.2	--	--	--	
1 - Point (lb)	1' 7 3/4" (Front)	N/A	686	1783	-323	-483	SW WA4 END POST REACTION & Linked from: S12, Support 1

• ASCE/SEI 7 Sec. 12.4.3: Overstrength Factor (2.5), Design Parameter at Short Periods (1.000), Seismic Design Category (D) are used to determine E_v and E_m .

• Axial load affects on the member from Q_E loads are not considered.

• Side loads are assumed to not induce cross-grain tension.

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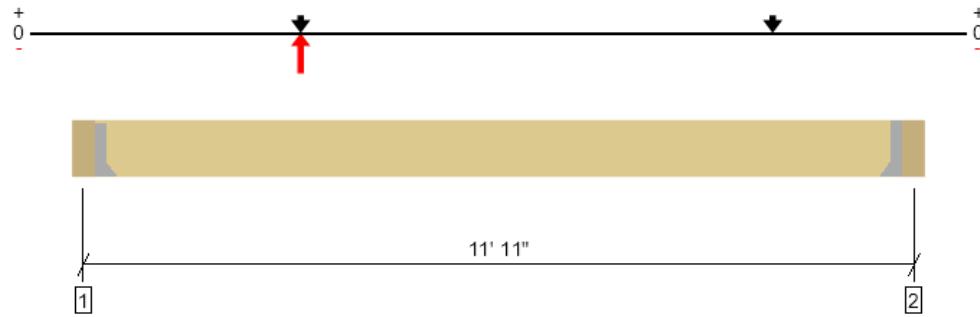
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S2.1, M17
1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL

Overall Length: 12' 4 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1668 @ 5 1/2"	1969 (1.50")	Passed (85%)	--	1.0 D - 0.7 E (All Spans)
Shear (lbs)	1660 @ 1' 7 1/2"	7448	Passed (22%)	1.60	1.0 D - 0.7 E (All Spans)
Moment (Ft-lbs)	4835 @ 3' 4 1/2"	19407	Passed (25%)	1.60	1.0 D - 0.7 E (All Spans)
Live Load Defl. (in)	0.004 @ 6' 1 3/16"	0.382	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	-0.067 @ 5' 6 1/4"	0.573	Passed (L/999+)	--	0.6 D + 0.6 W (All Spans)

Member Length : 11' 5 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- An excessive uplift of -1529 lbs detected at support located at 0".
- 482 lbs uplift at support located at 11' 11". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Seismic	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	87	38	-1606	2259/-225	1668/-1529	See note 1
2 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	97	46	-549	771/-771	637/-482	See note 1

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 10" o/c	
Bottom Edge (Lu)	11' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HUS1.81/10	3.00"	N/A	30-10dx1.5	10-10d	
2 - Face Mount Hanger	HUS1.81/10	3.00"	N/A	30-10dx1.5	10-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 11' 11"	N/A	7.2	--	--	--	
1 - Point (lb)	3' 4 1/2" (Front)	N/A	51	42	--	--	Linked from: S39, Support 1
2 - Point (lb)	10' 1" (Front)	N/A	51	42	--	--	Linked from: S39, Support 2
3 - Point (lb)	3' 4 1/2" (Front)	N/A	--	--	-2155	-3030	SW WC3 END POST REACTION

• Side loads are assumed to not induce cross-grain tension.

ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	

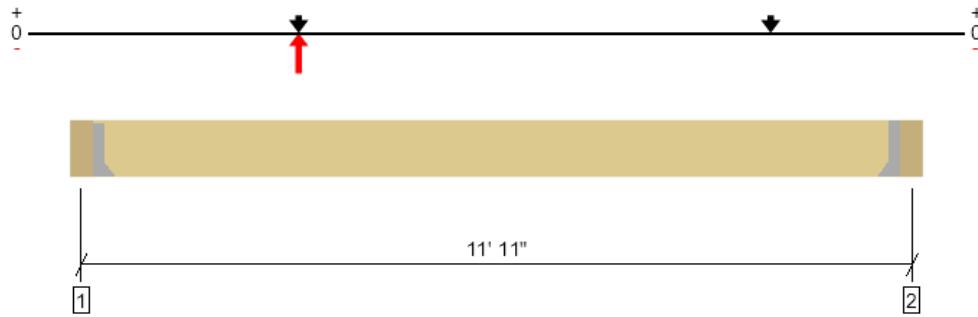


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File Name: Sitka

S2.1, M17 (OS)

1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL

Overall Length: 12' 4 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4052 @ 5 1/2"	4052 (2.57")	Passed (100%)	--	1.0 D + 0.7 Ev - 0.7 Emh (All Spans)
Shear (lbs)	4043 @ 1' 7 1/2"	8938	Passed (45%)	1.60	1.0 D + 0.7 Ev - 0.7 Emh (All Spans)
Moment (Ft-lbs)	11784 @ 3' 4 1/2"	23288	Passed (51%)	1.60	1.0 D + 0.7 Ev - 0.7 Emh (All Spans)
Live Load Defl. (in)	0.004 @ 6' 1 3/16"	0.382	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	-0.067 @ 5' 6 1/4"	0.573	Passed (L/999+)	--	0.6 D + 0.6 W (All Spans)

Member Length : 11' 5 1/2"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- An excessive uplift of -3913 lbs detected at support located at 0".
- An excessive uplift of -1305 lbs detected at support located at 11' 5 1/2".
- An allowable stress increase factor of 1.2 is used for seismic overstrength load combinations.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Seismic	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	2.57"	87	38	-1606	2259/-225 9	4052/-3913	See note 1
2 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	97	46	-549	771/-771	1460/-1305	See note 1

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 11" o/c	
Bottom Edge (Lu)	5' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	
2 - Face Mount Hanger	HUS1.81/10	3.00"	N/A	30-10dx1.5	10-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Seismic (Q _E) (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 11' 11"	N/A	7.2	--	--	--	
1 - Point (lb)	3' 4 1/2" (Front)	N/A	51	42	-2155	-3030	SW WC3 END POST REACTION & Linked from: S39, Support 1
2 - Point (lb)	10' 1" (Front)	N/A	51	42	--	--	Linked from: S39, Support 2

• ASCE/SEI 7 Sec. 12.4.3: Overstrength Factor (2.5), Design Parameter at Short Periods (1.000), Seismic Design Category (D) are used to determine Ev and Emh.

• Axial load affects on the member from Q_E loads are not considered.

• Side loads are assumed to not induce cross-grain tension.

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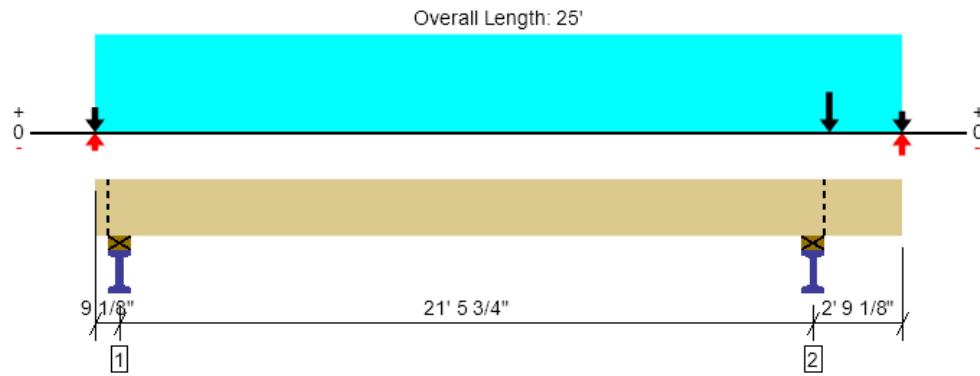
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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S2.1, M18
1 piece(s) 7" x 14" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	14895 @ 22' 2 7/8"	15593 (5.50")	Passed (96%)	--	1.0 D + 1.0 S (Adj Spans) [1]
Shear (lbs)	3591 @ 23' 7 5/8"	21789	Passed (16%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Moment (Ft-lbs)	-7785 @ 22' 2 7/8"	62472	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Live Load Defl. (in)	0.069 @ 25'	0.200	Passed (2L/954)	--	1.0 D + 1.0 S (All Spans) [1]
Total Load Defl. (in)	0.075 @ 25'	0.276	Passed (2L/888)	--	1.0 D + 1.0 S (All Spans) [1]

Member Length : 25'
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Member should be side-loaded from both sides of the member or braced to prevent rotation.

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Plate on steel - HF	5.50"	5.50"	1.69"	1850	614	2930	186/-291	435/-435	4780	Blocking
2 - Plate on steel - HF	5.50"	5.50"	5.25"	4347	849	10548	10/-1636	2300/-230	14895	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	25' o/c	
Bottom Edge (Lu)	25' o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 25'	N/A	30.6	--	--	--	--	
1 - Uniform (PSF)	0 to 25' (Front)	1' 4"	15.0	40.0	--	--	--	Default Load
2 - Point (lb)	22' 9" (Front)	N/A	314	--	815	--	--	Linked from: S13, Support 2
3 - Point (lb)	22' 9" (Front)	N/A	1658	--	5150	--	--	Linked from: S37, Support 2
4 - Point (lb)	22' 9" (Front)	N/A	1413	--	4389	--	--	Linked from: S38, Support 1
5 - Point (lb)	25' (Front)	N/A	97	46	--	-549	771/-771	Linked from: M17, Support 2
6 - Point (lb)	25' (Front)	N/A	113	60	--	-901	1267/-1267	Linked from: M20, Support 1
7 - Point (lb)	0 (Front)	N/A	1336	--	2949	-281	420/-420	Linked from: M19, Support 1

• Side loads are assumed to not induce cross-grain tension.

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ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	

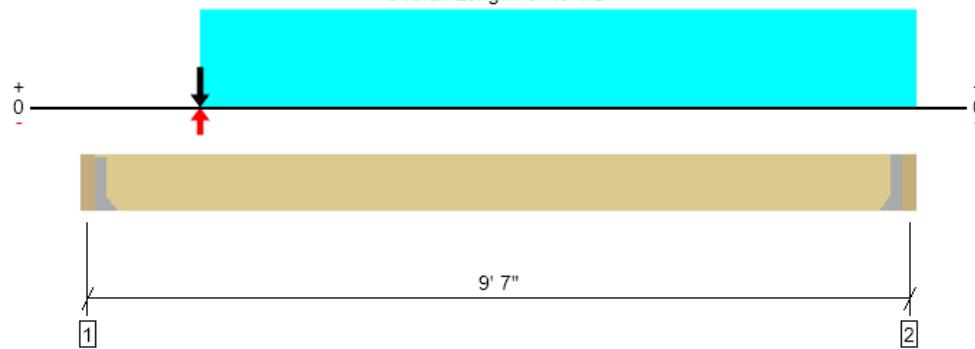


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S2.1, M19

1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL

Overall Length: 9' 10 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4285 @ 3 1/2"	4285 (1.96")	Passed (100%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4267 @ 1' 5 1/2"	10894	Passed (39%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	9676 @ 4' 9 3/8"	31236	Passed (31%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.078 @ 4' 11"	0.310	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.107 @ 4' 10 3/4"	0.465	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 9' 3 1/2"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Snow	Wind	Seismic	Factored	
1 - Hanger on 14" PSL beam	3.50"	Hanger ¹	1.96"	1336	2949	-281	420/-420	4285	See note ¹
2 - Hanger on 14" PSL beam	3.50"	Hanger ¹	1.84"	1084	3185	-42	63/-63	4269	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 4" o/c	
Bottom Edge (Lu)	9' 4" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HHUS410	3.00"	N/A	30-10d	10-10d	
2 - Face Mount Hanger	HHUS410	3.00"	N/A	30-10d	10-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 9' 7"	N/A	15.3	--	--	--	
1 - Uniform (PSF)	1' 6" to 9' 10 1/2" (Front)	12' 8"	15.0	50.0	--	--	roof above
2 - Point (lb)	1' 6" (Front)	N/A	686	830	-323	-483	SW WA6 END POST REACTION

• Side loads are assumed to not induce cross-grain tension.

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ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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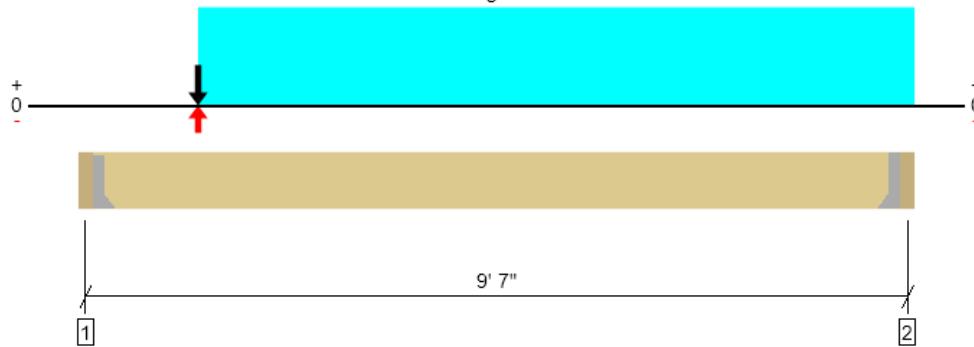
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S2.1, M19 (OS)

1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL

Overall Length: 9' 10 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4247 @ 3 1/2"	4247 (3.24")	Passed (100%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4239 @ 1' 5 1/2"	5353	Passed (79%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	9588 @ 4' 9 5/16"	13949	Passed (69%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.172 @ 4' 11"	0.310	Passed (L/647)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.233 @ 4' 10 3/4"	0.465	Passed (L/478)	--	1.0 D + 1.0 S (All Spans)

Member Length : 9' 3 1/2"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- An allowable stress increase factor of 1.2 is used for seismic overstrength load combinations.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Snow	Wind	Seismic	Factored	
1 - Hanger on 14" PSL beam	3.50"	Hanger ¹	3.24"	1298	2949	-281	420/-420	4247/-138	See note ¹
2 - Hanger on 14" PSL beam	3.50"	Hanger ¹	3.04"	1046	3185	-42	63/-63	4231	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 9" o/c	
Bottom Edge (Lu)	9' 4" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	
2 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Seismic (Q _E) (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 9' 7"	N/A	7.2	--	--	--	
1 - Uniform (PSF)	1' 6" to 9' 10 1/2" (Front)	12' 8"	15.0	50.0	--	--	roof above
2 - Point (lb)	1' 6" (Front)	N/A	686	830	-323	-483	SW WA6 END POST REACTION

• ASCE/SEI 7 Sec. 12.4.3: Overstrength Factor (2.5), Design Parameter at Short Periods (1.000), Seismic Design Category (D) are used to determine E_v and E_{mh} .

• Axial load affects on the member from Q_E loads are not considered.

• Side loads are assumed to not induce cross-grain tension.

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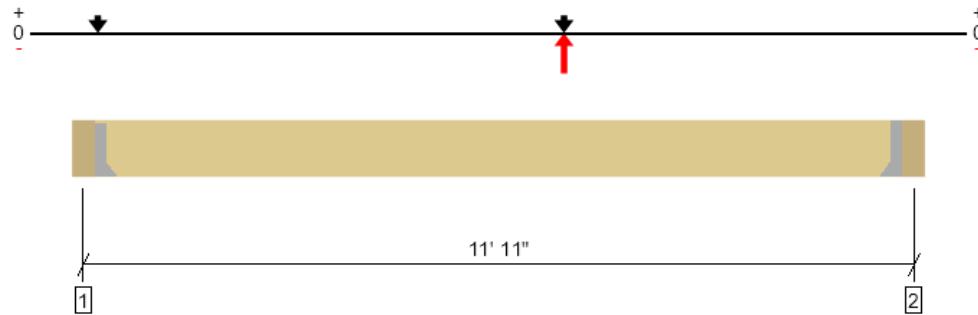
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S2.1, M20
1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL

Overall Length: 12' 4 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1305 @ 11' 11"	1969 (1.50")	Passed (66%)	--	1.0 D - 0.7 E (All Spans)
Shear (lbs)	1296 @ 10' 9"	7448	Passed (17%)	1.60	1.0 D - 0.7 E (All Spans)
Moment (Ft-lbs)	6169 @ 7' 1 1/2"	19407	Passed (32%)	1.60	1.0 D - 0.7 E (All Spans)
Live Load Defl. (in)	0.003 @ 7' 1 1/2"	0.382	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	-0.095 @ 7' 1 1/2"	0.573	Passed (L/999+)	--	0.6 D + 0.6 W (All Spans)

Member Length : 11' 5 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 819 lbs uplift at support located at 5 1/2". Strapping or other restraint may be required.
- An excessive uplift of -1192 lbs detected at support located at 11' 5 1/2".

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Seismic	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	113	60	-901	1267/-126 7	1000/-819	See note 1
2 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	71	24	-1254	1763/-176 3	1305/-1192	See note 1

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' o/c	
Bottom Edge (Lu)	8' 8" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HUS1.81/10	3.00"	N/A	30-10dx1.5	10-10d	
2 - Face Mount Hanger	HUS1.81/10	3.00"	N/A	30-10dx1.5	10-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 11' 11"	N/A	7.2	--	--	--	
1 - Point (lb)	7' 1 1/2" (Front)	N/A	--	--	-2155	-3030	SW WC4 END POST REACTION
2 - Point (lb)	6" (Front)	N/A	51	42	--	--	Linked from: S40, Support 1
3 - Point (lb)	7' 1 1/2" (Front)	N/A	51	42	--	--	Linked from: S40, Support 2

• Side loads are assumed to not induce cross-grain tension.

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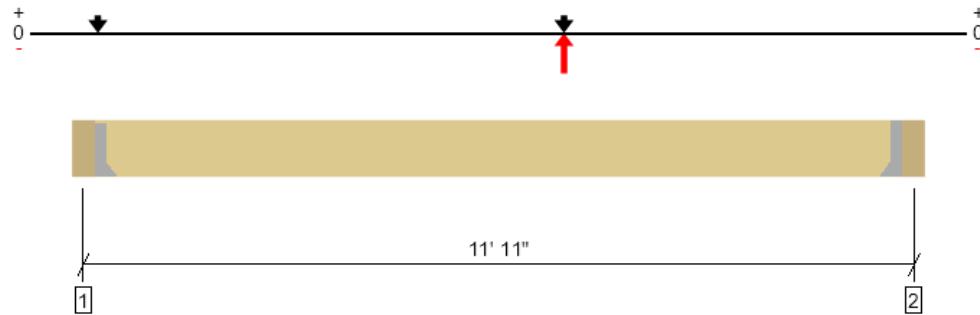
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S2.1, M20 (OS)
1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL

Overall Length: 12' 4 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3166 @ 11' 11"	3166 (2.01")	Passed (100%)	--	1.0 D + 0.7 Ev - 0.7 Emh (All Spans)
Shear (lbs)	3156 @ 10' 9"	8938	Passed (35%)	1.60	1.0 D + 0.7 Ev - 0.7 Emh (All Spans)
Moment (Ft-lbs)	15075 @ 7' 1 1/2"	23288	Passed (65%)	1.60	1.0 D + 0.7 Ev - 0.7 Emh (All Spans)
Live Load Defl. (in)	0.003 @ 7' 1 1/2"	0.382	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	-0.095 @ 7' 1 1/2"	0.573	Passed (L/999+)	--	0.6 D + 0.6 W (All Spans)

Member Length : 11' 5 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- An excessive uplift of -2165 lbs detected at support located at 0".
- An excessive uplift of -3053 lbs detected at support located at 11' 5 1/2".
- An allowable stress increase factor of 1.2 is used for seismic overstrength load combinations.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Seismic	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	113	60	-901	1267/-126 7	2347/-2165	See note 1
2 - Hanger on 14" HF beam	5.50"	Hanger ¹	2.01"	71	24	-1254	1763/-176 3	3166/-3053	See note 1

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 8" o/c	
Bottom Edge (Lu)	3' 10" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HUS1.81/10	3.00"	N/A	30-10d	10-10d	
2 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Seismic (Q _E) (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 11' 11"	N/A	7.2	--	--	--	
1 - Point (lb)	7' 1 1/2" (Front)	N/A	51	42	-2155	-3030	SW WC4 END POST REACTION & Linked from: S40, Support 2
2 - Point (lb)	6" (Front)	N/A	51	42	--	--	Linked from: S40, Support 1

• ASCE/SEI 7 Sec. 12.4.3: Overstrength Factor (2.5), Design Parameter at Short Periods (1.000), Seismic Design Category (D) are used to determine Ev and Emh.

• Axial load affects on the member from Q_E loads are not considered.

• Side loads are assumed to not induce cross-grain tension.

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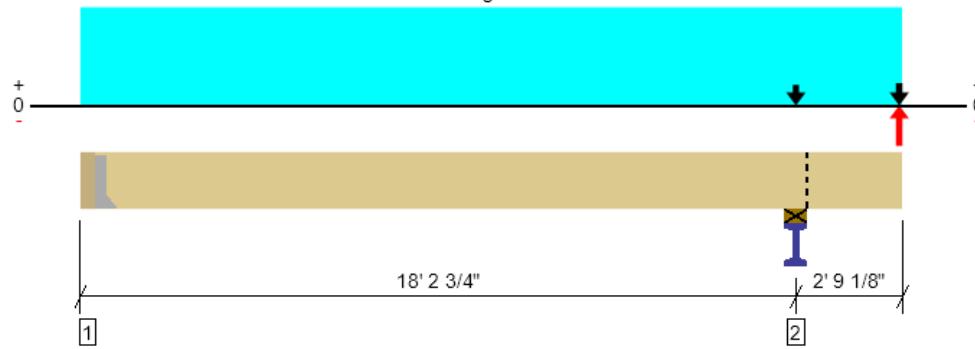


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S2.1, M21

1 piece(s) 5 1/4" x 14" 2.2E Parallam® PSL

Overall Length: 20' 11 7/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	4920 @ 18' 2 3/4"	11694 (5.50")	Passed (42%)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans) [8]
Shear (lbs)	3485 @ 19' 7 1/2"	22736	Passed (15%)	1.60	1.0 D - 0.7 E (All Spans) [8]
Moment (Ft-lbs)	-9621 @ 18' 2 3/4"	65188	Passed (15%)	1.60	1.0 D - 0.7 E (All Spans) [8]
Live Load Defl. (in)	0.091 @ 10' 5/8"	0.598	Passed (L/999+)	--	1.0 D + 0.45 W + 0.75 L + 0.75 S (All Spans) [1]
Total Load Defl. (in)	0.127 @ 9' 5 15/16"	0.897	Passed (L/999+)	--	1.0 D + 0.45 W + 0.75 L + 0.75 S (All Spans) [1]

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 294 lbs uplift at support located at 3 1/2". Strapping or other restraint may be required.
- An excessive uplift of -3330 lbs detected at support located at 17' 11 1/4".

Member Length : 20' 8 3/8"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Seismic	Factored	
1 - Hanger on 14" HF beam	3.50"	Hanger ¹	1.50"	371	494	525	738/-738	1118/-294	See note 1
2 - Plate on steel - HF	5.50"	5.50"	2.31"	902	1486	-3934	5531/-553 ₁	4920/-3330	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	20' 8" o/c	
Bottom Edge (Lu)	20' 8" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U610	2.00"	N/A	14-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 20' 11 7/8"	N/A	23.0	--	--	--	
1 - Uniform (PSF)	0 to 20' 11 7/8" (Front)	1' 4"	15.0	40.0	--	--	Default Load
2 - Point (lb)	20' 11" (Front)	N/A	71	24	-1254	1763/-1763	Linked from: M20, Support 2
3 - Point (lb)	20' 11" (Front)	N/A	--	--	-2155	-3030	SW WC4 END POST REACTION
4 - Point (lb)	18' 2 3/4" (Front)	N/A	307	821	--	--	Linked from: M23, Support 1

• Side loads are assumed to not induce cross-grain tension.

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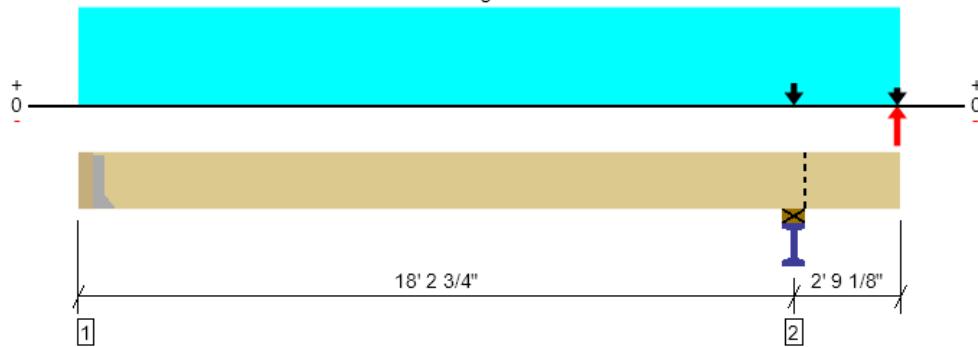


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S2.1, M21 (OS)

1 piece(s) 5 1/4" x 14" 2.2E Parallam® PSL

Overall Length: 20' 11 7/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	7147 @ 18' 2 3/4"	14033 (5.50")	Passed (51%)	--	1.0 D + 0.7 Ev - 0.7 Emh (All Spans)
Shear (lbs)	5450 @ 19' 7 1/2"	27283	Passed (20%)	1.60	1.0 D + 0.7 Ev - 0.7 Emh (All Spans)
Moment (Ft-lbs)	-15047 @ 18' 2 3/4"	78226	Passed (19%)	1.60	1.0 D + 0.7 Ev - 0.7 Emh (All Spans)
Live Load Defl. (in)	0.071 @ 9' 10 5/8"	0.598	Passed (L/999+)	--	1.0 D + 0.45 W + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.106 @ 9' 7 3/8"	0.897	Passed (L/999+)	--	1.0 D + 0.45 W + 0.75 L + 0.75 S (All Spans)

Member Length : 20' 8 3/8"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 645 lbs uplift at support located at 3 1/2". Strapping or other restraint may be required.
- An excessive uplift of -5704 lbs detected at support located at 17' 11 1/4".
- An allowable stress increase factor of 1.2 is used for seismic overstrength load combinations.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Seismic	Factored	
1 - Hanger on 14" HF beam	3.50"	Hanger ¹	1.50"	371	494	332	466/-466	1381/-645	See note 1
2 - Plate on steel - HF	5.50"	5.50"	2.80"	902	1466	-2487	3496/-349 ₆	7147/-5704	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	20' 8" o/c	
Bottom Edge (Lu)	20' 8" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U610	2.00"	N/A	14-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Seismic (Q _E) (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 20' 11 7/8"	N/A	23.0	--	--	--	
1 - Uniform (PSF)	0 to 20' 11 7/8" (Front)	1' 4"	15.0	40.0	--	--	Default Load
2 - Point (lb)	20' 11" (Front)	N/A	71	24	-2155	-3030	SW WC4 END POST REACTION & Linked from: M20, Support 2
3 - Point (lb)	18' 2 3/4" (Front)	N/A	307	801	--	--	Linked from: M23, Support 1

• ASCE/SEI 7 Sec. 12.4.3: Overstrength Factor (2.5), Design Parameter at Short Periods (1.000), Seismic Design Category (D) are used to determine Ev and Emh.

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- Axial load affects on the member from Q_E loads are not considered.
- Side loads are assumed to not induce cross-grain tension.

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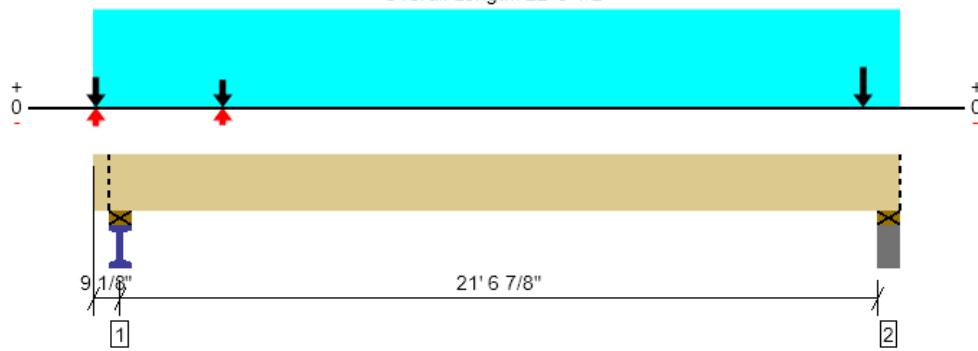
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S2.1, M22
1 piece(s) 6 x 14 HF No.2

Overall Length: 22' 9 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	5006 @ 22' 5 1/2"	12251 (5.50")	Passed (41%)	--	1.0 D + 1.0 L (Alt Spans) [8]
Shear (lbs)	3043 @ 21' 2 1/2"	6930	Passed (44%)	1.00	1.0 D + 1.0 L (Alt Spans) [1]
Moment (Ft-lbs)	9032 @ 10' 9 1/2"	9275	Passed (97%)	1.00	1.0 D + 1.0 L (Alt Spans) [1]
Live Load Defl. (in)	0.430 @ 11' 5 5/16"	0.723	Passed (L/605)	--	1.0 D + 1.0 L (Alt Spans) [1]
Total Load Defl. (in)	0.659 @ 11' 5 3/4"	1.085	Passed (L/395)	--	1.0 D + 1.0 L (Alt Spans) [1]

Member Length : 22' 9 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Plate on steel - HF	5.50"	5.50"	1.73"	1402	1896	1158	206	298/-298	3849	Blocking
2 - Plate on concrete - HF	5.50"	5.50"	2.25"	1516	3490/-6	-35	8/-5	11/-11	5006	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	22' 10" o/c	
Bottom Edge (Lu)	22' 10" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 22' 9 1/2"	N/A	18.8	--	--	--	--	
1 - Uniform (PSF)	0 to 22' 9 1/2" (Front)	1' 4"	15.0	40.0	--	--	--	Default Load
2 - Point (lb)	1" (Front)	N/A	115	184	--	185	182/-182	Linked from: M33, Support 2
3 - Point (lb)	1" (Front)	N/A	369	--	1123	-36	36/-36	Linked from: M34, Support 1
4 - Point (lb)	21' 9" (Front)	N/A	307	821	--	--	--	Linked from: M23A, Support 2
5 - Point (lb)	21' 9" (Front)	N/A	761	2011	--	--	--	Linked from: M23B, Support 1
6 - Point (lb)	3' 8" (Front)	N/A	481	1148	--	60	84/-84	Linked from: M32, Support 2

• Side loads are assumed to not induce cross-grain tension.

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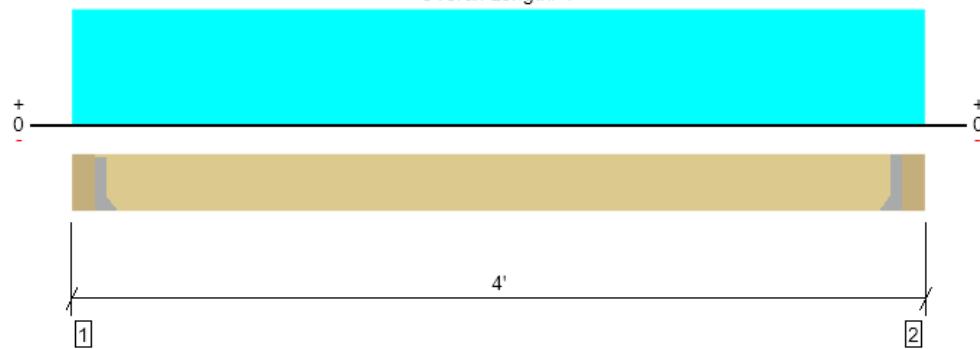


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S2.1, M23A

1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL

Overall Length: 4'



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	875 @ 5 1/2"	3281 (1.50")	Passed (27%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	213 @ 1' 7 1/2"	9473	Passed (2%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	674 @ 2'	27162	Passed (2%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.002 @ 2'	0.103	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.002 @ 2'	0.154	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]

Member Length : 3' 1"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	307	821	1128	See note ¹
2 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	307	821	1128	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 1" o/c	
Bottom Edge (Lu)	3' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-10dx1.5	6-10d	
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	5 1/2" to 3' 6 1/2"	N/A	15.3	--	
1 - Uniform (PLF)	0 to 4' (Front)	N/A	2.3	37.5/-13.5	Linked from: D4, Support 1
2 - Uniform (PLF)	0 to 4' (Front)	N/A	139.5	372.8	Linked from: J10, Support 1

• Side loads are assumed to not induce cross-grain tension.

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Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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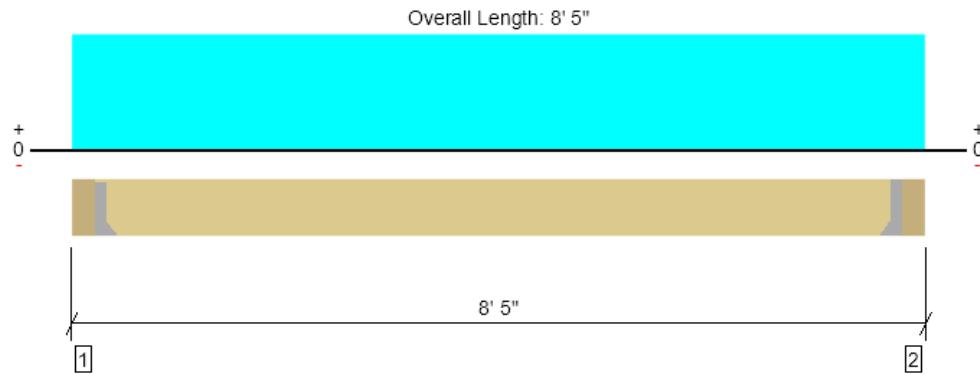
ForteWEB v3.9, Engine: V8.4.3.94, Data: V8.1.7.3

File Name: Sitka

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S2.1, M23B

1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	2476 @ 5 1/2"	3281 (1.50")	Passed (75%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	1706 @ 1' 7 1/2"	9473	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	4643 @ 4' 2 1/2"	27162	Passed (17%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.026 @ 4' 2 1/2"	0.250	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.037 @ 4' 2 1/2"	0.375	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]

Member Length : 7' 6"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	761	2011	2772	See note ¹
2 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	761	2011	2772	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 6" o/c	
Bottom Edge (Lu)	7' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HHUS410	3.00"	N/A	30-10d	10-10d	
2 - Face Mount Hanger	HHUS410	3.00"	N/A	30-10d	10-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	5 1/2" to 7' 11 1/2"	N/A	15.3	--	
1 - Uniform (PLF)	0 to 8' 5" (Front)	N/A	2.3	37.5/-13.5	Linked from: D4, Support 1
2 - Uniform (PLF)	0 to 8' 5" (Front)	N/A	165.0	440.3	Linked from: J7, Support 2

• Side loads are assumed to not induce cross-grain tension.

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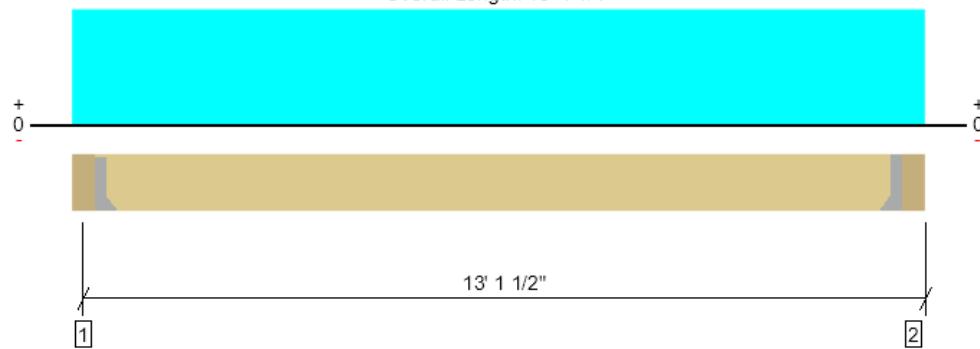
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S2.1, M24
1 piece(s) 2 x 14 HF No.2

Overall Length: 13' 4 1/4"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	474 @ 5 1/2"	911 (1.50")	Passed (52%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	390 @ 1' 6 3/4"	1988	Passed (20%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1475 @ 6' 8 1/8"	2798	Passed (53%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.084 @ 6' 8 1/8"	0.415	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.109 @ 6' 8 1/8"	0.622	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 12' 5 1/4"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 13 1/4" HF beam	5.50"	Hanger ¹	1.50"	111	396	507	See note ¹
2 - Hanger on 13 1/4" HF beam	5.50"	Hanger ¹	1.50"	111	396	507	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 6" o/c	
Bottom Edge (Lu)	12' 5" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LU210	1.50"	N/A	10-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	LU210	1.50"	N/A	10-10dx1.5	6-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	5 1/2" to 12' 10 3/4"	N/A	5.0	--	
1 - Uniform (PLF)	0 to 13' 4 1/4" (Front)	N/A	12.0	59.3	Linked from: D4, Support 3

• Side loads are assumed to not induce cross-grain tension.

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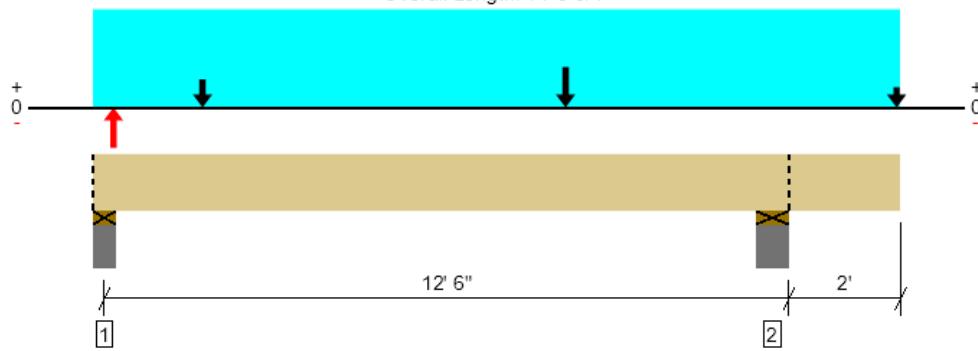
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S2.1, M25
1 piece(s) 6 x 14 HF No.2

Overall Length: 14' 8 3/4"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2304 @ 4"	12251 (5.50")	Passed (19%)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (Alt Spans)
Shear (lbs)	1798 @ 1' 7"	7970	Passed (23%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4343 @ 8' 7 1/2"	14840	Passed (29%)	1.60	1.0 D + 0.6 W (All Spans)
Live Load Defl. (in)	0.074 @ 6' 6"	0.402	Passed (L/999+)	--	1.0 D + 0.45 W + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.094 @ 6' 3 13/16"	0.603	Passed (L/999+)	--	1.0 D + 0.45 W + 0.75 L + 0.75 S (Alt Spans)

Member Length : 14' 8 3/4"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 586 lbs uplift at support located at 4". Strapping or other restraint may be required.
- 544 lbs uplift at support located at 12' 4 3/4". Strapping or other restraint may be required.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Plate on concrete - HF	5.50"	5.50"	1.50"	701	170/-83	1143	-1677	1178/-117 8	2304/-586	Blocking
2 - Plate on concrete - HF	8.00"	8.00"	1.50"	467	702	183	1677	1178/-117 8	1886/-544	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 9" o/c	
Bottom Edge (Lu)	14' 9" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 14' 8 3/4"	N/A	18.8	--	--	--	--	
1 - Uniform (PSF)	0 to 14' 8 3/4" (Front)	8"	15.0	40.0	--	--	--	Default Load
2 - Point (lb)	14' 8" (Front)	N/A	111	396	--	--	--	Linked from: M24, Support 2
3 - Point (lb)	4 1/2" (Front)	N/A	--	--	--	-2440	-1713	SW W3A END POST REACTION
4 - Point (lb)	8' 7 1/2" (Front)	N/A	--	--	--	2440	1713	SW W3A END POST REACTION
5 - Point (lb)	2' (Front)	N/A	633	--	1326	--	--	Linked from: S51, Support 2

- Side loads are assumed to not induce cross-grain tension.

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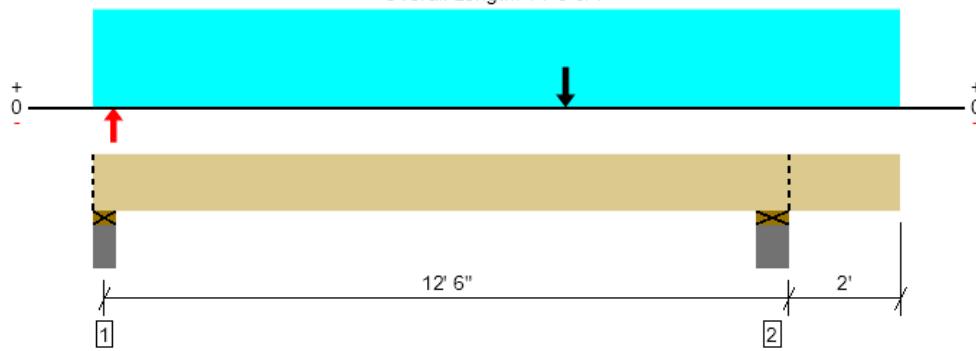


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File Name: Sitka

S2.1, M25 (OS)

1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL

Overall Length: 14' 8 3/4"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2277 @ 4"	9356 (5.50")	Passed (24%)	--	1.0 D + 0.7 Ev - 0.7 Emh (All Spans)
Shear (lbs)	2285 @ 10' 10 3/4"	18189	Passed (13%)	1.60	1.0 D + 0.7 Ev + 0.7 Emh (All Spans)
Moment (Ft-lbs)	8495 @ 8' 7 1/2"	52151	Passed (16%)	1.60	1.0 D + 0.7 Ev + 0.7 Emh (All Spans)
Live Load Defl. (in)	0.054 @ 6' 10 1/2"	0.402	Passed (L/999+)	--	1.0 D + 0.45 W + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.064 @ 6' 9 11/16"	0.603	Passed (L/999+)	--	1.0 D + 0.45 W + 0.75 L + 0.75 S (Alt Spans)

Member Length : 14' 8 3/4"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- An excessive uplift of -1973 lbs detected at support located at 4".
- An excessive uplift of -1926 lbs detected at support located at 12' 4 3/4".
- An allowable stress increase factor of 1.2 is used for seismic overstrength load combinations.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Seismic	Factored	
1 - Plate on concrete - HF	5.50"	5.50"	1.50"	190	294/-6	-1677	1178/-117 8	2277/-1973	Blocking
2 - Plate on concrete - HF	8.00"	8.00"	1.50"	294	501	1677	1178/-117 8	2395/-1926	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 9" o/c	
Bottom Edge (Lu)	14' 9" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Seismic (Q _E) (1.60)	Comments
0 - Self Weight (PLF)	0 to 14' 8 3/4"	N/A	15.3	--	--	--	
1 - Uniform (PSF)	0 to 14' 8 3/4" (Front)	8"	15.0	40.0	--	--	Default Load
2 - Point (lb)	4 1/2" (Front)	N/A	--	--	-2440	-1713	SW W3A END POST REACTION
3 - Point (lb)	8' 7 1/2" (Front)	N/A	--	--	2440	1713	SW W3A END POST REACTION
4 - Point (lb)	8' 7 1/2" (Front)	N/A	111	396	--	--	Linked from: M24, Support 2

• ASCE/SEI 7 Sec. 12.4.3: Overstrength Factor (2.5), Design Parameter at Short Periods (1.000), Seismic Design Category (D) are used to determine Ev and Emh.

• Axial load affects on the member from Q_E loads are not considered.

• Side loads are assumed to not induce cross-grain tension.

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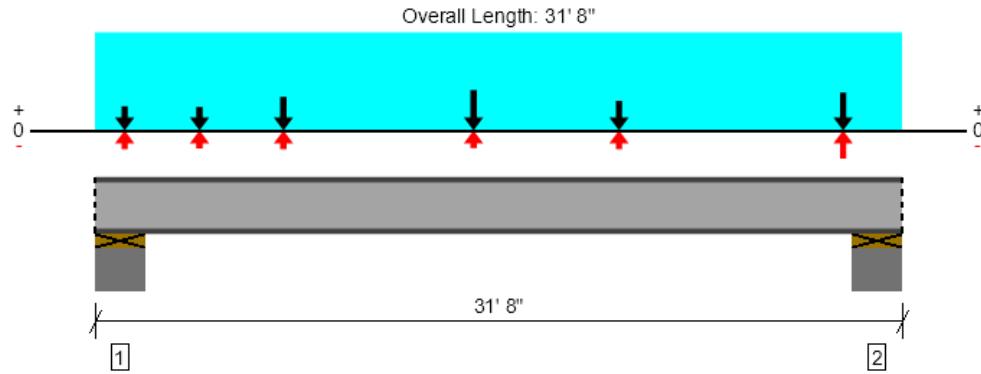
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S2.1, M26

1 piece(s) W18X65 (A992) ASTM Steel



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	44072 @ 10 1/2"	36887 (12.00")	Failed (119%)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans) [5]
Shear (lbs)	42296 @ 1'	165600	Passed (26%)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans) [5]
Moment (Ft-lbs)	322938 @ 14' 10 1/4"	109706	Failed (294%)	--	1.0 D + 1.0 S (All Spans) [5]
Live Load Defl. (in)	1.098 @ 15' 8 7/8"	0.748	Failed (L/327)	--	1.0 D + 1.0 S (All Spans) [5]
Total Load Defl. (in)	1.627 @ 15' 8 15/16"	1.496	Failed (L/221)	--	1.0 D + 1.0 S (All Spans) [5]

- Deflection criteria: LL (L/480) and TL (L/240).

- Applicable calculations are based on ANSI/AISC 360-16.

- A lateral-torsional buckling factor (C_b) of 1.0 has been assumed.

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Plate on concrete - HF	12.00"	12.00"	14.34"	14511	9443	29192	-845	1115/-1115	44072	Blocking
2 - Plate on concrete - HF	12.00"	12.00"	14.33"	14325	8723	29468	-3379	2043/-2043	44040	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 31' 8"	N/A	65.0	--	--	--	--	
1 - Uniform (PLF)	0 to 31' 8" (Front)	N/A	515.3	457.5	1137.8	--	--	Linked from: J3, Support 1
2 - Point (lb)	7' 4 3/4" (Front)	N/A	2067	611	4676	-331	327/-327	Linked from: M8, Support 1
3 - Point (lb)	20' 6 3/4" (Front)	N/A	1627	611	3234	-331	327/-327	Linked from: M12, Support 1
4 - Point (lb)	1' 2" (Front)	N/A	790	614/-11	1239	125/-262	435/-435	Linked from: M4, Support 1
5 - Point (lb)	4' 1 1/4" (Front)	N/A	793	614/-45	1165	128/-72	248/-248	Linked from: M6, Support 1
6 - Point (lb)	14' 10 1/4" (Front)	N/A	2913	614/-131	7339	12	17/-17	Linked from: M10, Support 1
7 - Point (lb)	29' 4 1/4" (Front)	N/A	2271	614/-72	4978	-3240	1804/-1804	Linked from: M15, Support 1

- Side loads are assumed to not induce cross-grain tension.

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



9/19/2025 7:50:37 PM UTC
ForteWEB v3.9, Engine: V8.4.3.94, Data: V8.1.7.3
File Name: Sitka

FLEXURAL CAPACITY

WF, M, S, & HP SECTIONS

Section: W18x106

$f_y =$	50 ksi	$I_x =$	1910 in ⁴
$L_b =$	34.5 ft	$E =$	29000000 psi
	414 in	$EI =$	5.539E+10 lb-in ²
$A =$	31.1 in ²		
$S_x =$	204 in ³		
$Z_x =$	230 in ³		

Moment Capacity:

LTB Check: Elastic LTB Controls

Plastic Limit		Elastic Limit	
L_p	L_b	L_r	
112.7	414	> 381.8	
$M_n =$	536.16 kft		
$\Omega =$	1.67		

$$M_n/\Omega = \boxed{321.06 \text{ kft}}$$

Shear Capacity:

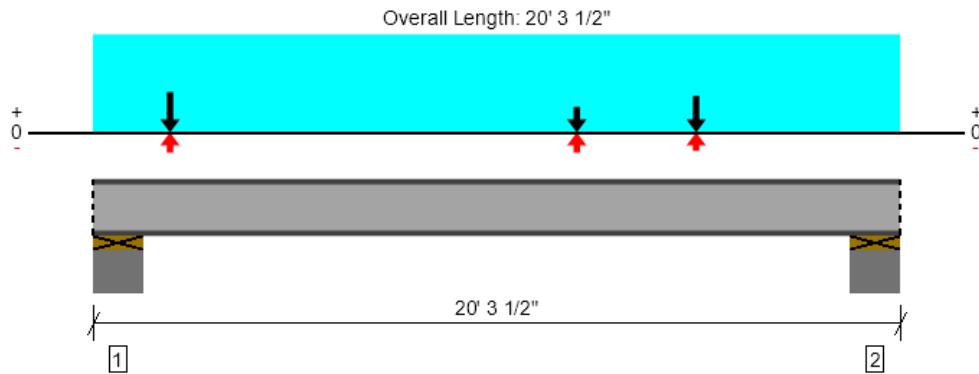
Slenderness Check

$h/t_w/\sqrt{E/F_y} =$	1.13
$k_v =$	1.00
$C_{v1} =$	1.00
$V_n =$	330.99 k
$\Omega =$	1.5

$$V_n/\Omega = \boxed{220.66 \text{ k}}$$

S2.1, M27

1 piece(s) W18X35 (A992) ASTM Steel



use W18x106
(forte doesn't go up to this size,
see capacity sheet on
following page)

Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	11375 @ 10 1/2"	29160 (12.00")	Passed (39%)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans) [8]
Shear (lbs)	10825 @ 1'	106200	Passed (10%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans) [1]
Moment (Ft-lbs)	40745 @ 11' 6 15/16"	51674	Passed (79%)	--	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.110 @ 10' 4 1/4"	0.464	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.172 @ 10' 4 1/4"	0.927	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]

Member Length : 20' 3 1/2"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).

- Applicable calculations are based on ANSI/AISC 360-16.

- A lateral-torsional buckling factor (C_b) of 1.0 has been assumed.

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Plate on concrete - HF	12.00"	12.00"	12.00"	4293	5879	3028	428/-22	767/-767	11375	Blocking
2 - Plate on concrete - HF	12.00"	12.00"	12.00"	3495	6470	1060	489	704/-704	9965	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 20' 3 1/2"	N/A	35.0	--	--	--	--	
1 - Uniform (PLF)	0 to 20' 3 1/2" (Front)	N/A	170.3	460.5	--	--	--	Linked from: J6, Support 1
2 - Point (lb)	1' 11 1/4" (Front)	N/A	1850	614	2930	186/-291	435/-435	Linked from: M18, Support 1
3 - Point (lb)	12' 2" (Front)	N/A	371	494	--	525	738/-738	Linked from: M21, Support 1
4 - Point (lb)	15' 2" (Front)	N/A	1402	1896	1158	206	298/-298	Linked from: M22, Support 1

- Side loads are assumed to not induce cross-grain tension.

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Weyerhaeuser

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FLEXURAL CAPACITY

WF, M, S, & HP SECTIONS

Section: W18x106

$f_y =$	50 ksi	$I_x =$	1910 in ⁴
$L_b =$	34.5 ft	$E =$	29000000 psi
	414 in	$EI =$	5.539E+10 lb-in ²
$A =$	31.1 in ²		
$S_x =$	204 in ³		
$Z_x =$	230 in ³		

Moment Capacity:

LTB Check: Elastic LTB Controls

Plastic Limit

L_p	L_b	L_r
112.7	414	> 381.8

$M_n =$ 536.16 kft
 $\Omega =$ 1.67

$M_n/\Omega =$ 321.06 kft

Shear Capacity:

Slenderness Check

$h/t_w/\sqrt{E/F_y} =$ 1.13

$k_v =$	1.00
$C_{v1} =$	1.00

$V_n =$ 330.99 k
 $\Omega =$ 1.5

$V_n/\Omega =$ 220.66 k

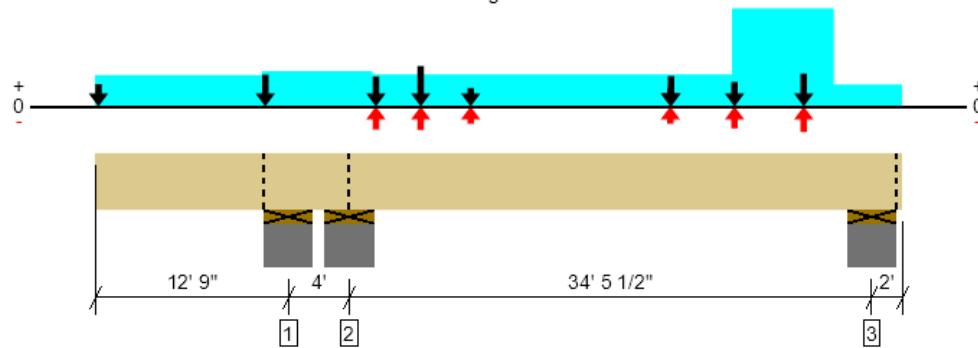
S2.1, M28

1 piece(s) 8 3/4" x 33" 24F-V4 DF Glulam

Support 2 failed reaction check due to insufficient bearing capacity.

use W18x106
(forte doesn't go up to this size,
see capacity sheet on following page)

Overall Length: 53' 2 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	99103 @ 16' 9"	44625 (12.00")	Failed (222%)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (Adj Spans) [5]
Shear (lbs)	45711 @ 16'	58664	Passed (78%)	1.15	1.0 D + 0.75 L + 0.75 S (Adj Spans) [5]
Pos Moment (Ft-lbs)	172958 @ 37' 11 13/16"	305301	Passed (57%)	1.15	1.0 D + 0.75 L + 0.75 S (Alt Spans) [5]
Neg Moment (Ft-lbs)	-235165 @ 16' 9"	237580	Passed (99%)	1.15	1.0 D + 0.75 L + 0.75 S (Adj Spans) [5]
Live Load Defl. (in)	0.367 @ 36' 9 1/16"	0.861	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [5]
Total Load Defl. (in)	0.574 @ 36' 8 5/8"	1.723	Passed (L/720)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [5]

Member Length : 53' 2 1/2"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Moment capacity has been adjusted by a factor of 0.84 to account for the beam stability and/or volume/size factors.
- Volume factor of 0.84 was calculated for positive bending using length L = 26' 10 9/16".
- Volume factor of 0.84 was calculated for negative bending using length L = 24' 5 3/8".
- An excessive uplift of -31891 lbs detected at support located at 12' 9".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

$$EI = 5.24 \times 10^{10} \text{ LB-IN}^2$$

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Plate on concrete - HF	12.00"	12.00"	5.69"	-4036	22226/-20650	10040/-16 490	5554	8910/-891 0	20163/-365 69	Blocking
2 - Plate on concrete - SPF	12.00"	12.00"	26.65"	28338	37684/-12083	44709	-11087	17085/-17 085	99103	Blocking
3 - Plate on concrete - HF	12.00"	12.00"	8.19"	9322	9253	12780	-3005	6053/-605 3	29025	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	Continuous	
Bottom Edge (Lu)	Continuous	

ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 lnavarre@harriettvalentine.com	



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Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 53' 2 1/2"	N/A	70.2	--	--	--	--	
1 - Uniform (PLF)	11' to 18' 3 1/2" (Front)	N/A	168.8	449.3	--	--	--	Linked from: J2, Support 2
2 - Uniform (PLF)	11' to 42' (Front)	N/A	18.0	88.5	--	--	--	Linked from: D2, Support 1
3 - Uniform (PLF)	42' to 48' 8 1/2" (Front)	N/A	330.8	88.5	1043.3	--	--	Linked from: D3, Support 1
4 - Uniform (PLF)	48' 8 1/2" to 53' 2 1/2" (Front)	N/A	118.5	333.8	--	--	--	Linked from: J5, Support 3
5 - Point (lb)	2 3/4" (Front)	N/A	1411	358	2777	--	--	Linked from: M1, Support 2
6 - Uniform (PLF)	0 to 11' (Front)	N/A	107.3	537.0	--	--	--	Linked from: D1, Support 2
7 - Uniform (PLF)	18' 3 1/2" to 48' 8 1/2" (Front)	N/A	153.8	441.8	-38.3	--	--	Linked from: J3, Support 2
8 - Point (lb)	24' 9 1/4" (Front)	N/A	348	588/-1	-113	8	8/-8	Linked from: M8, Support 2
9 - Point (lb)	37' 11 7/8" (Front)	N/A	3235	120	8453	--	--	Linked from: M14A, Support 1
10 - Point (lb)	37' 11 1/4" (Front)	N/A	359	588/-1	-78	8	8/-8	Linked from: M12, Support 2
11 - Point (lb)	42' 2" (Front)	N/A	1220	120	2865	-1810	2544/-2544	Linked from: M14B, Support 1
12 - Point (lb)	18' 6 1/4" (Front)	N/A	2296	1109	4882	9/-2263	3192/-3192	Linked from: M4, Support 2
13 - Point (lb)	21' 5 3/4" (Front)	N/A	5338	1405	11274	2/-2311	3186/-3186	Linked from: M6, Support 2
14 - Point (lb)	11' 2 3/4" (Front)	N/A	3483	885	8899	--	--	Linked from: M2, Support 2
15 - Point (lb)	46' 8 3/4" (Front)	N/A	1803	1641	2007	3527/-2170	5290/-5290	Linked from: M15, Support 2

• Side loads are assumed to not induce cross-grain tension.

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FLEXURAL CAPACITY

WF, M, S, & HP SECTIONS

Section: W18x106

$f_y =$	50 ksi	$I_x =$	1910 in ⁴
$L_b =$	34.5 ft	$E =$	29000000 psi
	414 in	$EI =$	5.539E+10 lb-in ²
$A =$	31.1 in ²		
$S_x =$	204 in ³		
$Z_x =$	230 in ³		

Moment Capacity:

LTB Check: Elastic LTB Controls

Plastic Limit		Elastic Limit	
L_p	L_b	L_r	
112.7	414	> 381.8	

$M_n =$ 536.16 kft
 $\Omega =$ 1.67

$M_n/\Omega =$ 321.06 kft

Shear Capacity:

Slenderness Check

$h/t_w/\sqrt{E/F_y} =$	1.13
$k_v =$	1.00
$C_{v1} =$	1.00

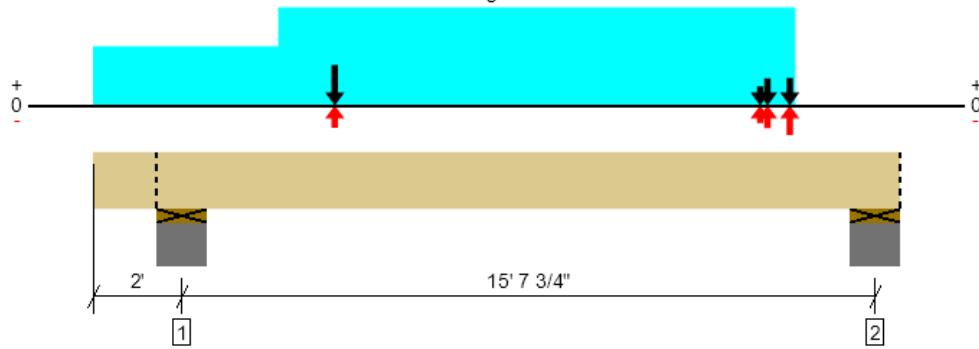
$V_n =$ 330.99 k
 $\Omega =$ 1.5

$V_n/\Omega =$ 220.66 k

S2.1, M29

1 piece(s) 7" x 16" 2.2E Parallam® PSL

Overall Length: 18' 1 3/4"



use W18x106
(forte doesn't go up to this size,
see capacity sheet on
following page)

Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	17639 @ 2'	34020 (12.00")	Passed (52%)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans) [5]
Shear (lbs)	14659 @ 3' 10"	24901	Passed (59%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans) [5]
Moment (Ft-lbs)	50387 @ 6' 7 7/16"	80396	Passed (63%)	1.15	1.0 D + 0.75 L + 0.75 S (Alt Spans) [5]
Live Load Defl. (in)	0.295 @ 9' 4 1/16"	0.382	Passed (L/621)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [5]
Total Load Defl. (in)	0.454 @ 9' 4 1/4"	0.764	Passed (L/404)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [5]

Member Length : 18' 1 3/4"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Moment capacity has been adjusted by a factor of 0.97 to account for the beam stability and/or volume/size factors.
- An excessive uplift of -2536 lbs detected at support located at 17' 3 1/4".
- Member should be side-loaded from both sides of the member or braced to prevent rotation.

$$EI = 5.26 \times 10^9 \text{ LB-IN}^2$$

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	
1 - Plate on concrete - HF	12.00"	12.00"	6.22"	5674	5366	8678	-1920	2727/-272	Blocking
2 - Plate on concrete - HF	12.00"	12.00"	6.09"	4800	5645/-44	5540	-5389	7738/-773	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	Continuous	
Bottom Edge (Lu)	Continuous	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 18' 1 3/4"	N/A	35.0	--	--	--	--	
1 - Uniform (PLF)	0 to 4' 2" (Front)	N/A	118.5	333.8	--	--	--	Linked from: J5, Support 3
2 - Uniform (PLF)	4' 2" to 15' 9 1/2" (Front)	N/A	204.8	547.5	--	--	--	Linked from: J6, Support 2
3 - Point (lb)	5' 5 1/4" (Front)	N/A	4347	849	10548	10/-1636	2300/-2300	Linked from: M18, Support 2
4 - Point (lb)	15' 8" (Front)	N/A	902	1486	--	-3934	5531/-5531	Linked from: M21, Support 2
5 - Point (lb)	15' (Front)	N/A	456	797/-7	-101	71	90/-90	Linked from: M35, Support 2
6 - Point (lb)	15' 2" (Front)	N/A	1260	80	3771	-1810	2544/-2544	Linked from: M37, Support 1

- Side loads are assumed to not induce cross-grain tension.

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FLEXURAL CAPACITY

WF, M, S, & HP SECTIONS

Section: W18x106

$f_y =$	50 ksi	$I_x =$	1910 in ⁴
$L_b =$	34.5 ft	$E =$	29000000 psi
	414 in	$EI =$	5.539E+10 lb-in ²
$A =$	31.1 in ²		
$S_x =$	204 in ³		
$Z_x =$	230 in ³		

Moment Capacity:

LTB Check: Elastic LTB Controls

Plastic Limit		Elastic Limit	
L_p	L_b	L_r	
112.7	414	> 381.8	

$M_n =$ 536.16 kft
 $\Omega =$ 1.67

$M_n/\Omega =$ 321.06 kft

Shear Capacity:

Slenderness Check

$h/t_w/\sqrt{E/F_y} =$	1.13
$k_v =$	1.00
$C_{v1} =$	1.00

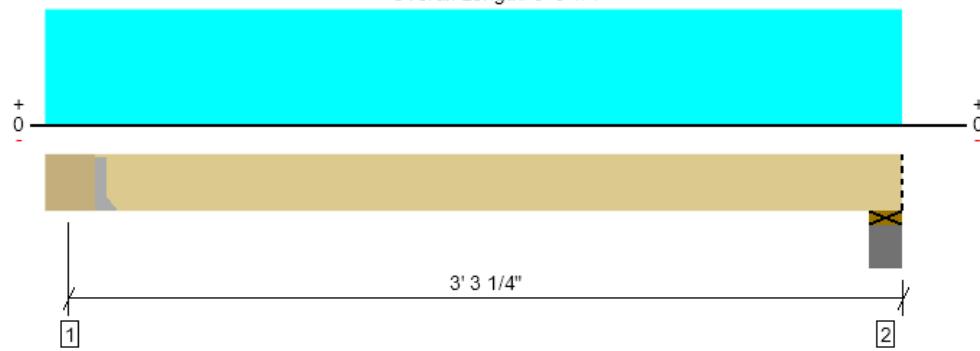
$V_n =$ 330.99 k
 $\Omega =$ 1.5

$V_n/\Omega =$ 220.66 k

S2.1, M30

1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL

Overall Length: 3' 9 1/4"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	297 @ 1'	3281 (1.50")	Passed (9%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	47 @ 1' 11 1/4"	9473	Passed (0%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	166 @ 2' 1 3/8"	27162	Passed (1%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.000 @ 1'	0.056	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.000 @ 1'	0.111	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]

Member Length : 2' 9 1/4"
 System : Floor
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Moment capacity has been adjusted by a factor of 0.98 to account for the beam stability and/or volume/size factors.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 14" PSL beam	12.00"	Hanger ¹	1.50"	68	481/-173	548/-105	See note ¹
2 - Plate on concrete - HF	8.00"	8.00"	1.50"	65	376/-31	441	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	Continuous	
Bottom Edge (Lu)	Continuous	

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-10dx1.5	6-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	1' to 3' 9 1/4"	N/A	15.3	--	
1 - Uniform (PLF)	0 to 3' 9 1/4" (Front)	N/A	-26.3	93.8/-152.3	Linked from: J8, Support 1
2 - Uniform (PLF)	0 to 3' 9 1/4" (Front)	N/A	50.3	133.5	Linked from: J9, Support 2

- Side loads are assumed to not induce cross-grain tension.

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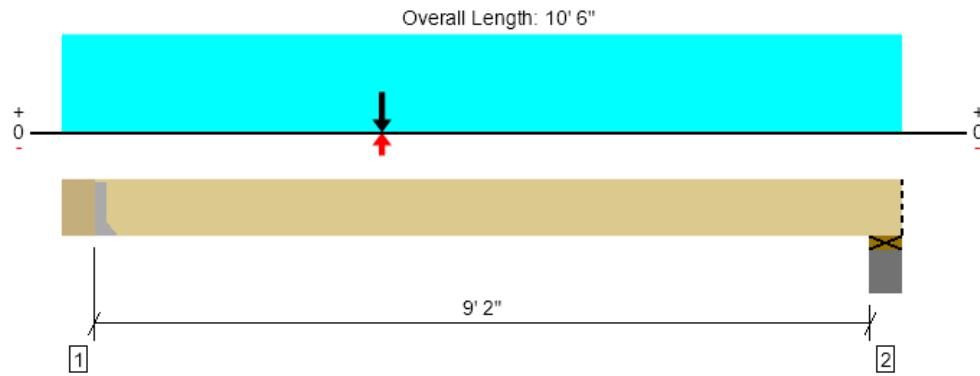
ForteWEB v3.9, Engine: V8.4.3.94, Data: V8.1.7.3

File Name: Sitka

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S2.1, M31

1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	763 @ 8"	3281 (1.50")	Passed (23%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	661 @ 1' 10"	9473	Passed (7%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	2017 @ 3' 11"	27162	Passed (7%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.015 @ 5' 1 5/16"	0.232	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.020 @ 5' 1 5/8"	0.465	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]

Member Length : 9' 10"
 System : Floor
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Moment capacity has been adjusted by a factor of 0.98 to account for the beam stability and/or volume/size factors.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 14" PSL beam	8.00"	Hanger ¹	1.50"	215	596	811	See note ¹
2 - Plate on concrete - HF	8.00"	8.00"	1.50"	200	445	645	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	Continuous	
Bottom Edge (Lu)	Continuous	

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-10dx1.5	6-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	8" to 10' 6"	N/A	15.3	--	
1 - Uniform (PSF)	0 to 10' 6" (Front)	1' 4"	14.0	40.0	
2 - Point (lb)	3' 11" (Front)	N/A	68	481/-173	Linked from: M30, Support 1

- Side loads are assumed to not induce cross-grain tension.

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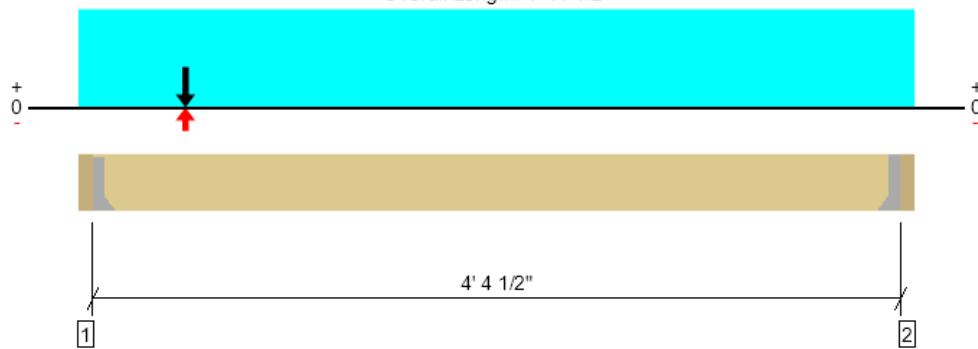


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S2.1, M32

1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL

Overall Length: 4' 11 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	2120 @ 3 1/2"	3281 (1.50")	Passed (65%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	960 @ 1' 5 1/2"	9473	Passed (10%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	1705 @ 2' 3 13/16"	27162	Passed (6%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.005 @ 2' 5 9/16"	0.146	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.007 @ 2' 5 7/16"	0.219	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]

Member Length : 4' 4 1/2"
 System : Floor
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Moment capacity has been adjusted by a factor of 0.98 to account for the beam stability and/or volume/size factors.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Seismic	Factored	
1 - Hanger on 14" PSL beam	3.50"	Hanger ¹	1.50"	767	1529	465	654/-654	2296	See note ¹
2 - Hanger on 14" PSL beam	3.50"	Hanger ¹	1.50"	481	1148	60	84/-84	1629	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	Continuous	
Bottom Edge (Lu)	Continuous	

Connector: Simpson Strong-Tie

Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS414	2.00"	N/A	10-16d	6-16d	
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 4' 8"	N/A	15.3	--	--	--	
1 - Uniform (PLF)	0 to 4' 11 1/2" (Front)	N/A	137.3	366.0	--	--	Linked from: J10, Support 2
2 - Uniform (PLF)	0 to 4' 11 1/2" (Front)	N/A	26.3	74.3	--	--	Linked from: J11, Support 1
3 - Point (lb)	9 1/2" (Front)	N/A	371	494	525	738/-738	Linked from: M21, Support 1

• Side loads are assumed to not induce cross-grain tension.

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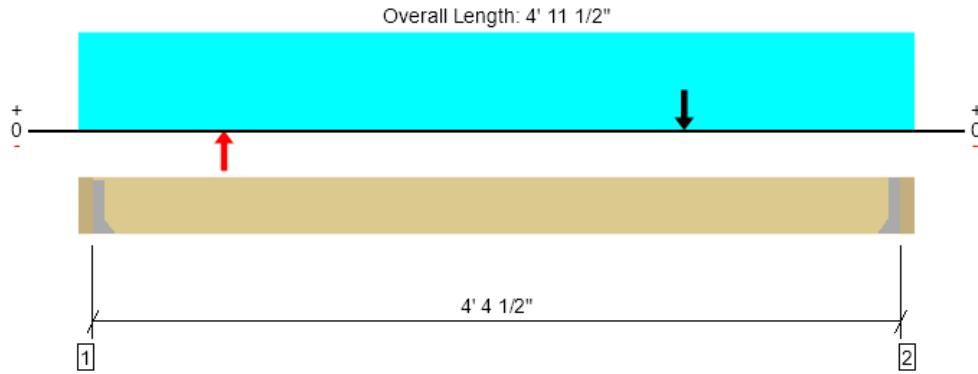
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S2.1, M33

1 piece(s) 5 1/4" x 14" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	325 @ 3 1/2"	4922 (1.50")	Passed (7%)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	203 @ 3' 6"	22736	Passed (1%)	1.60	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	296 @ 2' 5 3/4"	40743	Passed (1%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.000 @ 2' 5 15/16"	0.146	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.001 @ 2' 5 15/16"	0.219	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 4' 4 1/2"
 System : Floor
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Moment capacity has been adjusted by a factor of 0.98 to account for the beam stability and/or volume/size factors.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Seismic	Factored	
1 - Hanger on 14" PSL beam	3.50"	Hanger ¹	1.50"	115	184	-185	182/-182	349/-58	See note 1
2 - Hanger on 14" PSL beam	3.50"	Hanger ¹	1.50"	115	184	185	182/-182	349/-58	See note 1

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	Continuous	
Bottom Edge (Lu)	Continuous	

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U610	2.00"	N/A	14-10dx1.5	6-10d	
2 - Face Mount Hanger	U610	2.00"	N/A	14-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 4' 8"	N/A	23.0	--	--	--	
1 - Uniform (PLF)	0 to 4' 11 1/2" (Front)	N/A	26.3	74.3	--	--	Linked from: J11, Support 1
2 - Point (lb)	1' (Front)	N/A	--	--	-323	-319	SW WA6 END POST REACTION
3 - Point (lb)	3' 6" (Front)	N/A	--	--	323	319	SW WA7 END POST REACTION

• Side loads are assumed to not induce cross-grain tension.

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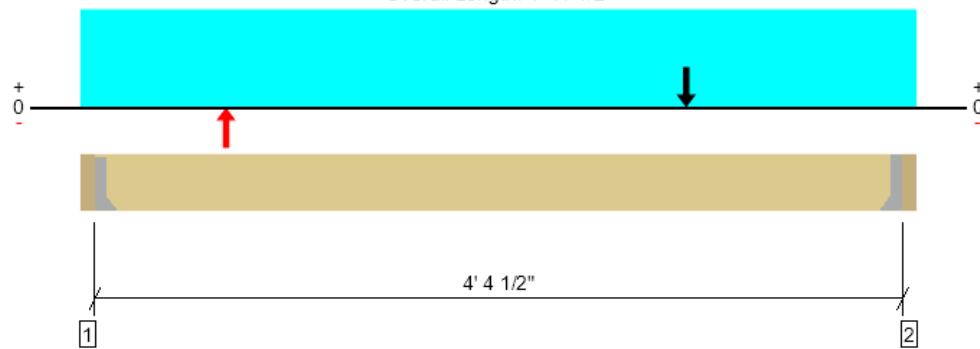


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S2.1, M33 (OS)

1 piece(s) 5 1/4" x 14" 2.2E Parallam® PSL

Overall Length: 4' 11 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	480 @ 3 1/2"	5906 (1.50")	Passed (8%)	--	1.0 D + 0.525 Ev - 0.525 Emh + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	376 @ 3' 6"	27283	Passed (1%)	1.60	1.0 D + 0.7 Ev + 0.7 Emh (All Spans)
Moment (Ft-lbs)	485 @ 3' 6"	78226	Passed (1%)	1.60	1.0 D + 0.525 Ev + 0.525 Emh + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.000 @ 2' 5 15/16"	0.146	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.001 @ 2' 5 15/16"	0.219	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 4' 4 1/2"
 System : Floor
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Moment capacity has been adjusted by a factor of 0.98 to account for the beam stability and/or volume/size factors.
- 266 lbs uplift at support located at 3 1/2". Strapping or other restraint may be required.
- 266 lbs uplift at support located at 4' 8". Strapping or other restraint may be required.
- An allowable stress increase factor of 1.2 is used for seismic overstrength load combinations.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Seismic	Factored	
1 - Hanger on 14" PSL beam	3.50"	Hanger ¹	1.50"	115	184	-185	182/-182	505/-266	See note 1
2 - Hanger on 14" PSL beam	3.50"	Hanger ¹	1.50"	115	184	185	182/-182	505/-266	See note 1

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	Continuous	
Bottom Edge (Lu)	Continuous	

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U610	2.00"	N/A	14-10dx1.5	6-10d	
2 - Face Mount Hanger	U610	2.00"	N/A	14-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Seismic (QE) (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 4' 8"	N/A	23.0	--	--	--	
1 - Uniform (PLF)	0 to 4' 11 1/2" (Front)	N/A	26.3	74.3	--	--	Linked from: J11, Support 1
2 - Point (lb)	1' (Front)	N/A	--	--	-323	-319	SW WA6 END POST REACTION
3 - Point (lb)	3' 6" (Front)	N/A	--	--	323	319	SW WA7 END POST REACTION

• ASCE/SEI 7 Sec. 12.4.3: Overstrength Factor (2.5), Design Parameter at Short Periods (1.000), Seismic Design Category (D) are used to determine Ev and Emh.

• Axial load affects on the member from QE loads are not considered.

• Side loads are assumed to not induce cross-grain tension.

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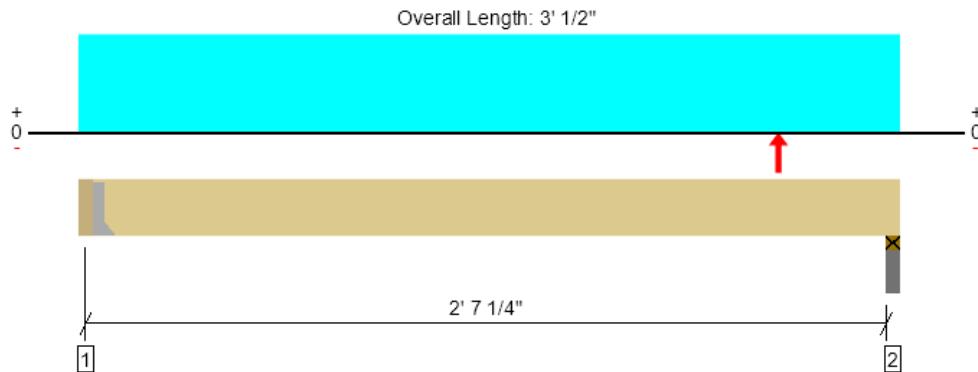
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S2.1, M34

1 piece(s) 5 1/4" x 14" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1222 @ 3 1/2"	4922 (1.50")	Passed (25%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	118 @ 1' 5 1/2"	16342	Passed (1%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	789 @ 1' 7"	46854	Passed (2%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.001 @ 1' 7 3/8"	0.086	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.001 @ 1' 7 3/8"	0.129	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 9"
 System : Floor
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Moment capacity has been adjusted by a factor of 0.98 to account for the beam stability and/or volume/size factors.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Snow	Wind	Seismic	
1 - Hanger on 14" PSL beam	3.50"	Hanger ¹	1.50"	369	1123	-36	36/-36	1491
2 - Plate on concrete - PSL	3.50"	3.50"	1.50"	346	1034	-287	283/-283	1380

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	Continuous	
Bottom Edge (Lu)	Continuous	

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	U610	2.00"	N/A	14-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 3' 1/2"	N/A	23.0	--	--	--	
1 - Point (lb)	2' 7" (Front)	N/A	--	--	-323	-319	SW WA7 END POST REACTION
2 - Uniform (PLF)	0 to 3' 1/2" (Front)	N/A	214.0	709.0	--	--	Linked from: R6, Support 1

• Side loads are assumed to not induce cross-grain tension.

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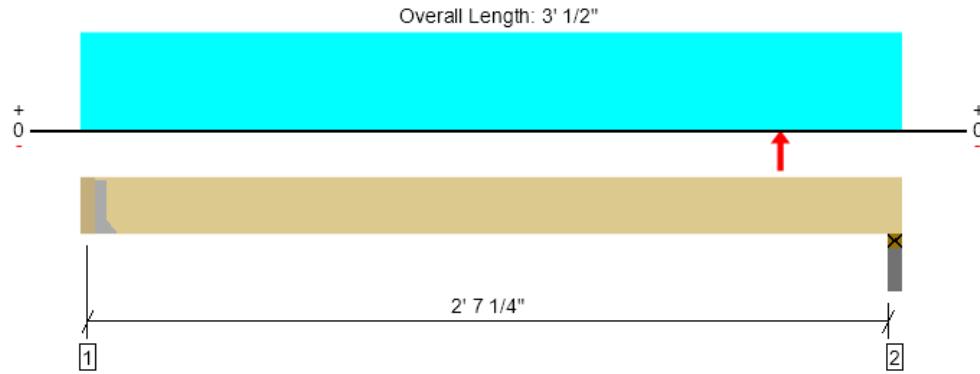
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S2.1, M34 (OS)

1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1201 @ 3 1/2"	1969 (1.50")	Passed (61%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	116 @ 1' 5 1/2"	5353	Passed (2%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	776 @ 1' 7"	13949	Passed (6%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.004 @ 1' 7 3/8"	0.086	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.005 @ 1' 7 3/8"	0.129	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 9"
 System : Floor
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Moment capacity has been adjusted by a factor of 0.98 to account for the beam stability and/or volume/size factors.
- 347 lbs uplift at support located at 2' 10 1/2". Strapping or other restraint may be required.
- An allowable stress increase factor of 1.2 is used for seismic overstrength load combinations.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Snow	Wind	Seismic	Factored	
1 - Hanger on 14" PSL beam	3.50"	Hanger ¹	1.50"	348	1123	-36	36/-36	1471	See note ¹
2 - Plate on concrete - PSL	3.50"	3.50"	1.50"	323	1034	-287	283/-283	1503/-347	None

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	Continuous	
Bottom Edge (Lu)	Continuous	

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/11.88	2.00"	N/A	10-10d	2-10dx1.5	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Seismic (QE) (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 3' 1/2"	N/A	7.2	--	--	--	
1 - Point (lb)	2' 7" (Front)	N/A	--	--	-323	-319	SW WA7 END POST REACTION
2 - Uniform (PLF)	0 to 3' 1/2" (Front)	N/A	214.0	709.0	--	--	Linked from: R6, Support 1

• ASCE/SEI 7 Sec. 12.4.3: Overstrength Factor (2.5), Design Parameter at Short Periods (1.000), Seismic Design Category (D) are used to determine Ev and Emh.

• Axial load affects on the member from QE loads are not considered.

• Side loads are assumed to not induce cross-grain tension.

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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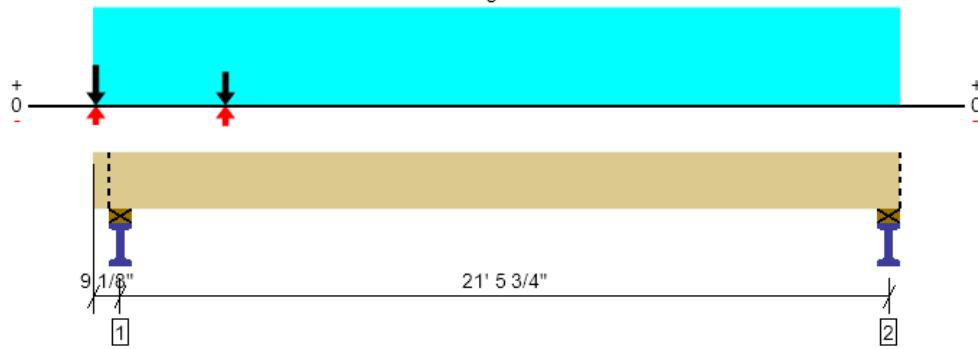


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S2.1, M35

1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL

Overall Length: 22' 5 5/8"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	6788 @ 9 1/8"	7796 (5.50")	Passed (87%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	2850 @ 2' 1 7/8"	9473	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	8441 @ 8' 4"	27162	Passed (31%)	1.00	1.0 D + 1.0 L (Alt Spans) [1]
Live Load Defl. (in)	0.277 @ 10' 9 3/16"	0.712	Passed (L/925)	--	1.0 D + 1.0 L (Alt Spans) [1]
Total Load Defl. (in)	0.417 @ 10' 10 5/16"	1.069	Passed (L/615)	--	1.0 D + 1.0 L (Alt Spans) [1]

Member Length : 22' 5 5/8"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).

- Overhang deflection criteria: LL (2L/360) and TL (2L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Plate on steel - HF	5.50"	5.50"	4.79"	2304	2121	3286	401/-234	817/-817	6788	Blocking
2 - Plate on steel - HF	5.50"	5.50"	1.50"	456	797/-7	-101	71	90/-90	1253	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	22' 6" o/c	
Bottom Edge (Lu)	22' 6" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 22' 5 5/8"	N/A	15.3	--	--	--	--	
1 - Uniform (PSF)	0 to 22' 5 5/8" (Front)	1' 4"	15.0	40.0	--	--	--	Default Load
2 - Point (lb)	1" (Front)	N/A	115	184	--	-185	182/-182	Linked from: M33, Support 1
3 - Point (lb)	1" (Front)	N/A	1084	--	3185	-42	63/-63	Linked from: M19, Support 2
4 - Point (lb)	3' 8 1/4" (Front)	N/A	767	1529	--	465	654/-654	Linked from: M32, Support 1

- Side loads are assumed to not induce cross-grain tension.

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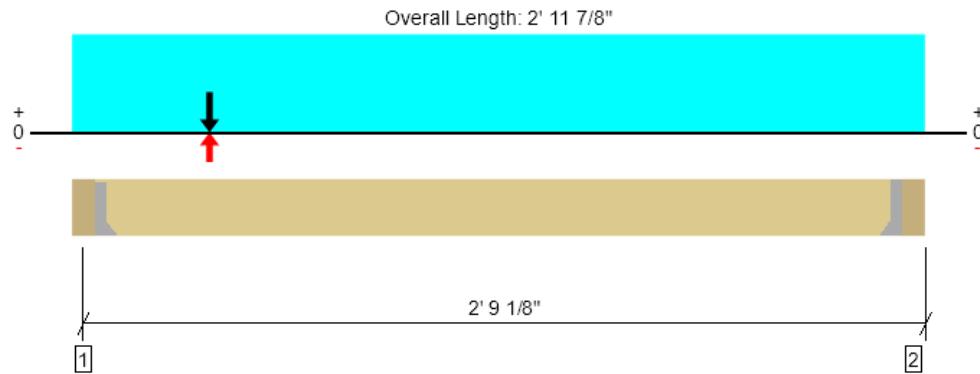
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S2.1, M36
1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6158 @ 5 1/2"	6158 (2.81")	Passed (100%)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1458 @ 1' 7 1/2"	10894	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1715 @ 9"	31236	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.003 @ 9"	0.069	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.004 @ 9"	0.104	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 7/8"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).

- Allowed moment does not reflect the adjustment for the beam stability factor.
- 899 lbs uplift at support located at 5 1/2". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	2.81"	1470	80	4425	-1810	2544/-254 ₄	6185/-899	See note ¹
2 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	279	80	725	-296	417/-417	1101/-124	See note ¹

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 1" o/c	
Bottom Edge (Lu)	2' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HGUS410	4.00"	N/A	46-10d	16-10d	
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-10dx1.5	6-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 2' 6 3/8"	N/A	15.3	--	--	--	--	
1 - Uniform (PSF)	0 to 2' 11 7/8" (Front)	1' 4"	15.0	40.0	--	--	--	
2 - Point (lb)	9" (Front)	N/A	--	--	--	-2106	-2961	SW WC2 END POST REACTION
3 - Point (lb)	9" (Front)	N/A	1658	--	5150	--	--	Linked from: S37, Support 1

- Side loads are assumed to not induce cross-grain tension.

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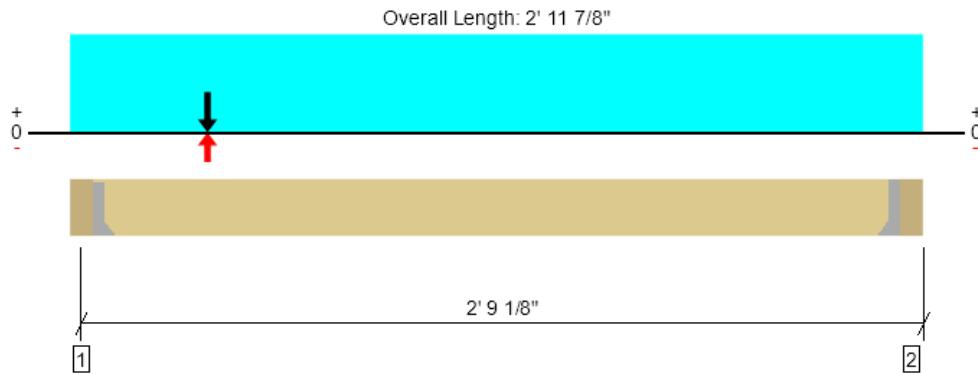
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S2.1, M36 (OS)

1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	8315 @ 5 1/2"	8315 (3.17")	Passed (100%)	--	1.0 D + 0.525 Ev - 0.525 Emh + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1458 @ 1' 7 1/2"	10894	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1715 @ 9"	31236	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.003 @ 9"	0.069	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.004 @ 9"	0.104	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 7/8"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- An excessive uplift of -3776 lbs detected at support located at 0".
- 601 lbs uplift at support located at 2' 6 3/8". Strapping or other restraint may be required.
- An allowable stress increase factor of 1.2 is used for seismic overstrength load combinations.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	3.17"	1470	80	4425	-1810	2544/-254 4	8343/-3776 See note 1
2 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	279	80	725	-296	417/-417	1458/-601 See note 1

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 1" o/c	
Bottom Edge (Lu)	2' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HGUS412	4.00"	N/A	56-10d	20-10d	
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (Q _E) (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 2' 6 3/8"	N/A	15.3	--	--	--	--	
1 - Uniform (PSF)	0 to 2' 11 7/8" (Front)	1' 4"	15.0	40.0	--	--	--	
2 - Point (lb)	9" (Front)	N/A	1658	--	5150	-2106	-2961	SW WC2 END POST REACTION & Linked from: S37, Support 1

• ASCE/SEI 7 Sec. 12.4.3: Overstrength Factor (2.5), Design Parameter at Short Periods (1.000), Seismic Design Category (D) are used to determine E_v and Em_h .

• Axial load affects on the member from Q_E loads are not considered.

• Side loads are assumed to not induce cross-grain tension.

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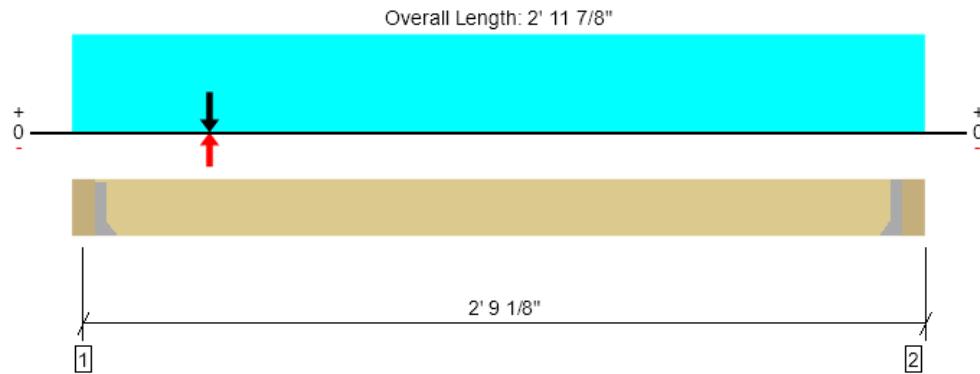
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S2.1, M37
1 piece(s) 3 1/2" x 14" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5457 @ 5 1/2"	5457 (2.49")	Passed (100%)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1242 @ 1' 7 1/2"	10894	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1463 @ 9"	31236	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.003 @ 9"	0.069	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.003 @ 9"	0.104	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 7/8"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- An excessive uplift of -1025 lbs detected at support located at 0".

Supports	Bearing Length			Loads to Supports (lbs)						Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Wind	Seismic	Factored	
1 - Hanger on 14" HF beam	5.50"	Hanger ¹	2.49"	1260	80	3771	-1810	2544/-254 ₄	5484/-1025	See note 1
2 - Hanger on 14" HF beam	5.50"	Hanger ¹	1.50"	245	80	618	-296	417/-417	986/-145	See note 1

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 1" o/c	
Bottom Edge (Lu)	2' 1" o/c	

• Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HGUS410	4.00"	N/A	46-10d	16-10d	
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-10dx1.5	6-10d	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Wind (1.60)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 2' 6 3/8"	N/A	15.3	--	--	--	--	
1 - Uniform (PSF)	0 to 2' 11 7/8" (Front)	1' 4"	15.0	40.0	--	--	--	
2 - Point (lb)	9" (Front)	N/A	--	--	--	-2106	-2961	SW WC2 END POST REACTION
3 - Point (lb)	9" (Front)	N/A	1413	--	4389	--	--	Linked from: S38, Support 2

• Side loads are assumed to not induce cross-grain tension.

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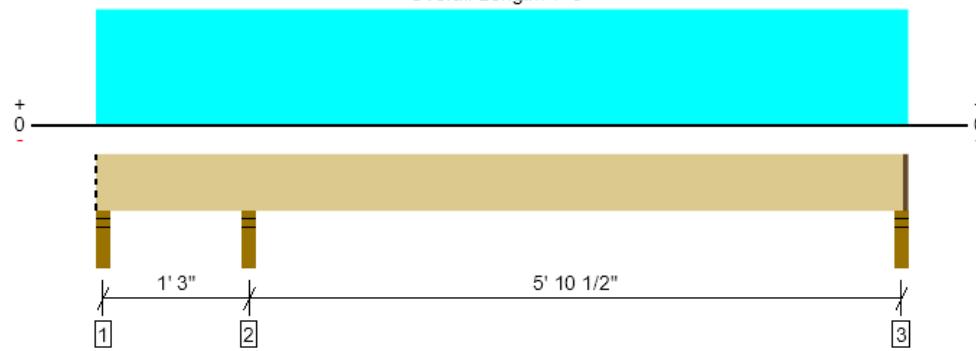


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Bridge, B1

1 piece(s) 2 x 14 HF No.2 @ 16" OC

Overall Length: 7' 5"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	921 @ 1' 4 3/4"	2126 (3.50")	Passed (43%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	464 @ 1' 4 3/4"	2286	Passed (20%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	-460 @ 1' 4 3/4"	3700	Passed (12%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.004 @ 4' 7 5/8"	0.194	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.005 @ 4' 7 5/8"	0.291	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 7' 3 3/4"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- 349 lbs uplift at support located at 2 1/2". Strapping or other restraint may be required.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - SPF	3.50"	3.50"	1.50"	-44	62/-236	-171	19/-349	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.52"	142	567	472	921	None
3 - Stud wall - SPF	3.50"	2.25"	1.50"	50	201	167	326	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 4" o/c	
Bottom Edge (Lu)	7' 4" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 7' 5"	16"	15.0	60.0	50.0	Default Load

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	

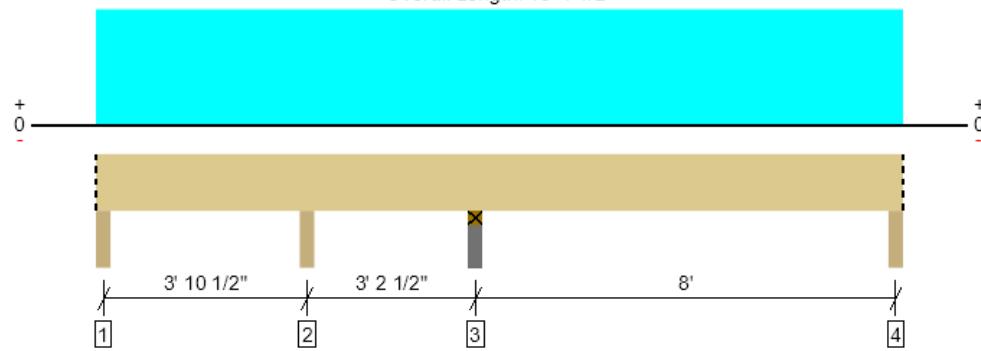


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Bridge, B2

1 piece(s) 2 x 8 HF No.2 @ 16" OC

Overall Length: 15' 4 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1087 @ 7' 2 3/4"	2126 (3.50")	Passed (51%)	--	1.0 D + 0.75 L + 0.75 S (Adj Spans)
Shear (lbs)	517 @ 7' 11 3/4"	1251	Passed (41%)	1.15	1.0 D + 0.75 L + 0.75 S (Adj Spans)
Moment (Ft-lbs)	-786 @ 7' 2 3/4"	1477	Passed (53%)	1.15	1.0 D + 0.75 L + 0.75 S (Adj Spans)
Live Load Defl. (in)	0.091 @ 11' 6 7/16"	0.265	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.107 @ 11' 6 1/2"	0.397	Passed (L/894)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 15' 4 1/2"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Beam - SPF	3.50"	3.50"	1.50"	41	176/-11	142	279	Blocking
2 - Beam - SPF	3.50"	3.50"	1.50"	36	348/-61	204	450/-25	None
3 - Plate on concrete - SPF	3.50"	3.50"	1.79"	162	679	553	1087	None
4 - Beam - SPF	3.50"	3.50"	1.50"	69	277/-3	230	449	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 2" o/c	
Bottom Edge (Lu)	10' 5" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 15' 4 1/2"	16"	15.0	60.0	50.0	Default Load

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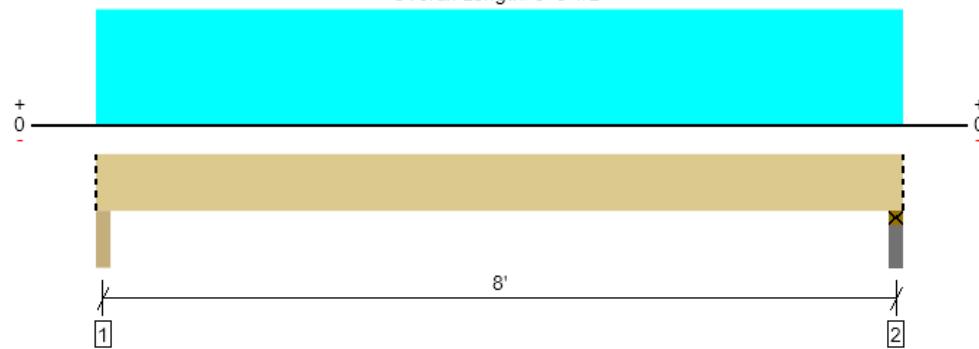


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Bridge, B3

1 piece(s) 2 x 8 HF No.2 @ 16" OC

Overall Length: 8' 3 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	539 @ 2 1/2"	2126 (3.50")	Passed (25%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	423 @ 10 3/4"	1251	Passed (34%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	1008 @ 4' 1 3/4"	1477	Passed (68%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.154 @ 4' 1 3/4"	0.262	Passed (L/615)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.182 @ 4' 1 3/4"	0.394	Passed (L/520)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 8' 3 1/2"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Beam - SPF	3.50"	3.50"	1.50"	83	332	276	539	Blocking
2 - Plate on concrete - SPF	3.50"	3.50"	1.50"	83	332	276	539	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 8" o/c	
Bottom Edge (Lu)	8' 4" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 8' 3 1/2"	16"	15.0	60.0	50.0	Default Load

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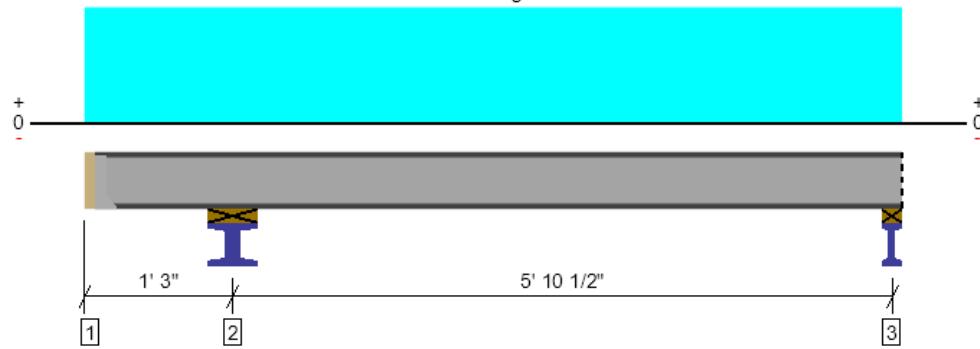


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Bridge, B4

1 piece(s) W14X22 (A992) ASTM Steel

Overall Length: 7' 4"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	649 @ 1' 3"	25500 (12.00")	Passed (3%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	300 @ 9"	63020	Passed (0%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	-311 @ 1' 3"	67776	Passed (0%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.000 @ 4' 5 7/8"	0.145	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.000 @ 4' 5 7/8"	0.290	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)

Member Length : 7' 1 1/2"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- 261 lbs uplift at support located at 2 1/2". Strapping or other restraint may be required.
- Applicable calculations are based on ANSI/AISC 360-16.
- A lateral-torsional buckling factor (C_b) of 1.0 has been assumed.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Hanger on 13 11/16" SPF Ledger	2.50"	Hanger ¹	1.50" / - ²	-91	28/-128	-98	-261	See note ¹
2 - Plate on steel - SPF	12.00"	12.00"	12.00"	239	299	249	649	None
3 - Plate on steel - SPF	5.00"	5.00"	5.00"	82	103	86	224	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.
- ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	2 1/2" to 7' 4"	N/A	22.0	--	--	
1 - Uniform (PSF)	0 to 7' 4" (Front)	8"	15.0	60.0	50.0	Default Load

* Side loads are assumed to not induce cross-grain tension.

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ForteWEB Software Operator	Job Notes
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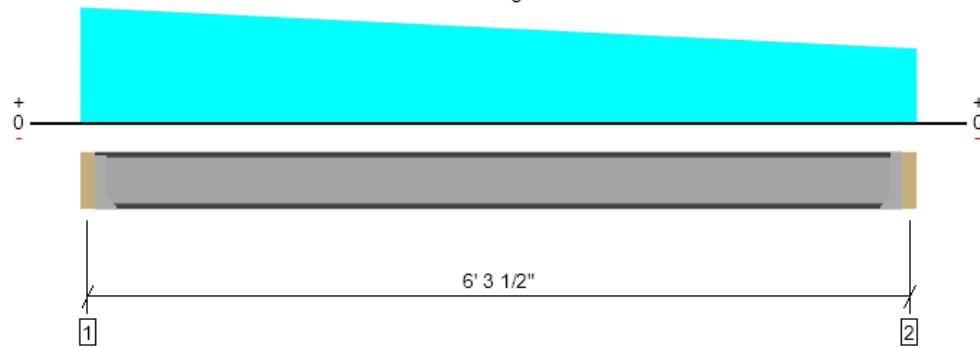
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Bridge, B5

1 piece(s) W8X10 (A992) ASTM Steel

Overall Length: 6' 7"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1579 @ 3 1/2"	10935 (1.50")	Passed (14%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1423 @ 3 1/2"	26826	Passed (5%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	2008 @ 3' 2 3/8"	17497	Passed (11%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.012 @ 3' 3 3/16"	0.150	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.015 @ 3' 3 3/16"	0.300	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 6'
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Applicable calculations are based on ANSI/AISC 360-16.
- A lateral-torsional buckling factor (C_b) of 1.0 has been assumed.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Hanger on 7 7/8" SPF beam	3.50"	Hanger ¹	1.50" / - 2	268	953	794	1579	See note ¹
2 - Hanger on 7 7/8" SPF beam	3.50"	Hanger ¹	1.50" / - 2	234	815	679	1354	See note ¹

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

• ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	
2 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 6' 3 1/2"	N/A	10.0	--	--	
1 - Uniform (PSF)	0 to 6' 7" (Front)	3' 6"	15.0	60.0	50.0	Default Load
2 - Tapered (PSF)	0 to 6' 7" (Front)	1' 11 1/4" to 0	15.0	60.0	50.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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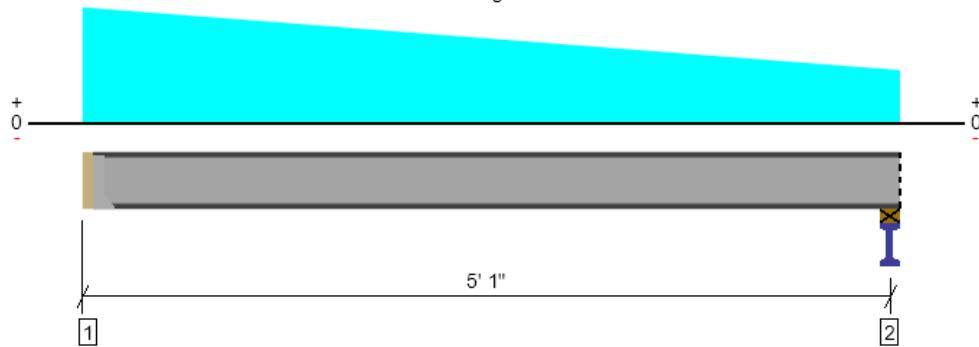
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Bridge, B6

1 piece(s) W8X10 (A992) ASTM Steel

Overall Length: 5' 3 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	616 @ 5'	8373 (5.00")	Passed (7%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	702 @ 2 1/2"	26826	Passed (3%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	761 @ 2' 5 11/16"	19345	Passed (49%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.003 @ 2' 7 1/16"	0.120	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.004 @ 2' 7 1/16"	0.240	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 5' 1"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Applicable calculations are based on ANSI/AISC 360-16.
- A lateral-torsional buckling factor (C_b) of 1.0 has been assumed.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Hanger on 7 7/8" SPF Ledger	2.50"	Hanger ¹	1.50" / - 2	139	462	385	775	See note ¹
2 - Plate on steel - SPF	5.00"	5.00"	5.00"	117	362	302	616	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.
- ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Connector: Simpson Strong-Tie

Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	2 1/2" to 5' 3 1/2"	N/A	10.0	--	--	
1 - Uniform (PSF)	0 to 5' 3 1/2" (Front)	1' 7 1/2"	15.0	60.0	50.0	Default Load
2 - Tapered (PSF)	0 to 5' 3 1/2" (Front)	1' 11 1/4" to 0	15.0	60.0	50.0	Default Load

- Side loads are assumed to not induce cross-grain tension.

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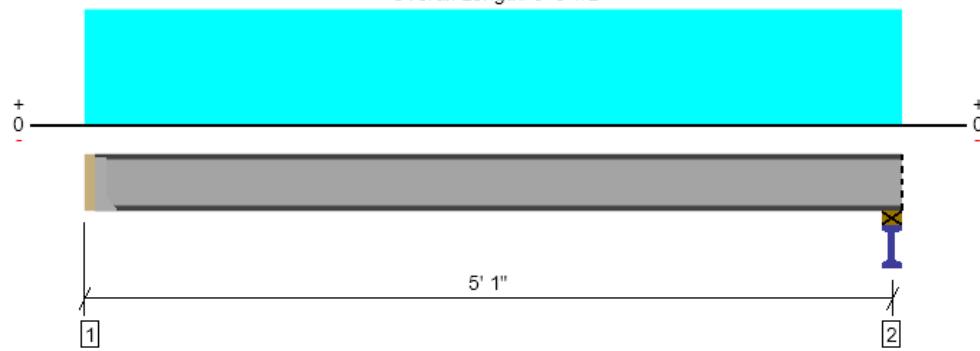
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Bridge, B7
1 piece(s) W8X10 (A992) ASTM Steel

Overall Length: 5' 3 1/2"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2123 @ 5'	8373 (5.00")	Passed (25%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1893 @ 2 1/2"	26826	Passed (7%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	2267 @ 2' 7 1/4"	19345	Passed (12%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.009 @ 2' 7 1/4"	0.120	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.010 @ 2' 7 1/4"	0.240	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 5' 1"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Bearing reinforcement may be required for support located at 0".
- Applicable calculations are based on ANSI/AISC 360-16.
- A lateral-torsional buckling factor (C_b) of 1.0 has been assumed.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Hanger on 7 7/8" SPF Ledger	2.50"	Hanger ¹	1.50" / - ²	336	1250	1042	2055	See note ¹
2 - Plate on steel - SPF	5.00"	5.00"	5.00"	349	1290	1075	2123	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

• At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

• ¹ See Connector grid below for additional information and/or requirements.

• ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

• Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	2 1/2" to 5' 3 1/2"	N/A	10.0	--	--	
1 - Uniform (PSF)	0 to 5' 3 1/2" (Front)	8'	15.0	60.0	50.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator						

ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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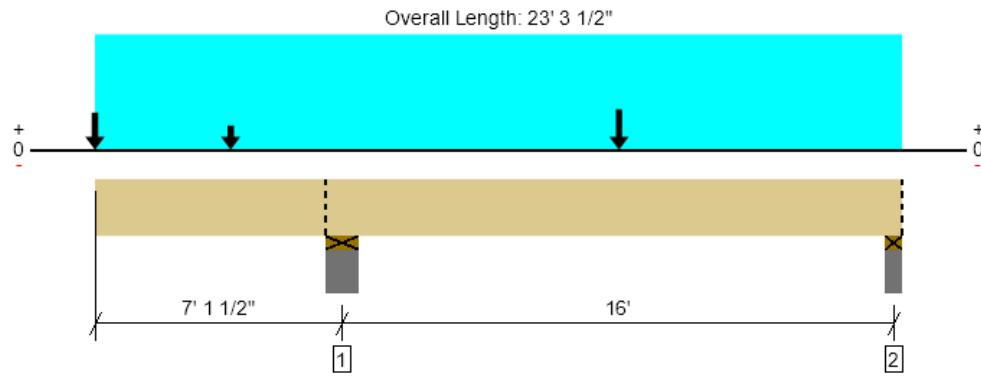
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ForteWEB v3.9, Engine: V8.4.3.94, Data: V8.1.7.3

File Name: Sitka

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Bridge, B8
1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5975 @ 7' 1 1/2"	11900 (8.00")	Passed (50%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	3024 @ 5' 3 1/2"	14007	Passed (22%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	-17473 @ 7' 1 1/2"	50215	Passed (35%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.335 @ 0	0.356	Passed (2L/510)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.397 @ 0	0.712	Passed (2L/430)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)

Member Length : 23' 3 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 448 lbs uplift at support located at 23' 1". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Plate on concrete - SPF	8.00"	8.00"	4.02"	1336	3374	2811	5975	Blocking
2 - Plate on concrete - SPF	4.00"	4.00"	1.50"	180	954/-628	534/-126	1296/-448	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	23' 4" o/c	
Bottom Edge (Lu)	23' 4" o/c	

• Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 23' 3 1/2"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 23' 3 1/2" (Front)	8"	15.0	60.0	50.0	Default Load
2 - Point (lb)	0 (Front)	N/A	82	103	86	Linked from: B4, Support 3
3 - Point (lb)	3' 11" (Front)	N/A	139	462	385	Linked from: B6, Support 1
4 - Point (lb)	15' 1 1/2" (Front)	N/A	336	1250	1042	Linked from: B7, Support 1
5 - Point (lb)	0 (Front)	N/A	268	953	794	Linked from: B5, Support 1

• Side loads are assumed to not induce cross-grain tension.

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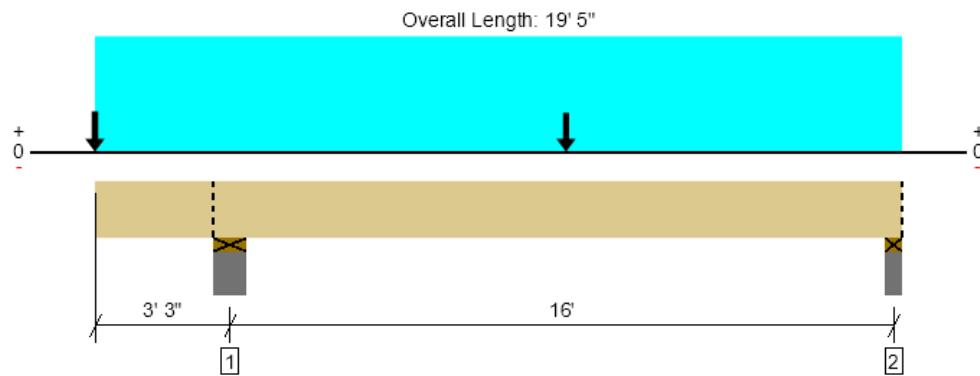
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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File Name: Sitka
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Bridge, B9
1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4666 @ 3' 3"	11900 (8.00")	Passed (39%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2313 @ 1' 5"	14007	Passed (17%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	9717 @ 11' 4"	50215	Passed (19%)	1.15	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Live Load Defl. (in)	0.055 @ 0	0.200	Passed (2L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.057 @ 0	0.325	Passed (2L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)

Member Length : 19' 5"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Plate on concrete - SPF	8.00"	8.00"	3.14"	1037	2640	2200	4666	Blocking
2 - Plate on concrete - SPF	4.00"	4.00"	1.50"	322	981/-274	703	1585	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	19' 5" o/c	
Bottom Edge (Lu)	19' 5" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 19' 5"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 19' 5" (Front)	8"	15.0	60.0	50.0	Default Load
2 - Point (lb)	0 (Front)	N/A	82	103	86	Linked from: B4, Support 3
3 - Point (lb)	0 (Front)	N/A	117	362	302	Linked from: B6, Support 2
4 - Point (lb)	0 (Front)	N/A	234	815	679	Linked from: B5, Support 2
5 - Point (lb)	11' 4" (Front)	N/A	349	1290	1075	Linked from: B7, Support 2

- Side loads are assumed to not induce cross-grain tension.

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ForteWEB Software Operator	Job Notes
Lexee Navarre Harriett Valentine Engineers (206) 697-1700 Inavarre@harriettvalentine.com	



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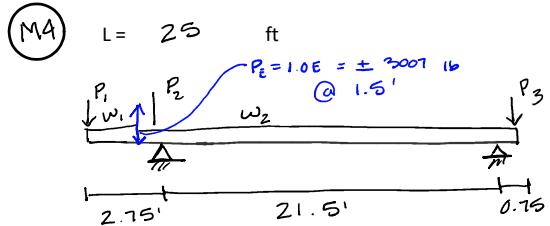
Overstrength Beams (Non-engineered wood)

LOAD COMBOS

$$\begin{aligned}
 1) (1.0 + 0.7(0.2S_{DS}))D + \Omega(0.7E) &= (1.10)D + 3(0.7E) \\
 2) (1.0 + 0.525(0.2S_{DS}))D + \Omega(0.7E) + 0.75(L+S) &= (1.07)D + 2.25(0.7E) + 0.75(L+S) \\
 3) (0.6 - 0.7(0.2S_{DS}))D + \Omega(0.7E) &= (0.50)D + 3(0.7E)
 \end{aligned}$$

$$\Omega = 3.0$$

$$S_{DS} = 0.712$$



W ₁	W ₂	P ₁	P ₂	P ₃
D = 13 psf	D = 15 psf	D = 91 lb	D = 1620 lb	D = 387 lb
L = 60 ft	L = 40 ft	L = 336 lb	L = _____ lb	L = _____ lb
TRIB = 1.33	TRIB = 1.33	S = _____ lb	S = 4741 lb	S = 1252 lb
		x = 0 ft	x = 2.25 ft	x = 25 ft

WORST LOAD COMBO: (1)

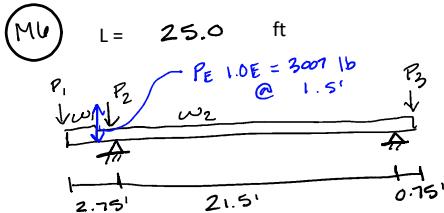
$$V = 10.93 \text{ k}$$

$$M = 12.40 \text{ k-ft}$$

USE: 6×14 ($C_D = 1.6$)

$$V_R = 17.74 \text{ k}$$

$$M_R = 14.84 \text{ k-ft}$$



W ₁	W ₂	P ₁	P ₂	P ₃
D = 13 psf	D = 15 psf	D = 154 lb	D = 4448 lb	D = 387 lb
L = 60 psf	L = 40 psf	L = 599 lb	L = _____ lb	L = _____ lb
TRIB = 1.33 ft	TRIB = 1.33 ft	S = _____ lb	S = 11034 lb	S = 1252 lb
		x = 0 ft	x = 2.25 ft	x = 25 ft

WORST LOAD COMBO: (2)

$$V = 20.6 \text{ k}$$

$$M = 16.76 \text{ k-ft}$$

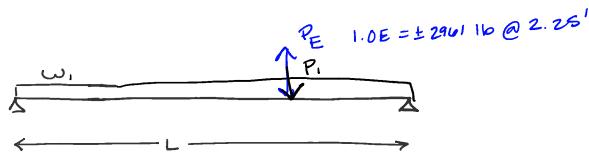
USE: 8×14 ($C_D = 1.6$)

$$V_R = 29.2 \text{ k}$$

$$M_R = 23.2 \text{ k-ft}$$

M14B

$$L = 27.75 \text{ ft}$$



W₁

$$D = 13$$

$$L = 60$$

$$\text{TRIB} = 1.33$$

psf

psf

ft

W₂

$$D = \cancel{X}$$

$$L = \cancel{X}$$

$$\text{TRIB} = \cancel{X}$$

psf

psf

ft

P₁

$$D = 13269$$

$$L = \cancel{X}$$

$$S = 3334$$

lb

lb

ft

P₂

$$D = \cancel{X}$$

$$L = \cancel{X}$$

$$S = \cancel{X}$$

lb

lb

ft

WORST LOAD COMBO: (2)

$$V = 8.8 \text{ k}$$

$$M = 4.35 \text{ k-ft}$$

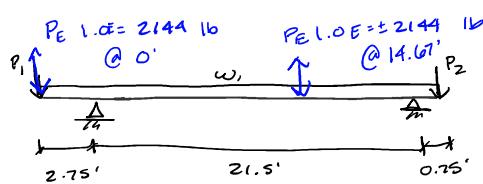
USE: W12x14 (CCD = 1.44)

$$V_R = 17.74 \text{ k}$$

$$M_R = 14.89 \text{ k-ft}$$

M15

$$L = 25.0 \text{ ft}$$



W₁

$$D = 15$$

$$L = 10$$

$$\text{TRIB} = 1.33$$

psf

psf

ft

W₂

$$D = \cancel{X}$$

$$L = \cancel{X}$$

$$\text{TRIB} = \cancel{X}$$

psf

psf

ft

P₁

$$D = 1024$$

$$L = 808$$

$$S = 1833$$

lb

lb

ft

P₂

$$D = 1785$$

$$L = \cancel{X}$$

$$S = 4973$$

lb

lb

ft

WORST LOAD COMBO: (1)

$$V = 7.61 \text{ k}$$

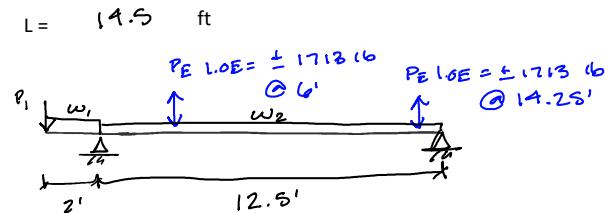
$$M = 42.69 \text{ k-ft}$$

USE: W12x35

$$V_R = 75 \text{ k}$$

$$M_R = 54.4 \text{ k-ft}$$

M15



W₁

D = 13
L = 60
TRIB = 0.67

W₂

D = 15
L = 40
TRIB = 0.67

P₁

D = 111
L = 394
S = 0

P₂

lb
lb
ft

WORST LOAD COMBO:

1

V = 3.50 k

M = 13.39 k-ft

USE: 6×14 ($C_D = 1.6$)

V_R = 17.74 k

M_R = 14.84 k-ft

WOOD COLUMN

4x OR 6x

Species: DF #2

Size: 4x

$F_c^* = 1300 \text{ psi}$ $F_{c\perp} = 405 \text{ psi}$ << sill plate is

$E = 1.60E+06 \text{ psi}$ Hem-Fir

$c' = 0.8$

$d = 3.5 \text{ in}$

$K_c E = 0.3$

				4x4	4x6
le (ft)	le (in)	$F_c E$ (psi)	F'_c (psi)	Pa (lb)	Pa (lb)

Pa (perp)				4961	7796
-----------	--	--	--	------	------

8.00	96.00	638	555	6802	10688	<< crushing governs
8.50	102.00	565	502	6150	9664	up to a height of
9.00	108.00	504	455	5575	8760	9'-7" w/ Hem-Fir
9.50	114.00	452	414	5069	7966	(7'-5" if Doug-Fir)
10.00	120.00	408	377	4624	7266	
10.50	126.00	370	345	4231	6649	
11.00	132.00	337	317	3883	6103	
11.50	138.00	309	292	3575	5618	
12.00	144.00	284	269	3301	5187	

Species: DF #1

Size: 6x

$F_c^* = 925 \text{ psi}$ $F_{c\perp} = 405 \text{ psi}$ << sill plate is

$E = 1.60E+06 \text{ psi}$ Hem-Fir

$c' = 0.8$

$d = 5.5 \text{ in}$

$K_c E = 0.3$

				6x6	4x6
le (ft)	le (in)	$F_c E$ (psi)	F'_c (psi)	Pa (lb)	Pa (lb)

Pa (perp)				12251	7796
-----------	--	--	--	-------	------

8.00	96.00	1576	775	23443	14918	<< crushing governs
8.50	102.00	1396	750	22701	14446	up to a height of
9.00	108.00	1245	724	21897	13934	14'-8" w/ Hem-Fir
9.50	114.00	1117	696	21041	13389	(10'-8" if Doug-Fir)
10.00	120.00	1008	666	20145	12819	
10.50	126.00	915	636	19225	12234	
11.00	132.00	833	605	18296	11643	
11.50	138.00	762	574	17373	11056	
12.00	144.00	700	544	16470	10481	

WOOD COLUMN

MULTI-STUD

Species: HF stand.

Size: 2x4

$F_c^* = 1300 \text{ psi}$ $F_{c\perp} = 405 \text{ psi}$ << sill plate is
 $E = 1.20E+06 \text{ psi}$ Hem-Fir

$c' = 0.8$

$d = 3.5 \text{ in}$

$K_c E = 0.3$

le (ft)	le (in)	$F_c E$ (psi)	F'_c (psi)	(2)2x4 Pa (lb)	(3)2x4 Pa (lb)	(4)2x4 Pa (lb)	(5)2x4 Pa (lb)
--------------	--------------	------------------	-----------------	----------------------	----------------------	----------------------	----------------------

Pa (perp) 4253 6379 8505 10631

8.00	96.00	479	435	4566	6848	9131	11414	<< crushing governs
8.50	102.00	424	390	4099	6148	8198	10247	up to a height of
9.00	108.00	378	352	3696	5543	7391	9239	8'-4" w/ Hem-Fir
9.50	114.00	339	319	3346	5019	6691	8364	(6'-5" if Doug-Fir)
10.00	120.00	306	290	3041	4562	6083	7603	
10.50	126.00	278	264	2775	4163	5550	6938	
11.00	132.00	253	242	2541	3812	5083	6353	
11.50	138.00	232	222	2335	3503	4670	5838	
12.00	144.00	213	205	2152	3229	4305	5381	

Species: HF stud

Size: 2x6

$F_c^* = 800 \text{ psi}$ $F_{c\perp} = 405 \text{ psi}$ << sill plate is
 $E = 1.20E+06 \text{ psi}$ Hem-Fir

$c' = 0.8$

$d = 5.5 \text{ in}$

$K_c E = 0.3$

le (ft)	le (in)	$F_c E$ (psi)	F'_c (psi)	(2)2x6 Pa (lb)	(3)2x6 Pa (lb)	(4)2x6 Pa (lb)	(5)2x6 Pa (lb)
--------------	--------------	------------------	-----------------	----------------------	----------------------	----------------------	----------------------

Pa (perp) 6683 10024 13365 16706

8.00	96.00	1182	645	10642	15963	21284	26605	<< crushing governs
8.50	102.00	1047	620	10229	15343	20457	25572	up to a height of
9.00	108.00	934	593	9788	14683	19577	24471	12'-5" w/ Hem-Fir
9.50	114.00	838	565	9329	13994	18658	23323	(8'-5" if Doug-Fir)
10.00	120.00	756	537	8860	13290	17720	22151	
10.50	126.00	686	509	8390	12586	16781	20976	
11.00	132.00	625	480	7928	11892	15856	19820	
11.50	138.00	572	453	7479	11219	14959	18699	
12.00	144.00	525	427	7049	10574	14099	17624	

STEEL SECTION COMPRESSION

Section: **HSS5x3x1/4**

Type: **HSS**
fy = **50** ksi
Lc = **10.75** ft
129 in

A **3.37** in²

Axial Capacity:

Flange Slenderness Check: **OK** Web Slenderness Check: **OK**

	Slender Limit			Slender Limit	
b/t	<	$1.4\sqrt{E/F_y}$	b/t	<	$1.4\sqrt{E/F_y}$
9.9	<	33.7	9.9	<	33.7

Weak Axis Buckling Mode: Inelastic Buckling Controls

Lc/r **4.71** $\sqrt{E/F_y}$
108.4 < 113.4

F_{cr} = **21.2** ksi
P_n = **71.4** k
Ω = **1.67**

P_n/Ω = **42.73** k

STEEL SECTION COMPRESSION

Section: HSS4x4x1/8

Type: **HSS**
fy = **50** ksi
Lc = **10.75** ft
129 in

A **1.77** in²

Axial Capacity:

Flange Slenderness Check: **OK** Web Slenderness Check: **OK**

	Slender Limit		Slender Limit
b/t	$1.4\sqrt{E/F_y}$	b/t	$1.4\sqrt{E/F_y}$
31.5	< 33.7	31.5	< 33.7

Weak Axis Buckling Mode: Inelastic Buckling Controls

Lc/r	$4.71\sqrt{E/F_y}$
81.6	< 113.4

F_{cr} = **30.7** ksi
P_n = **54.4** k
Ω = **1.67**

P_n/Ω = **32.55** k

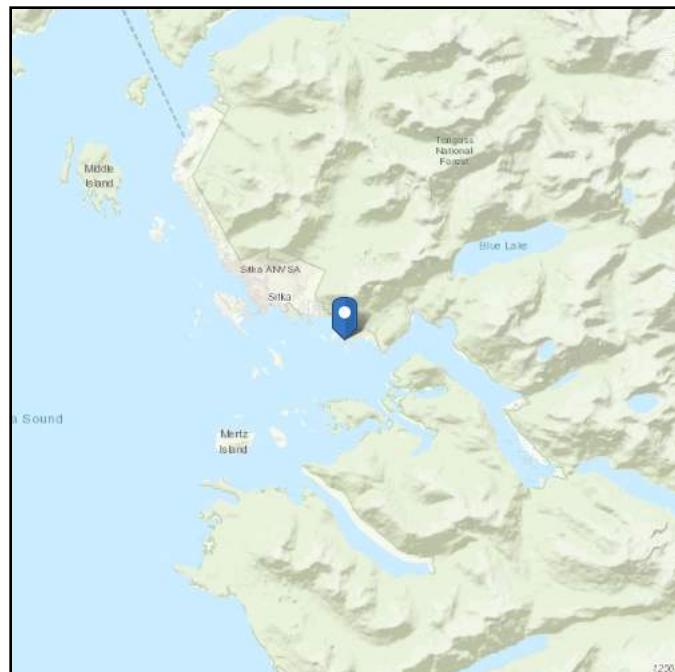
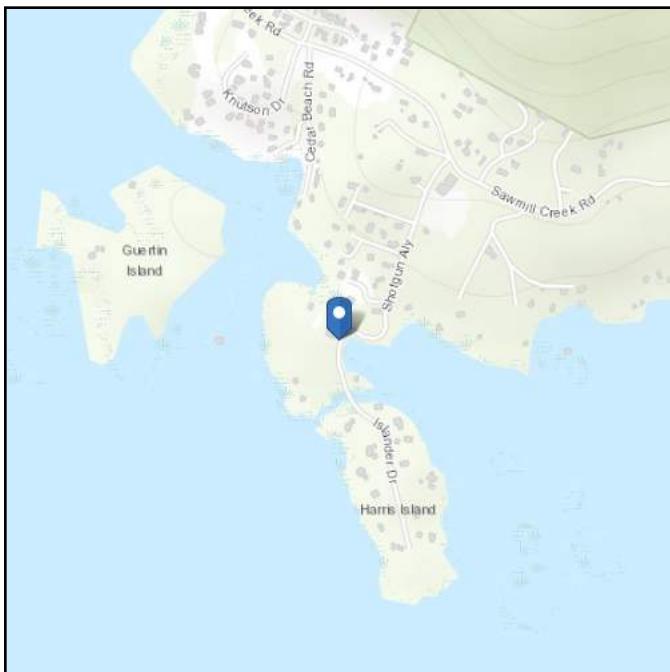
SECTION 3: LATERAL

ASCE Hazards Report

Address:
216 Shotgun Aly
Sitka, Alaska
99835

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see
Section 11.4.3)

Latitude: 57.037549
Longitude: -135.279361
Elevation: 35.17060567598428 ft
(NAVD 88)





Seismic

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

Results:

S _s :	0.89	S _{D1} :	N/A
S ₁ :	0.615	T _L :	12
F _a :	1.2	PGA :	0.305
F _v :	N/A	PGA _M :	0.395
S _{MS} :	1.069	F _{PGA} :	1.295
S _{M1} :	N/A	I _e :	1
S _{Ds} :	0.712	C _v :	1.245

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

Data Accessed: Thu Jul 24 2025

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

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SEISMIC DESIGN

ASCE 7-16

Equivalent Lateral Force Procedure

RISK Category	II	Table 1.5-1
Seismic Design Category	D	Table 11.6-1
Importance Factor	1.00	Table 1.5-2
Site Class	D	Table 20.3-1 per Geotech or DEFAULT
Ss	89.00 %g	(from ATC Hazard website tool)
S1	61.50 %g	(from ATC Hazard website tool)
Fa	1.20	Table 11.4-1 USE Fa=1.2 for DEFAULT Site Class D
Fv	1.70	Table 11.4-2
Ct	0.02	Table 12.8-2
x	0.75	Table 12.8-2
hn	21.67 feet	(height to highest level)
SMS = Fa*Ss	1.068	Eq. 11.4-1
SM1 = Fv*S1	1.046	Eq. 11.4-2
SDS = (2/3)*SMS	0.712 g	Eq. 11.4-3
SD1 = (2/3)*SM1	0.697 g	Eq. 11.4-4
Period Ta = Ct*hn^x	0.201 s	Eq. 12.8-7
To	0.196 s	per section 11.4.6
Ts	0.979 s	per section 11.4.6
Sa	0.712 g	per section 11.4.6
R	6.5	Table 12.2-1
Ωo	3	Table 12.2-1
Cd	4	Table 12.2-1
Section 12.8 (ELF) ok?	Yes	Table 12.6-1

Equivalent Lateral Force Procedure (section 12.8)

Cs	0.1095	Eq. 12.8-2
W, weight	90,636 lb	per table below
QE	9,928 lb	Eq. 12.8-1

Vertical Force Distribution (section 12.8.3)

k = 1.00

Level	Hx	Floor Area	Seismic Dead Ld	Floor Wt.	Wall Length	Wall Wt.	Total Wt.	WxHx	Cvx	(LRFD) Q _E	(ASD) 0.7Q _E
	(ft)	(ft ²)	(psf)	(k)	(ft)	(k)	(k)			(k)	(k)
roof	19.33	2666	15	40.0	0	0.0	40.0	773.0	62.9	6.25	4.372
floor	9.00	2050	15	30.8	214	19.9	50.6	455.8	37.1	3.68	2.578

90.64 1228.82 100.00 9.93 **6.95**

N-S Elevation



Exposure

= D

Hill Type

= escarpment

L_h = distance upwind of crest to where the difference in ground elevation is half the height of hill or escarpment

= 625 ft

H = height of hill or escarpment relevant to the upwind terrain

= 20 ft

x = distance from crest to the site of the building

= 750 ft

z = height above ground surface at the site of the building

= 22 ft

μ = horizontal attenuation factor

= 1.5

y = vertical attenuation factor

= 3

K₁ = from Figure 26.8-1

= 0.0304

K₂ = $(1 - |x|/(\mu \cdot L_h))$

= 0.2

K₃ = $e^{(-y^*z/L_h)}$

= 0.899784

K_{zt} = $(1 + K_1 \cdot K_2 \cdot K_3)^2$

= 1.010971

E-W Elevation



Exposure

= D

Hill Type

= ridge

L_h = distance upwind of crest to where the difference in ground elevation is half the height of hill or escarpment

= 250 ft

H = height of hill or escarpment relevant to the upwind terrain

= 6 ft

x = distance from crest to the site of the building

= 250 ft

z = height above ground surface at the site of the building

= 22 ft

μ = horizontal attenuation factor

= 1.5

y = vertical attenuation factor

= 3

K₁ = from Figure 26.8-1

= 0.0372

K₂ = $(1 - |x|/(\mu \cdot L_h))$

= 0.333333

K₃ = $e^{(-y \cdot z / L_h)}$

= 0.767974

K_{zt} = $(1 + K_1 \cdot K_2 \cdot K_3)^2$

= 1.019136

WIND DESIGN

ASCE 7-16

Simplified Envelope Method (Chapter 28)

$$ps = \lambda Kzt I ps_{30}$$

$$\lambda = \text{adjustment factor} = 1.55$$

$$I = \text{importance factor} = 1.00$$

$$Kzt = \text{topographic factor} = 1.02$$

Part of Figure 28.6-1 - Adjustment Factor for Building Height and Exposure, λ

Mean Roof Height (ft)	Exposure		
	B	C	D
15	1.00	1.21	1.47
16	1.00	1.23	1.49
17	1.00	1.24	1.50
18	1.00	1.26	1.52
19	1.00	1.27	1.53
20	1.00	1.29	1.55
21	1.00	1.30	1.56
22	1.00	1.31	1.57
23	1.00	1.33	1.59
24	1.00	1.34	1.60
25	1.00	1.35	1.61
26	1.00	1.36	1.62
27	1.00	1.37	1.63
28	1.00	1.38	1.64
29	1.00	1.39	1.65
30	1.00	1.40	1.66

Part of Figure 28.6-1 - Method 2

Design Wind Pressure, ps₃₀

Basic Speed	Roof Angle	Roof Pitch	Horizontal Pressures (psf)			
			A	B	C	D
150	0 to 5	flat	35.7	-18.5	23.7	-11.0
	10	2	40.2	-16.7	26.8	-9.7
	15	3	44.8	-14.9	29.8	-8.5
	20	4	49.4	-13.0	32.9	-7.2
	25	6	44.8	7.2	32.4	7.4
	30 to 45	7 to 12	40.1	27.4	31.9	22.0

Design Wind Pressure, ps

Basic Speed	Roof Angle	Roof Pitch	Horizontal Pressures (psf)			
			A	B	C	D
150	0 to 5	flat	56.4	-29.2	37.4	-17.4
	10	2	63.5	-26.4	42.3	-15.3
	15	3	70.8	-23.5	47.1	-13.4
	20	4	78.0	-20.5	52.0	-11.4
	25	6	70.8	11.4	51.2	11.7
	30 to 45	7 to 12	63.3	43.3	50.4	34.8

$$\begin{aligned} \text{roof h} &= 4.67 \text{ ft} \\ \text{main wall h} &= 8.00 \text{ ft} \end{aligned}$$

Horizontal Pressures E-W (plf)

Ext.	Int.	Level
79	52	roof
214	142	main

<<<

Horizontal Pressures N-S (plf)

Ext.	Int.	Level
-41	-24	roof
214	142	main

SHEAR WALL DESIGN

SITKA

SEISMIC

Wall Weight (EXT.)	9	psf	$\rho q =$	1.30
Wall Weight (INT.)	8	psf	$\rho w =$	1.0
Floor Weight	15	psf		
Roof Weight	15	psf		

UNDER ROOF

v_a' = allowable shear values multiplied by 1.25-0.125 h / L
for wall aspect ratios greater than 2:1

EAST WEST <u>WALL</u>	F.Q. (lb)	Applied Loads		Capacity	C (lb)	POST	Capacity																		
		DL (lb)	LL (lb)																						
WA1	235	8.00	7.25	1.10	0	306	306	241.0	2449	338	0	338	776	0	2771	-267	none	n/a	3369	(2)2x6	5144				
WA2	227	8.00	7.00	1.14	0	296	42	SW1	241.0	2365	338	0	338	686	0	1783	-208	none	n/a	2529	(2)2x6	5144			
WA3	187	8.00	5.75	1.39	0	243	42	SW1	241.0	1942	338	0	338	0	0	1622	0	0	4563	227	CS20	1030	545	(2)2x6	5144
WA4	347	8.00	10.67	0.75	0	451	42	SW1	241.0	3605	338	0	338	686	0	1783	-279	none	n/a	2661	(2)2x6	5144			
WA5	211	8.00	6.50	1.23	0	274	42	SW1	241.0	2196	338	0	338	686	0	1783	-199	none	n/a	2511	(2)2x6	5144			
WA6	300	8.00	9.25	0.86	0	391	42	SW1	241.0	3125	338	0	338	686	0	1783	-251	none	n/a	2610	(2)2x6	5144			
WA7	127	8.00	3.92	2.04	0	165	42	SW1	239.7	1323	338	0	338	663	0	1719	-135	none	n/a	2347	(2)2x6	5144			
WA8	130	8.00	4.00	2.00	0	169	42	SW1	241.0	1351	338	0	338	654	0	1590	-131	none	n/a	2244	(2)2x6	5144			
WB1	2550	9.25	7.00	1.32	0	3315	474	SW4	595.0	30664	4381	0	4381	0	0	0	4225	HDU5	4340	4672	(3)2x6	10024			
WC1	503	11.00	3.42	3.22	0	654	191	SW1	204.3	7192	2105	0	2105	0	0	0	2015	CS14	2490	2274	(2)2x6	2904			
WC2	761	10.83	5.17	2.10	0	989	191	SW1	238.1	10711	2073	0	2073	1369	0	3334	1117	CS16	1705	5676	(3)2x6	9119			
WC3	515	11.08	3.50	3.17	0	670	191	SW1	205.9	7424	2121	0	2121	51	0	42	0	2028	HDU2	2215	2296	(2)2x6	2864		
WC4	540	11.08	3.67	3.02	0	702	191	SW1	210.3	7784	2121	0	2121	51	42	0	1993	CS14	2490	2355	(2)2x6	2864			
										2121	0	2121	0	0	0	2023	CS14	2490	2304	(2)2x6	2864				

NORTH WALL	F_Q (lb)	APPLIED LOADS										C (lb)	Capacity									
		b (ft)	L (ft)	h/l	V (abv)	V (total)	v (plf)	SW	Capacity	M ot (lbf)	OT (lb)	OT (abv)	OT (total)	DL (lb)	LL (lb)	SL (lb)	I (lb)	HD				
W1A	982	8.33	4.00	2.08	0	1276	319	SW2	349.4	10629	2657	0	2657	465	0	1511	2298	HDU4	3285	3741	(2)2x6	4801
W1B	982	9.25	4.00	2.31	0	1276	319	SW2	339.2	11803	2951	0	2951	0	0	0	2862	HDU4	3285	3117	(2)2x6	3993
W2A	3137	10.33	14.92	0.69	0	4078	273	SW2	353.0	42127	2824	0	2824	0	0	0	2454	HDU4	3285	3518	(3)2x6	9813
W3A	784	10.00	8.50	1.18	0	1019	120	SW1	241.0	10193	1199	0	1199	0	0	0	995	CS20	1030	1582	(2)2x6	3466
W3B	738	8.67	8.00	1.08	0	959	120	SW1	241.0	8317	1040	0	1040	0	0	0	873	HDU2	2215	1352	(2)2x6	4479
										1040	0	1040	731	0	1780	435	HDU2	2215	3158	(2)2x6	4479	

SHEAR WALL DESIGN

SITKA

WIND

Wall Weight (EXT.)	9	psf	$\rho q =$	1.30
Wall Weight (INT.)	8	psf	$\rho w =$	1.0
Floor Weight	15	psf		
Roof Weight	15	psf		

UNDER ROOF

v_a' = allowable shear values multiplied by 1.25-0.125 h / L
for wall aspect ratios greater than 2:1

EAST WEST <u>WALL</u>	APPLIED LOADS		Capacity	C (lb)	POST	Capacity																
	F W (lb)	h (ft)	L (ft)	h/l	V (abv)	V (total)	v (plf)	SW	Capacity	M _{ot} (lbft)	OT (lb)	OT (abv)	OT (total)	DL (lb)	LL (lb)	SL (lb)	I (lb)	HD				
WA1	176	8.00	7.25	1.10	0	176	24	SW1	337.0	1407	194 194	0 0	194 194	776 686	0 0	2771 1783	-411 -357	none none	n/a n/a	3261 2430	(2)2x6 (2)2x6	5144 5144
WA2	170	8.00	7.00	1.14	0	170	24	SW1	337.0	1358	194 194	0 0	194 194	686 738	0 0	1783 1973	-352 -383	none none	n/a n/a	2421 2615	(2)2x6 (2)2x6	5144 5144
WA3	139	8.00	5.75	1.39	0	139	24	SW1	337.0	1116	194 194	0 0	194 194	0 1622	0 0	0 4563	84 -890	CS20 none	1030 n/a	401 5397	(2)2x6 (3)2x6	5144 10024
WA4	259	8.00	10.67	0.75	0	259	24	SW1	337.0	2071	194 194	0 0	194 194	686 686	0 0	1783 1783	-422 -422	none none	n/a n/a	2553 2553	(2)2x6 (2)2x6	5144 5144
WA5	158	8.00	6.50	1.23	0	158	24	SW1	337.0	1261	194 194	0 0	194 194	686 686	0 0	1783 1783	-342 -342	none none	n/a n/a	2403 2403	(2)2x6 (2)2x6	5144 5144
WA6	224	8.00	9.25	0.86	0	224	24	SW1	337.0	1795	194 194	0 0	194 194	686 830	0 0	1783 1765	-395 -482	none none	n/a n/a	2502 2632	(2)2x6 (2)2x6	5144 5144
WA7	95	8.00	3.92	2.04	0	95	24	SW1	335.2	760	194 194	0 0	194 194	663 673	0 0	1719 1753	-279 -285	none none	n/a n/a	2239 2274	(2)2x6 (2)2x6	5144 5144
WA8	97	8.00	4.00	2.00	0	97	24	SW1	337.0	776	194 194	0 0	194 194	654 731	0 0	1590 1780	-275 -321	none none	n/a n/a	2136 2356	(2)2x6 (2)2x6	5144 5144
WB1	2324	9.25	7.00	1.32	0	2324	332	SW1	337.0	21497	3071 3071	0 0	3071 3071	0 -17	0 0	0 -437	2916 2926	H DU4 H DU4	3285 3285	3362 3345	(2)2x6 (2)2x6	3993 3993
WC1	399	11.00	3.42	3.22	0	399	117	SW1	285.6	4385	1283 1283	0 0	1283 1283	0 0	0 0	0 0	1193 1193	CS16 CS16	1705 1705	1453 1453	(2)2x6 (2)2x6	2904 2904
WC2	603	10.83	5.17	2.10	0	603	117	SW1	332.9	6530	1264 1264	0 0	1264 1264	1369 1658	0 0	3334 5150	308 135	CS20 CS20	1030 1030	5069 6720	(3)2x6 (3)2x6	9119 9119
WC3	408	11.08	3.50	3.17	0	408	117	SW1	287.9	4526	1293 1293	0 0	1293 1293	0 51	0 42	0 0	1200 1169	H DU2 CS16	2215 1705	1468 1519	(2)2x6 (2)2x6	2864 2864
WC4	428	11.08	3.67	3.02	0	428	117	SW1	294.0	4746	1293 1293	0 0	1293 1293	51 0	42 0	0 0	1165 1196	CS16 CS16	1705 1705	1527 1476	(2)2x6 (2)2x6	2864 2864

NORTH SOUTH												APPLIED LOADS											
<u>WALL</u>	<u>F_W</u> (lb)	<u>b</u> (ft)	<u>L</u> (ft)	<u>h/l</u>	<u>V</u> (abv)	<u>V</u> (total)	<u>v</u> (plf)	<u>SW</u>	<u>Capacity</u>	<u>M_ot</u> (lbft)	<u>OT</u> (lb)	<u>OT</u> (abv)	<u>OT</u> (total)	<u>DL</u> (lb)	<u>LL</u> (lb)	<u>SL</u> (lb)	<u>I</u> (lb)	<u>HD</u>	<u>Capacity</u>	<u>C</u> (lb)	<u>POST</u>	<u>Capacity</u>	
W1A	1552	8.33	4.00	2.08	0	1552	388	SW2	488.9	12924	3231	0	3231	465	0	1511	2872	HDU4	3285	4171	(2)2x6	4801	
										3231	0	3231	0	0	0	0	3151	HDU4	3285	3381	(2)2x6	4801	
W1B	1552	9.25	4.00	2.31	0	1552	388	SW2	474.7	14351	3588	0	3588	0	0	0	3499	HDU5	4340	3754	(2)2x6	3993	
										3588	0	3588	776	0	2771	3033	HDU4	3285	5712	(3)2x6	10024		
W2A	4809	10.33	14.92	0.69	0	4809	322	SW1	337.0	49677	3330	0	3330	0	0	0	2960	HDU4	3285	4024	(3)2x6	9813	
										3330	0	3330	0	0	0	0	2960	HDU4	3285	4024	(3)2x6	9813	
W3A	1244	10.00	8.50	1.18	0	1244	146	SW1	337.0	12441	1464	0	1464	0	0	0	1260	CS16	1705	1846	(2)2x6	3466	
										1464	0	1464	0	0	0	0	1260	CS16	1705	1846	(2)2x6	3466	
W3B	1171	8.67	8.00	1.08	0	1171	146	SW1	337.0	10152	1269	0	1269	0	0	0	1103	HDU2	2215	1581	(2)2x6	4479	
										1269	0	1269	731	0	1780	664	HDU2	2215	3330	(2)2x6	4479		

SITKA

f_c (psi): 4000
 E (psi): 3604997

EAST-WEST SHEARWALLS

LINE A	h (ft)	h (in)	l (ft)	l (in)	t (in)	I (in^4)	K (stiffness)	Stiffness Dist.	SEISMIC (lb)	WIND (lb)
									1256	1603
CA1	7.5	90	19.25	231	8	8217594	1.22E+08	0.941	1182	1509
CA2	10.25	123	9	108	8	839808	4.88E+06	0.038	47	60
CA3	9	108	6.5	78	8	316368	2.72E+06	0.021	26	34
							1.30E+08			
LINE B	h (ft)	h (in)	l (ft)	l (in)	t (in)	I (in^4)	K (stiffness)	Stiffness Dist.	SEISMIC (lb)	WIND (lb)
									2670	2643
CB1	4	48	11.5	138	8	1752048	1.71E+08	0.972	2596	2570
CB2	10.25	123	9	108	8	839808	4.88E+06	0.028	74	73
							1.76E+08			
LINE C	h (ft)	h (in)	l (ft)	l (in)	t (in)	I (in^4)	K (stiffness)	Stiffness Dist.	SEISMIC (lb)	WIND (lb)
									2053	2392
CC1	9.83	118	6.5	78	8	316368	2.08E+06	0.043	88	103
CC2	9.50	114	6.5	78	8	316368	2.31E+06	0.048	98	114
CC3	6.83	82	12.5	150	8	2250000	4.41E+07	0.909	1867	2175
							4.85E+07			

NORTH-SOUTH SHEARWALLS

LINE 1	h (ft)	h (in)	l (ft)	l (in)	t (in)	I (in^4)	K (stiffness)	Stiffness Dist.	SEISMIC (lb)	WIND (lb)
									413	2052
C1A	4	48	10.5	126	8	1333584	1.30E+08	1.000	413	2052
LINE 2	h (ft)	h (in)	l (ft)	l (in)	t (in)	I (in^4)	K (stiffness)	Stiffness Dist.	SEISMIC (lb)	WIND (lb)
									1739	5750
C2A	4	48	10.5	126	8	1333584	1.30E+08	1.000	1739	5750
LINE 3	h (ft)	h (in)	l (ft)	l (in)	t (in)	I (in^4)	K (stiffness)	Stiffness Dist.	SEISMIC (lb)	WIND (lb)
									1649	5423
C3A	10.25	123	6.17	74	8	270149.3	1.57E+06	1.000	1649	5423
LINE 4	h (ft)	h (in)	l (ft)	l (in)	t (in)	I (in^4)	K (stiffness)	Stiffness Dist.	SEISMIC (lb)	WIND (lb)
									1189	3905
C4A	10.25	123	10.5	126	8	1333584	7.75E+06	1.000	1189	3905
LINE 5	h (ft)	h (in)	l (ft)	l (in)	t (in)	I (in^4)	K (stiffness)	Stiffness Dist.	SEISMIC (lb)	WIND (lb)
									913	3718
C5A	6.83	82	4	48	8	73728	1.45E+06	0.052	48	195
C5B	6.83	82	10.5	126	8	1333584	2.62E+07	0.948	865	3524
							2.76E+07			

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

CA1

Rebar

Bar No. =	#4	Spacing =	13 in oc
Bar Area =	0.2		
# of Bars =	17		
A _{st} =	3.4 in ²		

Wall

b _w =	8 in		
h _w =	90 in	α =	0.001353
L _w =	231 in	q =	0.028
F _y =	60 ksi	c/l _w =	0.037
β =	0.85	A _{cv} =	1848 in ²
f'c =	4 ksi	h _w /l _w =	0.39
P _u =	10 k	α _c =	3
V _u =	1.51 k	λ =	1
M _u =	11.3 kft	ρ _t =	0.0025

Check Moment

M _n =	23797 kin	V _n =	351 k
φ =	0.9	φ =	0.75
φM _n =	1784.8 kft	φV _n =	263.2 k

Check Shear

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

CA2

Rebar

Bar No. =	#4	Spacing =	12 in oc
Bar Area =	0.2		
# of Bars =	10		
A _{st} =	2 in ²		

Wall

b _w =	8 in		
h _w =	82 in	α =	0.00252
L _w =	124 in	q =	0.030
F _y =	60 ksi	c/l _w =	0.042
β =	0.85	A _{cv} =	992 in ²
f'c =	4 ksi	h _w /l _w =	0.66
P _u =	10 k	α _c =	3
V _u =	0.06 k	λ =	1
M _u =	0.4 kft	ρ _t =	0.0025

Check Moment

M _n =	7723 kin
φ =	0.9
φM _n =	579.2 kft

Check Shear

V _n =	188 k
φ =	0.75
φV _n =	141.3 k

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

CA2

Rebar

Bar No. =	#4	Spacing =	13 in oc
Bar Area =	0.2		
# of Bars =	6		
A _{st} =	1.2 in ²		

Wall

b _w =	8 in		
h _w =	108 in	α =	0.004006
L _w =	78 in	q =	0.029
F _y =	60 ksi	c/l _w =	0.042
β =	0.85	A _{cv} =	624 in ²
f'c =	4 ksi	h _w /l _w =	1.38
P _u =	10 k	α _c =	3
V _u =	0.03 k	λ =	1
M _u =	0.3 kft	ρ _t =	0.0025

Check Moment

M _n =	3063 kin	V _n =	118 k
φ =	0.9	φ =	0.75
φM _n =	229.8 kft	φV _n =	88.9 k

Check Shear

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

CB1

Rebar

Bar No. =	#4	Spacing =	13 in oc
Bar Area =	0.2		
# of Bars =	10		
A _{st} =	2 in ²		

Wall

b _w =	8 in		
h _w =	48 in	α =	0.002264
L _w =	138 in	q =	0.027
F _y =	60 ksi	c/l _w =	0.038
β =	0.85	A _{cv} =	1104 in ²
f'c =	4 ksi	h _w /l _w =	0.35
P _u =	10 k	α _c =	3
V _u =	2.60 k	λ =	1
M _u =	10.4 kft	ρ _t =	0.0025

Check Moment

M _n =	8630 kin	V _n =	210 k
φ =	0.9	φ =	0.75
φM _n =	647.3 kft	φV _n =	157.2 k

Check Shear

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

CB2

Rebar

Bar No. =	#4	Spacing =	13 in oc
Bar Area =	0.2		
# of Bars =	8		
A _{st} =	1.6 in ²		

Wall

b _w =	8 in		
h _w =	124 in	α =	0.002894
L _w =	108 in	q =	0.028
F _y =	60 ksi	c/l _w =	0.039
β =	0.85	A _{cv} =	864 in ²
f'c =	4 ksi	h _w /l _w =	1.15
P _u =	10 k	α _c =	3
V _u =	0.07 k	λ =	1
M _u =	0.8 kft	ρ _t =	0.0025

Check Moment

M _n =	5498 kin
φ =	0.9
φM _n =	412.4 kft

Check Shear

V _n =	164 k
φ =	0.75
φV _n =	123.0 k

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

CC1

Rebar

Bar No. =	#4	Spacing =	13 in oc
Bar Area =	0.2		
# of Bars =	6		
A _{st} =	1.2 in ²		

Wall

b _w =	8 in		
h _w =	118 in	α =	0.004006
L _w =	78 in	q =	0.029
F _y =	60 ksi	c/l _w =	0.042
β =	0.85	A _{cv} =	624 in ²
f'c =	4 ksi	h _w /l _w =	1.51
P _u =	10 k	α _c =	2.974359
V _u =	0.10 k	λ =	1
M _u =	1.0 kft	ρ _t =	0.0025

Check Moment

M _n =	3063 kin	V _n =	117 k
φ =	0.9	φ =	0.75
φM _n =	229.8 kft	φV _n =	88.1 k

Check Shear

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

CC2

Rebar

Bar No. =	#4	Spacing =	13 in oc
Bar Area =	0.2		
# of Bars =	6		
A _{st} =	1.2 in ²		

Wall

b _w =	8 in		
h _w =	118 in	α =	0.004006
L _w =	78 in	q =	0.029
F _y =	60 ksi	c/l _w =	0.042
β =	0.85	A _{cv} =	624 in ²
f'c =	4 ksi	h _w /l _w =	1.51
P _u =	10 k	α _c =	2.974359
V _u =	0.11 k	λ =	1
M _u =	1.1 kft	ρ _t =	0.0025

Check Moment

M _n =	3063 kin
φ =	0.9
φM _n =	229.8 kft

Check Shear

V _n =	117 k
φ =	0.75
φV _n =	88.1 k

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

CC3

Rebar

Bar No. =	#4	Spacing =	12 in oc
Bar Area =	0.2		
# of Bars =	12		
A _{st} =	2.4 in ²		

Wall

b _w =	8 in		
h _w =	118 in	α =	0.002083
L _w =	150 in	q =	0.030
F _y =	60 ksi	c/l _w =	0.041
β =	0.85	A _{cv} =	1200 in ²
f'c =	4 ksi	h _w /l _w =	0.79
P _u =	10 k	α _c =	3
V _u =	2.18 k	λ =	1
M _u =	21.4 kft	ρ _t =	0.0025

Check Moment

M _n =	11076 kin	V _n =	228 k
φ =	0.9	φ =	0.75
φM _n =	830.7 kft	φV _n =	170.9 k

Check Shear

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

C1A

Rebar

Bar No. =	#4	Spacing =	12 in oc
Bar Area =	0.2		
# of Bars =	10		
A _{st} =	2 in ²		

Wall

b _w =	8 in		
h _w =	4 in	α =	0.00248
L _w =	126 in	q =	0.030
F _y =	60 ksi	c/l _w =	0.041
β =	0.85	A _{cv} =	1008 in ²
f'c =	4 ksi	h _w /l _w =	0.03
P _u =	10 k	α _c =	3
V _u =	2.05 k	λ =	1
M _u =	0.7 kft	ρ _t =	0.0025

Check Moment

M _n =	7852 kin
φ =	0.9
φM _n =	588.9 kft

Check Shear

V _n =	191 k
φ =	0.75
φV _n =	143.6 k

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

C2A

Rebar

Bar No. =	#4	Spacing =	12 in oc
Bar Area =	0.2		
# of Bars =	10		
A _{st} =	2 in ²		

Wall

b _w =	8 in		
h _w =	4 in	α =	0.00248
L _w =	126 in	q =	0.030
F _y =	60 ksi	c/l _w =	0.041
β =	0.85	A _{cv} =	1008 in ²
f'c =	4 ksi	h _w /l _w =	0.03
P _u =	10 k	α _c =	3
V _u =	5.75 k	λ =	1
M _u =	1.9 kft	ρ _t =	0.0025

Check Moment

M _n =	7852 kin	V _n =	191 k
φ =	0.9	φ =	0.75
φM _n =	588.9 kft	φV _n =	143.6 k

Check Shear

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

C3A

Rebar

Bar No. =	#4	Spacing =	12 in oc
Bar Area =	0.2		
# of Bars =	6		
A _{st} =	1.2 in ²		

Wall

b _w =	8 in		
h _w =	11 in	α =	0.004223
L _w =	74 in	q =	0.030
F _y =	60 ksi	c/l _w =	0.044
β =	0.85	A _{cv} =	592 in ²
f'c =	4 ksi	h _w /l _w =	0.15
P _u =	10 k	α _c =	3
V _u =	5.42 k	λ =	1
M _u =	5.0 kft	ρ _t =	0.0025

Check Moment

M _n =	2900 kin	V _n =	112 k
φ =	0.9	φ =	0.75
φM _n =	217.5 kft	φV _n =	84.3 k

Check Shear

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

C3A

Rebar

Bar No. =	#4	Spacing =	12 in oc
Bar Area =	0.2		
# of Bars =	10		
A _{st} =	2 in ²		

Wall

b _w =	8 in		
h _w =	102 in	α =	0.00248
L _w =	126 in	q =	0.030
F _y =	60 ksi	c/l _w =	0.041
β =	0.85	A _{cv} =	1008 in ²
f'c =	4 ksi	h _w /l _w =	0.81
P _u =	10 k	α _c =	3
V _u =	3.91 k	λ =	1
M _u =	33.2 kft	ρ _t =	0.0025

Check Moment

M _n =	7852 kin	V _n =	191 k
φ =	0.9	φ =	0.75
φM _n =	588.9 kft	φV _n =	143.6 k

Check Shear

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

C3A

Rebar

Bar No. =	#4	Spacing =	12 in oc
Bar Area =	0.2		
# of Bars =	4		
A _{st} =	0.8 in ²		

Wall

b _w =	8 in		
h _w =	82 in	α =	0.00651
L _w =	48 in	q =	0.031
F _y =	60 ksi	c/l _w =	0.048
β =	0.85	A _{cv} =	384 in ²
f'c =	4 ksi	h _w /l _w =	1.71
P _u =	10 k	α _c =	2.583333
V _u =	0.19 k	λ =	1
M _u =	1.3 kft	ρ _t =	0.0025

Check Moment

M _n =	1325 kin
φ =	0.9
φM _n =	99.4 kft

Check Shear

V _n =	63 k
φ =	0.75
φV _n =	47.1 k

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

CONCRETE SHEAR WALL DESIGN

ACI 318 Chapter 18

C3A

Rebar

Bar No. =	#4	Spacing =	12 in oc
Bar Area =	0.2		
# of Bars =	10		
A _{st} =	2 in ²		

Wall

b _w =	8 in		
h _w =	82 in	α =	0.00248
L _w =	126 in	q =	0.030
F _y =	60 ksi	c/l _w =	0.041
β =	0.85	A _{cv} =	1008 in ²
f'c =	4 ksi	h _w /l _w =	0.65
P _u =	10 k	α _c =	3
V _u =	3.52 k	λ =	1
M _u =	24.1 kft	ρ _t =	0.0025

Check Moment

M _n =	7852 kin	V _n =	191 k
φ =	0.9	φ =	0.75
φM _n =	588.9 kft	φV _n =	143.6 k

Check Shear

USE #4 @ 12" o.c.

No Boundary Element Checklist

h/L < 2.0	ACI 18.10.6.2	OK
M/S <= 0.2f'c	ACI 18.10.6.3	OK

Single Curtain Checklist

h/L < 2.0	ACI 18.10.2.2	OK
V _u <= 2A _c *sqrt(f'c)	ACI 18.10.2.2	OK

SECTION 4: FOUNDATION

SIMPSON**Strong-Tie**

Anchor Designer™ for Concrete Software

Version 3.3.2404.1

®

Company:	HVE	Date:	9/15/2025
Engineer:	LN	Page:	1/5
Project:	SITKA		
Address:			
Phone:			
E-mail:			

1. Project information

Project description:

Comment:

Location:

Fastening description:

2. Input Data & Anchor Parameters**General**

Design method: ACI 318-19

Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place

Material: F1554 Grade 36

Diameter (inch): 0.625

Effective Embedment depth, h_{ef} (inch): 6.000

Anchor category: -

Anchor ductility: Yes

 h_{min} (inch): 7.38 C_{min} (inch): 1.11 S_{min} (inch): 2.50**Base Material**

Concrete: Normal-weight

Concrete thickness, h (inch): 60.00

State: Cracked

Compressive strength, f_c (psi): 2500 $\Psi_{c,v}$: 1.0

Reinforcement condition: Supplementary reinforcement not present

Supplemental edge reinforcement: Not applicable

Reinforcement provided at corners: No

Ignore concrete breakout in tension: No

Ignore concrete breakout in shear: No

Ignore 6do requirement: Yes

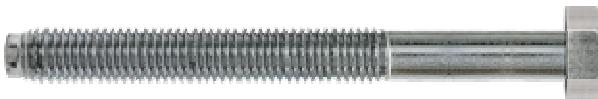
Build-up grout pad: No

Base Plate

Length x Width x Thickness (inch): 2.50 x 2.50 x 0.25

Recommended Anchor

Anchor Name: Heavy Hex Bolt - 5/8"Ø Heavy Hex Bolt, F1554 Gr. 36



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Project:	SITKA		
Address:			
Phone:			
E-mail:			

Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: Yes

Anchors subjected to sustained tension: Not applicable

Ductility section for tension: 17.10.5.2 not applicable

Ductility section for shear: 17.10.6.2 not applicable

 Ω_0 factor: not set

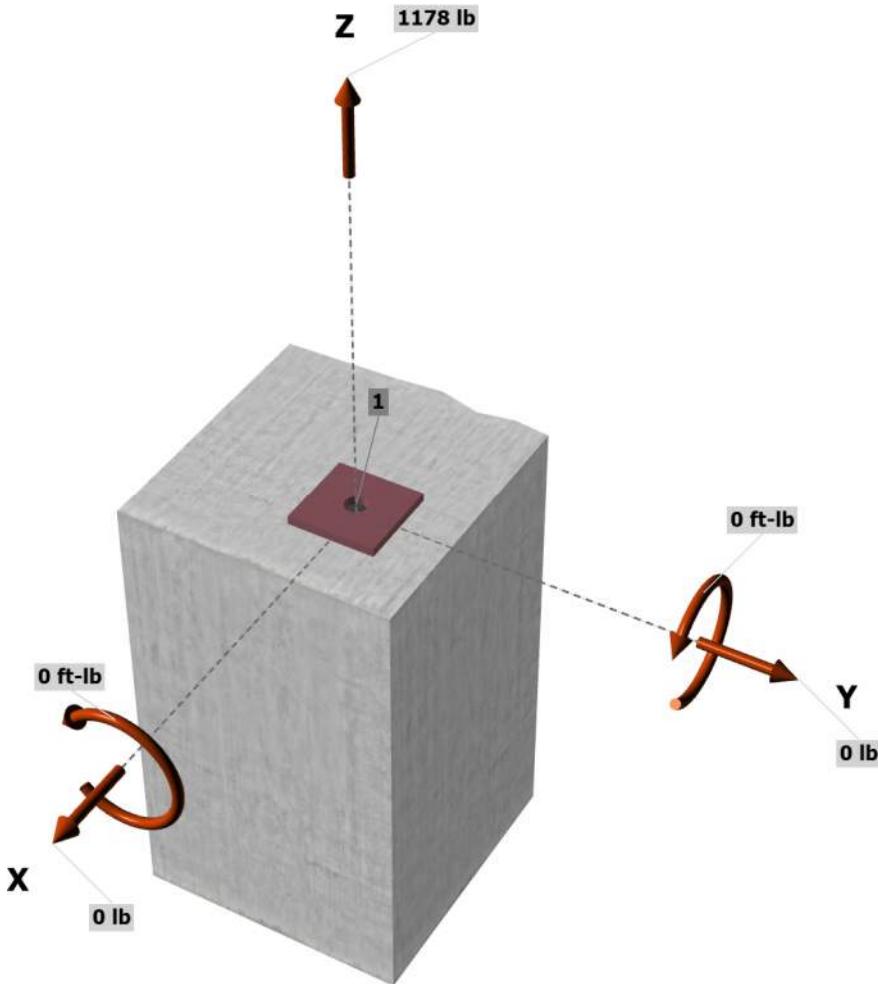
Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: Yes

Strength level loads:

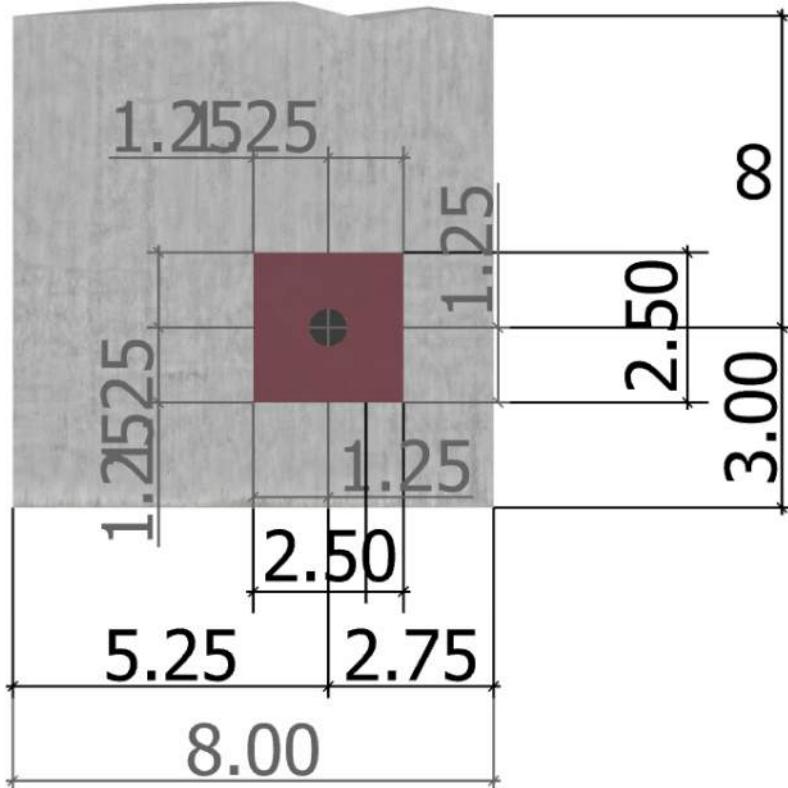
N_{ua} [lb]: 1178V_{uax} [lb]: 0V_{uay} [lb]: 0M_{ux} [ft-lb]: 0M_{uy} [ft-lb]: 0

<Figure 1>



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Address:			
Phone:			
E-mail:			

<Figure 2>

**3. Resulting Anchor Forces**

Anchor	Tension load, N_{ua} (lb)	Shear load x, V_{uax} (lb)	Shear load y, V_{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	1178.0	0.0	0.0	0.0
Sum	1178.0	0.0	0.0	0.0

Maximum concrete compression strain (%): 0.00

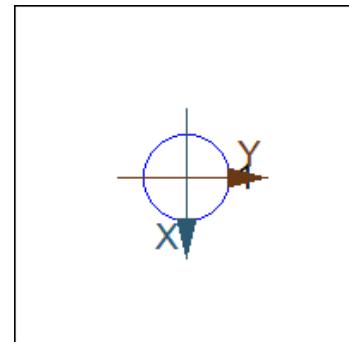
Maximum concrete compression stress (psi): 0

Resultant tension force (lb): 1178

Resultant compression force (lb): 0

Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00

<Figure 3>



SIMPSON**Strong-Tie**

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Version 3.3.2404.1

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Company:	HVE	Date:	9/15/2025
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Project:	SITKA		
Address:			
Phone:			
E-mail:			

4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
13100	0.75	9825

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$$N_b = k_c \lambda_a \sqrt{f'_c h_{ef}}^{1.5} \text{ (Eq. 17.6.2.2.1)}$$

k_c	λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	2500	3.500	7857

$$0.75\phi N_{cb} = 0.75\phi (A_{Nc}/A_{Nco}) \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.5.1.2 & Eq. 17.6.2.1a)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$c_{a,min}$ (in)	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	$0.75\phi N_{cb}$ (lb)
66.00	110.25	2.75	0.857	1.00	1.000	7857	0.70	2117

6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$$0.75\phi N_{pn} = 0.75\phi \Psi_{c,P} N_p = 0.75\phi \Psi_{c,P} 8A_{brg} f'_c \text{ (Sec. 17.5.1.2, Eq. 17.6.3.1 & 17.6.3.2.2a)}$$

$\Psi_{c,P}$	A_{brg} (in ²)	f'_c (psi)	ϕ	$0.75\phi N_{pn}$ (lb)
1.0	0.67	2500	0.70	7046

SIMPSON**Strong-Tie**

**Anchor Designer™ for
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Company:	HVE	Date:	9/15/2025
Engineer:	LN	Page:	5/5
Project:	SITKA		
Address:			
Phone:			
E-mail:			

11. Results**Interaction of Tensile and Shear Forces (Sec. 17.8)**

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	1178	9825	0.12	Pass
Concrete breakout	1178	2117	0.56	Pass (Governs)
Pullout	1178	7046	0.17	Pass

5/8"Ø Heavy Hex Bolt, F1554 Gr. 36 with hef = 6.000 inch meets the selected design criteria.

12. Warnings

- Minimum spacing and edge distance requirement of 6da per ACI 318 Table 17.9.2(a) for torqued cast-in-place anchor is waived per designer option.\n
- Per designer input, the tensile component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor tensile force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.5.2 for tension need not be satisfied – designer to verify.
- Per designer input, the shear component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor shear force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.6.2 for shear need not be satisfied – designer to verify.
- Designer must exercise own judgement to determine if this design is suitable.

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Version 3.3.2404.1

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Address:			
Phone:			
E-mail:			

1. Project information

Project description:

Comment:

Location:

Fastening description: HDU2 anchor -- seismic loading

2. Input Data & Anchor Parameters**General**

Design method: ACI 318-19

Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place

Material: F1554 Grade 36

Diameter (inch): 0.625

Effective Embedment depth, h_{ef} (inch): 6.000

Anchor category: -

Anchor ductility: Yes

 h_{min} (inch): 7.38 C_{min} (inch): 3.75 S_{min} (inch): 3.75**Base Material**

Concrete: Normal-weight

Concrete thickness, h (inch): 12.00

State: Cracked

Compressive strength, f_c (psi): 2500 $\Psi_{c,v}$: 1.0

Reinforcement condition: Supplementary reinforcement not present

Supplemental edge reinforcement: Not applicable

Reinforcement provided at corners: No

Ignore concrete breakout in tension: No

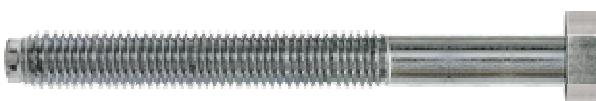
Ignore concrete breakout in shear: No

Ignore 6do requirement: No

Build-up grout pad: No

Recommended Anchor

Anchor Name: Heavy Hex Bolt - 5/8"Ø Heavy Hex Bolt, F1554 Gr. 36



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E-mail:			

Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: Yes

Anchors subjected to sustained tension: Not applicable

Ductility section for tension: 17.10.5.2 not applicable

Ductility section for shear: 17.10.6.2 not applicable

 Ω_0 factor: not set

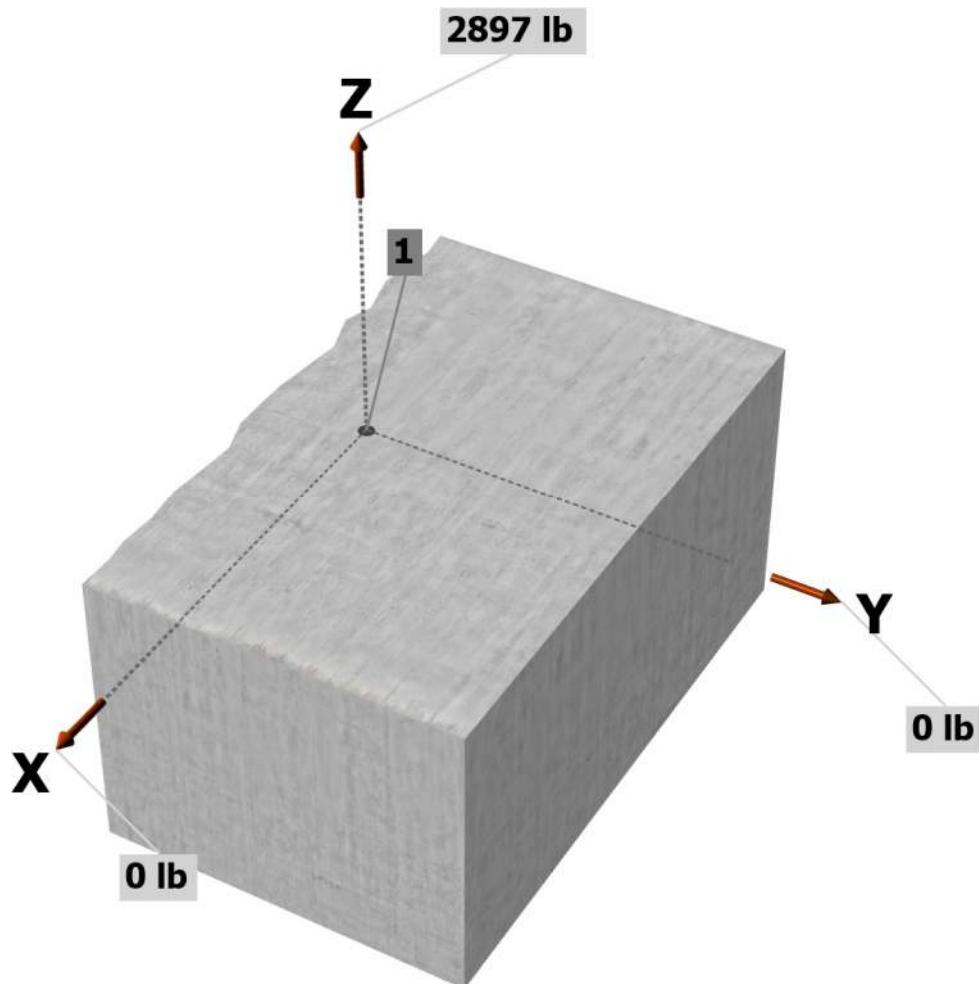
Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: Yes

Strength level loads:

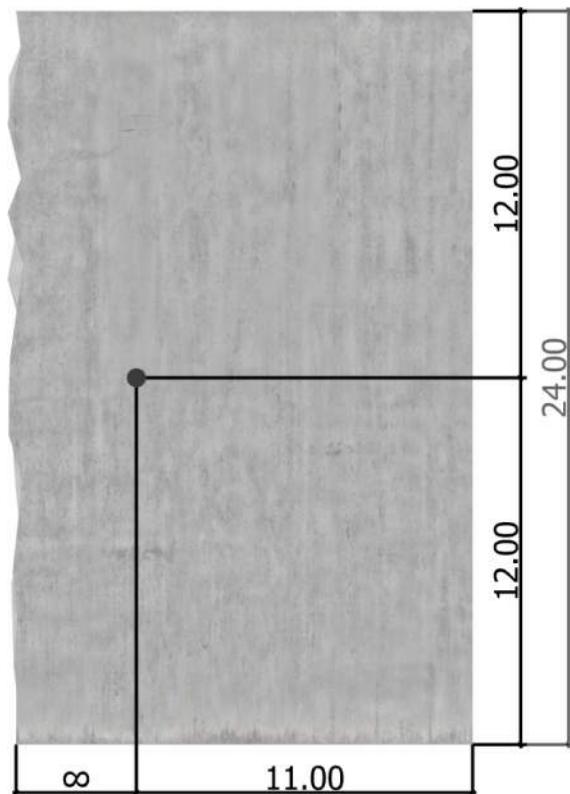
N_{ua} [lb]: 2897V_{uax} [lb]: 0V_{uay} [lb]: 0

<Figure 1>



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<Figure 2>

**3. Resulting Anchor Forces**

Anchor	Tension load, N _{ua} (lb)	Shear load x, V _{uax} (lb)	Shear load y, V _{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	2897.0	0.0	0.0	0.0
Sum	2897.0	0.0	0.0	0.0

Maximum concrete compression strain (%): 0.00

Maximum concrete compression stress (psi): 0

Resultant tension force (lb): 2897

Resultant compression force (lb): 0

Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00

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Address:			
Phone:			
E-mail:			

4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
13100	0.75	9825

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$$N_b = k_c \lambda_a \sqrt{f'_c h_{ef}}^{1.5} \text{ (Eq. 17.6.2.2.1)}$$

k_c	λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	2500	6.000	17636

$$0.75\phi N_{cb} = 0.75\phi (A_{Nc}/A_{Nco}) \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.5.1.2 & Eq. 17.6.2.1a)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$c_{a,min}$ (in)	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	$0.75\phi N_{cb}$ (lb)
324.00	324.00	11.00	1.000	1.00	1.000	17636	0.70	9259

6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$$0.75\phi N_{pn} = 0.75\phi \Psi_{c,P} N_p = 0.75\phi \Psi_{c,P} 8A_{brg} f'_c \text{ (Sec. 17.5.1.2, Eq. 17.6.3.1 & 17.6.3.2.2a)}$$

$\Psi_{c,P}$	A_{brg} (in ²)	f'_c (psi)	ϕ	$0.75\phi N_{pn}$ (lb)
1.0	0.67	2500	0.70	7046

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Address:			
Phone:			
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11. Results**Interaction of Tensile and Shear Forces (Sec. 17.8)**

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	2897	9825	0.29	Pass
Concrete breakout	2897	9259	0.31	Pass
Pullout	2897	7046	0.41	Pass (Governs)

5/8"Ø Heavy Hex Bolt, F1554 Gr. 36 with hef = 6.000 inch meets the selected design criteria.**12. Warnings**

- Per designer input, the tensile component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor tensile force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.5.2 for tension need not be satisfied – designer to verify.
- Per designer input, the shear component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor shear force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.6.2 for shear need not be satisfied – designer to verify.
- Designer must exercise own judgement to determine if this design is suitable.

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Address:			
Phone:			
E-mail:			

1. Project information

Project description:

Comment:

Location:

Fastening description: HDU4 anchor -- seismic loading

2. Input Data & Anchor Parameters**General**

Design method: ACI 318-19

Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place

Material: F1554 Grade 36

Diameter (inch): 0.625

Effective Embedment depth, h_{ef} (inch): 5.000

Anchor category: -

Anchor ductility: Yes

 h_{min} (inch): 6.38 C_{min} (inch): 3.75 S_{min} (inch): 3.75**Base Material**

Concrete: Normal-weight

Concrete thickness, h (inch): 12.00

State: Cracked

Compressive strength, f_c (psi): 2500 $\Psi_{c,v}$: 1.0

Reinforcement condition: Supplementary reinforcement not present

Supplemental edge reinforcement: Not applicable

Reinforcement provided at corners: No

Ignore concrete breakout in tension: No

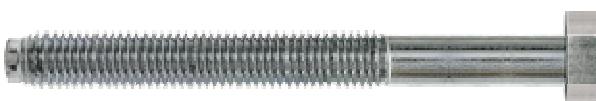
Ignore concrete breakout in shear: No

Ignore 6do requirement: No

Build-up grout pad: No

Recommended Anchor

Anchor Name: Heavy Hex Bolt - 5/8"Ø Heavy Hex Bolt, F1554 Gr. 36



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Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: Yes

Anchors subjected to sustained tension: Not applicable

Ductility section for tension: 17.10.5.2 not applicable

Ductility section for shear: 17.10.6.2 not applicable

 Ω_0 factor: not set

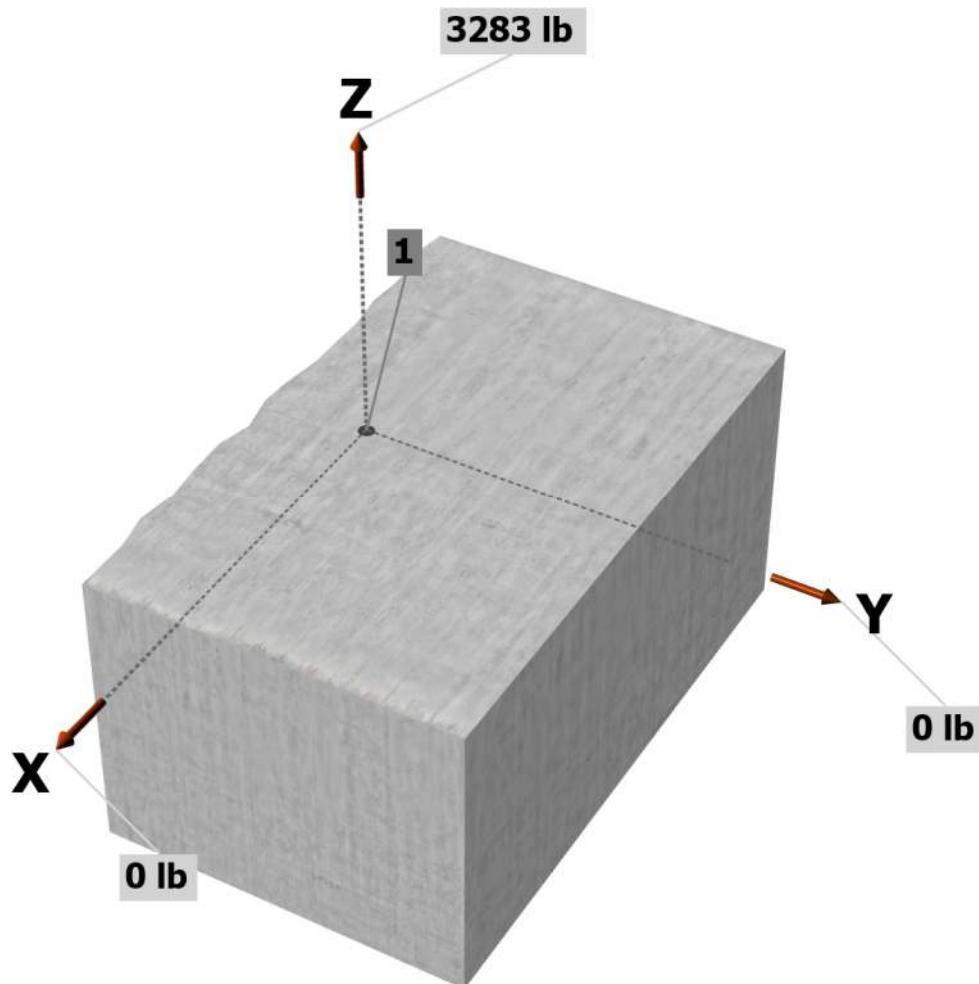
Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: Yes

Strength level loads:

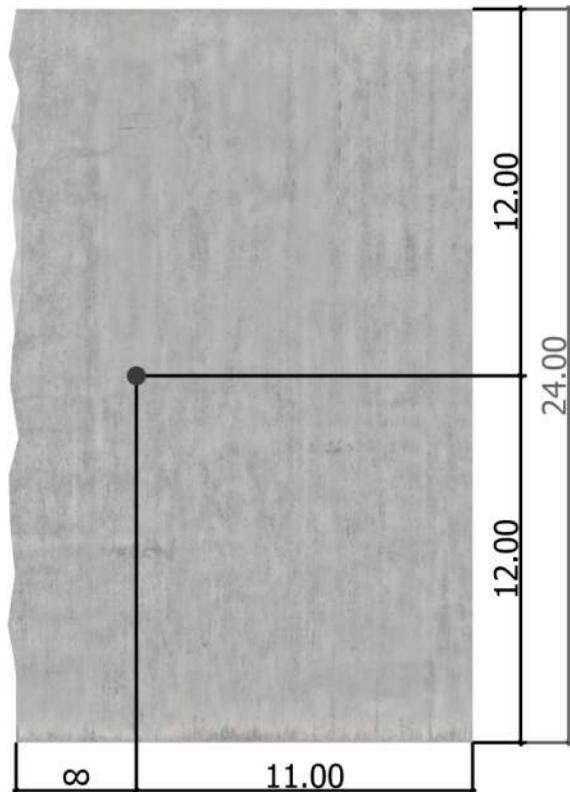
N_{ua} [lb]: 3283V_{uax} [lb]: 0V_{uay} [lb]: 0

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<Figure 2>

**3. Resulting Anchor Forces**

Anchor	Tension load, N _{ua} (lb)	Shear load x, V _{uax} (lb)	Shear load y, V _{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	3283.0	0.0	0.0	0.0
Sum	3283.0	0.0	0.0	0.0

Maximum concrete compression strain (%): 0.00

Maximum concrete compression stress (psi): 0

Resultant tension force (lb): 3283

Resultant compression force (lb): 0

Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00

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4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
13100	0.75	9825

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$$N_b = k_c \lambda_a \sqrt{f_c} h_{ef}^{1.5} \text{ (Eq. 17.6.2.2.1)}$$

k_c	λ_a	f_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	2500	5.000	13416

$$0.75\phi N_{cb} = 0.75\phi (A_{Nc}/A_{Nco}) \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.5.1.2 & Eq. 17.6.2.1a)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$c_{a,min}$ (in)	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	$0.75\phi N_{cb}$ (lb)
225.00	225.00	11.00	1.000	1.00	1.000	13416	0.70	7044

6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$$0.75\phi N_{pn} = 0.75\phi \Psi_{c,P} N_p = 0.75\phi \Psi_{c,P} 8A_{brg} f_c \text{ (Sec. 17.5.1.2, Eq. 17.6.3.1 & 17.6.3.2.2a)}$$

$\Psi_{c,P}$	A_{brg} (in ²)	f_c (psi)	ϕ	$0.75\phi N_{pn}$ (lb)
1.0	0.67	2500	0.70	7046

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11. Results**Interaction of Tensile and Shear Forces (Sec. 17.8)**

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	3283	9825	0.33	Pass
Concrete breakout	3283	7044	0.47	Pass (Governs)
Pullout	3283	7046	0.47	Pass

5/8"Ø Heavy Hex Bolt, F1554 Gr. 36 with hef = 5.000 inch meets the selected design criteria.**12. Warnings**

- Per designer input, the tensile component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor tensile force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.5.2 for tension need not be satisfied – designer to verify.
- Per designer input, the shear component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor shear force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.6.2 for shear need not be satisfied – designer to verify.
- Designer must exercise own judgement to determine if this design is suitable.

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Address:			
Phone:			
E-mail:			

1. Project information

Project description:

Comment:

Location:

Fastening description: HDU5 anchor -- seismic loading

2. Input Data & Anchor Parameters**General**

Design method: ACI 318-19

Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place

Material: F1554 Grade 36

Diameter (inch): 0.625

Effective Embedment depth, h_{ef} (inch): 6.000

Anchor category: -

Anchor ductility: Yes

 h_{min} (inch): 7.38 C_{min} (inch): 3.75 S_{min} (inch): 3.75**Base Material**

Concrete: Normal-weight

Concrete thickness, h (inch): 12.00

State: Cracked

Compressive strength, f_c (psi): 2500 $\Psi_{c,v}$: 1.0

Reinforcement condition: Supplementary reinforcement not present

Supplemental edge reinforcement: Not applicable

Reinforcement provided at corners: No

Ignore concrete breakout in tension: No

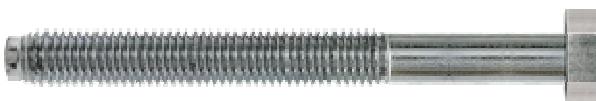
Ignore concrete breakout in shear: No

Ignore 6do requirement: No

Build-up grout pad: No

Recommended Anchor

Anchor Name: Heavy Hex Bolt - 5/8"Ø Heavy Hex Bolt, F1554 Gr. 36



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Address:			
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Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: Yes

Anchors subjected to sustained tension: Not applicable

Ductility section for tension: 17.10.5.2 not applicable

Ductility section for shear: 17.10.6.2 not applicable

 Ω_0 factor: not set

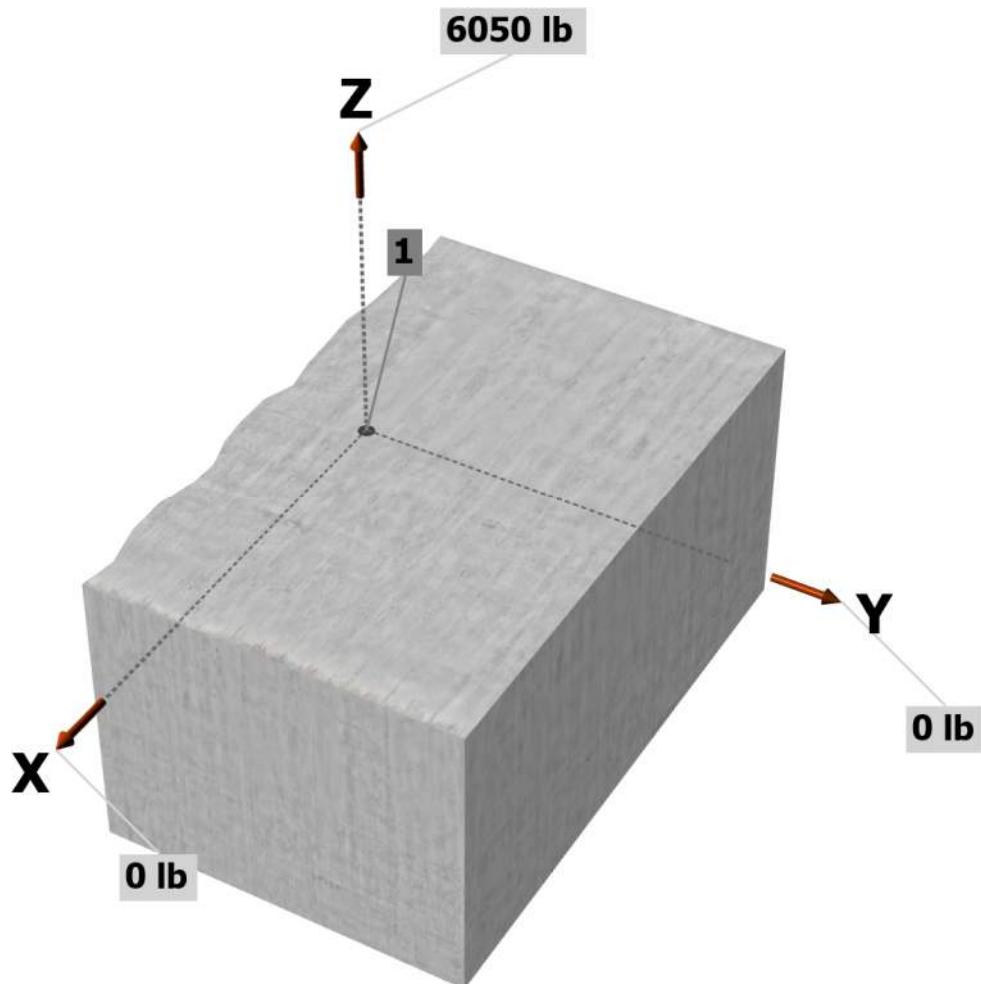
Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: Yes

Strength level loads:

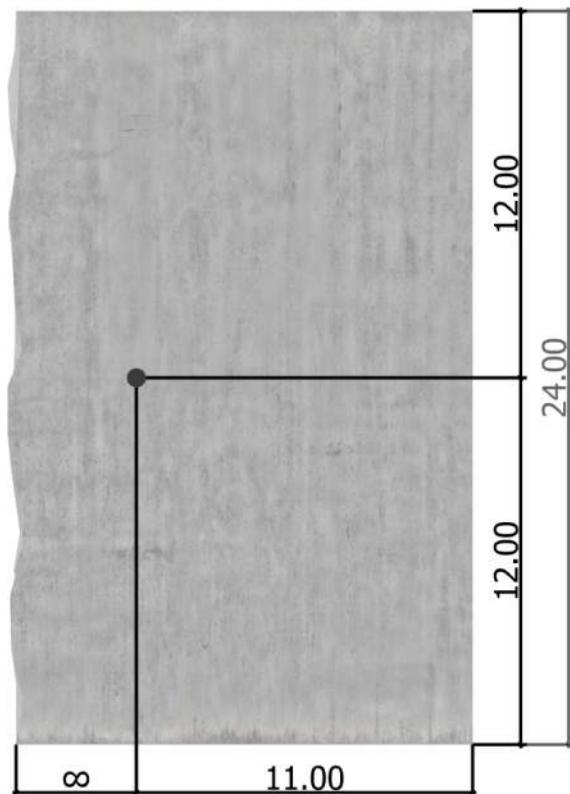
N_{ua} [lb]: 6050V_{uax} [lb]: 0V_{uay} [lb]: 0

<Figure 1>



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<Figure 2>

**3. Resulting Anchor Forces**

Anchor	Tension load, N _{ua} (lb)	Shear load x, V _{uax} (lb)	Shear load y, V _{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	6050.0	0.0	0.0	0.0
Sum	6050.0	0.0	0.0	0.0

Maximum concrete compression strain (%): 0.00

Maximum concrete compression stress (psi): 0

Resultant tension force (lb): 6050

Resultant compression force (lb): 0

Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00

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4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
13100	0.75	9825

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$$N_b = k_c \lambda_a \sqrt{f'_c h_{ef}}^{1.5} \text{ (Eq. 17.6.2.2.1)}$$

k_c	λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	2500	6.000	17636

$$0.75\phi N_{cb} = 0.75\phi (A_{Nc}/A_{Nco}) \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.5.1.2 & Eq. 17.6.2.1a)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$c_{a,min}$ (in)	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	$0.75\phi N_{cb}$ (lb)
324.00	324.00	11.00	1.000	1.00	1.000	17636	0.70	9259

6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$$0.75\phi N_{pn} = 0.75\phi \Psi_{c,P} N_p = 0.75\phi \Psi_{c,P} 8A_{brg} f'_c \text{ (Sec. 17.5.1.2, Eq. 17.6.3.1 & 17.6.3.2.2a)}$$

$\Psi_{c,P}$	A_{brg} (in ²)	f'_c (psi)	ϕ	$0.75\phi N_{pn}$ (lb)
1.0	0.67	2500	0.70	7046

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11. Results**Interaction of Tensile and Shear Forces (Sec. 17.8)**

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	6050	9825	0.62	Pass
Concrete breakout	6050	9259	0.65	Pass
Pullout	6050	7046	0.86	Pass (Governs)

5/8"Ø Heavy Hex Bolt, F1554 Gr. 36 with hef = 6.000 inch meets the selected design criteria.**12. Warnings**

- Per designer input, the tensile component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor tensile force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.5.2 for tension need not be satisfied – designer to verify.
- Per designer input, the shear component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor shear force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.6.2 for shear need not be satisfied – designer to verify.
- Designer must exercise own judgement to determine if this design is suitable.

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Project:	SITKA		
Address:			
Phone:			
E-mail:			

1. Project information

Project description:

Comment:

Location:

Fastening description: HDU2 anchor -- wind loading

2. Input Data & Anchor Parameters**General**

Design method: ACI 318-19

Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place

Material: F1554 Grade 36

Diameter (inch): 0.625

Effective Embedment depth, h_{ef} (inch): 6.000

Anchor category: -

Anchor ductility: Yes

 h_{min} (inch): 7.38 C_{min} (inch): 3.75 S_{min} (inch): 3.75**Base Material**

Concrete: Normal-weight

Concrete thickness, h (inch): 12.00

State: Cracked

Compressive strength, f_c (psi): 2500 $\Psi_{c,v}$: 1.0

Reinforcement condition: Supplementary reinforcement not present

Supplemental edge reinforcement: Not applicable

Reinforcement provided at corners: No

Ignore concrete breakout in tension: No

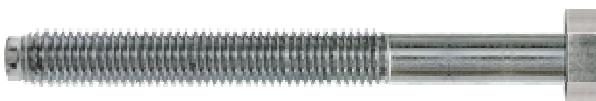
Ignore concrete breakout in shear: No

Ignore 6do requirement: No

Build-up grout pad: No

Recommended Anchor

Anchor Name: Heavy Hex Bolt - 5/8"Ø Heavy Hex Bolt, F1554 Gr. 36



Company:	HVE	Date:	9/17/2025
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Project:	SITKA		
Address:			
Phone:			
E-mail:			

Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: No

Anchors subjected to sustained tension: Not applicable

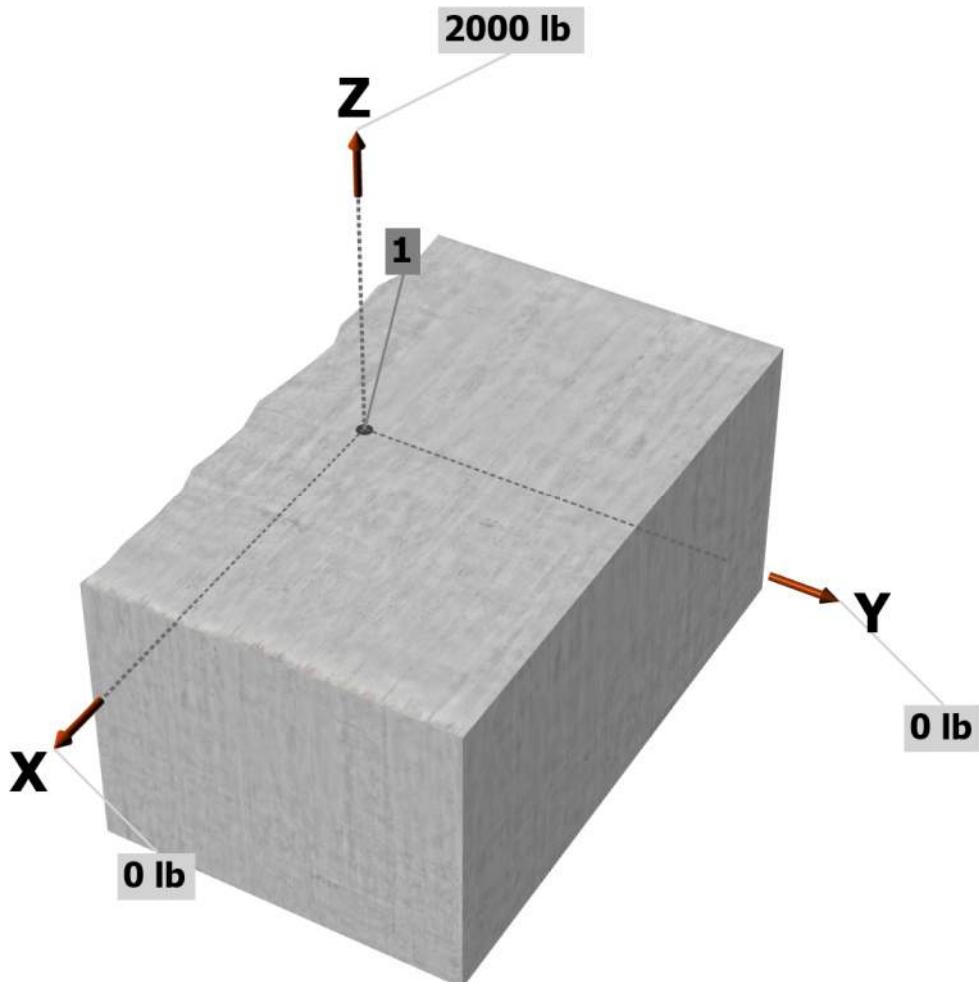
Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: Yes

Strength level loads:

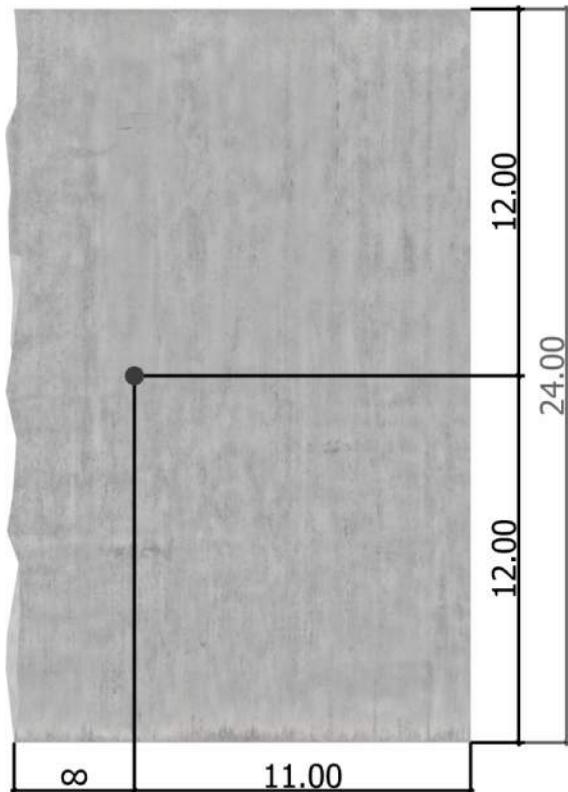
N_{ua} [lb]: 2000V_{uax} [lb]: 0V_{uay} [lb]: 0

<Figure 1>



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Engineer:	LN	Page:	3/5
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Address:			
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<Figure 2>

**3. Resulting Anchor Forces**

Anchor	Tension load, N _{ua} (lb)	Shear load x, V _{uax} (lb)	Shear load y, V _{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	2000.0	0.0	0.0	0.0
Sum	2000.0	0.0	0.0	0.0

Maximum concrete compression strain (%): 0.00

Maximum concrete compression stress (psi): 0

Resultant tension force (lb): 2000

Resultant compression force (lb): 0

Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00

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Address:			
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E-mail:			

4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
13100	0.75	9825

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$$N_b = k_c \lambda_a \sqrt{f'_c h_{ef}}^{1.5} \text{ (Eq. 17.6.2.2.1)}$$

k_c	λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	2500	6.000	17636

$$\phi N_{cb} = \phi (A_{Nc}/A_{Nco}) \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.5.1.2 & Eq. 17.6.2.1a)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$c_{a,min}$ (in)	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕN_{cb} (lb)
324.00	324.00	11.00	1.000	1.00	1.000	17636	0.70	12345

6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$$\phi N_{pn} = \phi \Psi_{c,P} N_p = \phi \Psi_{c,P} 8 A_{brg} f'_c \text{ (Sec. 17.5.1.2, Eq. 17.6.3.1 & 17.6.3.2.2a)}$$

$\Psi_{c,P}$	A_{brg} (in ²)	f'_c (psi)	ϕ	ϕN_{pn} (lb)
1.0	0.67	2500	0.70	9394

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11. Results**Interaction of Tensile and Shear Forces (Sec. 17.8)**

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	2000	9825	0.20	Pass
Concrete breakout	2000	12345	0.16	Pass
Pullout	2000	9394	0.21	Pass (Governs)

5/8"Ø Heavy Hex Bolt, F1554 Gr. 36 with hef = 6.000 inch meets the selected design criteria.**12. Warnings**

- Designer must exercise own judgement to determine if this design is suitable.

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1. Project information

Project description:

Comment:

Location:

Fastening description: HDU4 anchor -- wind loading

2. Input Data & Anchor Parameters**General**

Design method: ACI 318-19

Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place

Material: F1554 Grade 36

Diameter (inch): 0.625

Effective Embedment depth, h_{ef} (inch): 5.000

Anchor category: -

Anchor ductility: Yes

 h_{min} (inch): 6.38 C_{min} (inch): 3.75 S_{min} (inch): 3.75**Base Material**

Concrete: Normal-weight

Concrete thickness, h (inch): 12.00

State: Cracked

Compressive strength, f_c (psi): 2500 $\Psi_{c,v}$: 1.0

Reinforcement condition: Supplementary reinforcement not present

Supplemental edge reinforcement: Not applicable

Reinforcement provided at corners: No

Ignore concrete breakout in tension: No

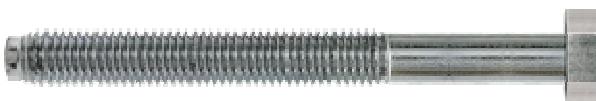
Ignore concrete breakout in shear: No

Ignore 6do requirement: No

Build-up grout pad: No

Recommended Anchor

Anchor Name: Heavy Hex Bolt - 5/8"Ø Heavy Hex Bolt, F1554 Gr. 36



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Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: No

Anchors subjected to sustained tension: Not applicable

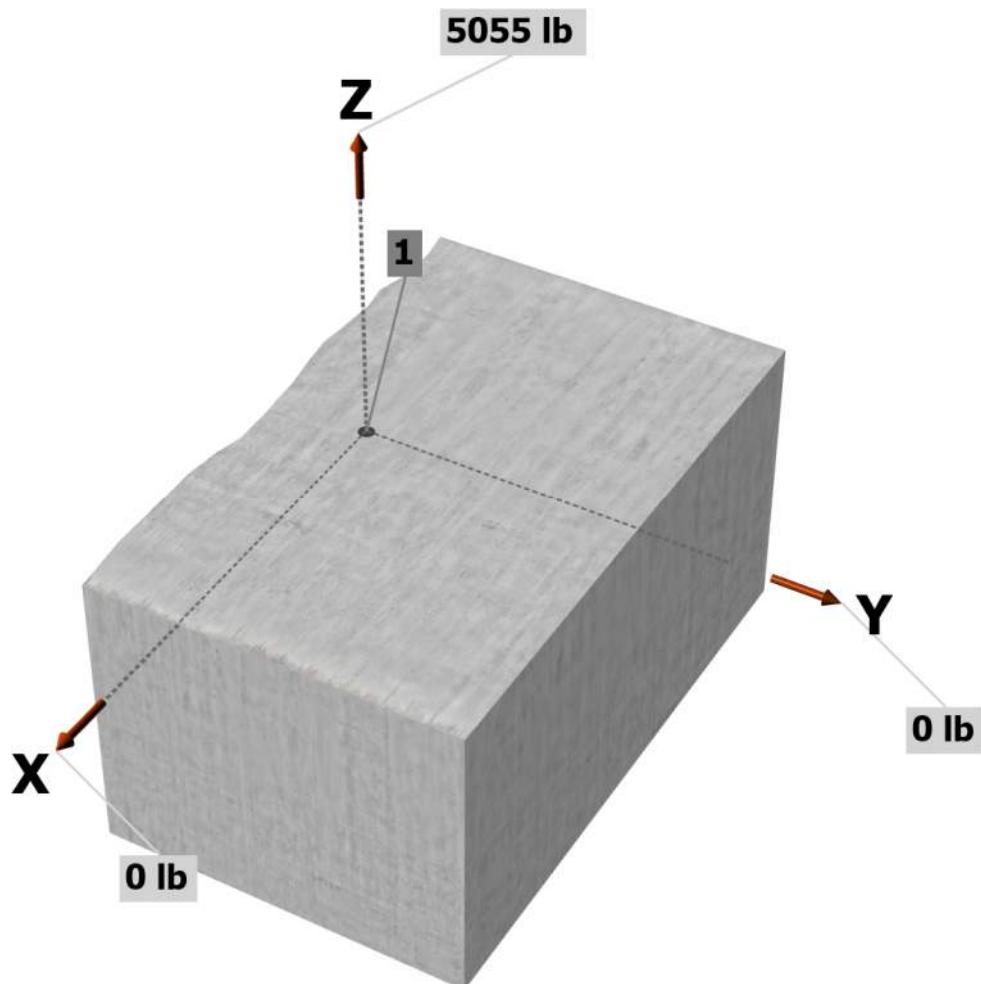
Apply entire shear load at front row: Yes

Anchors only resisting wind and/or seismic loads: Yes

Strength level loads:

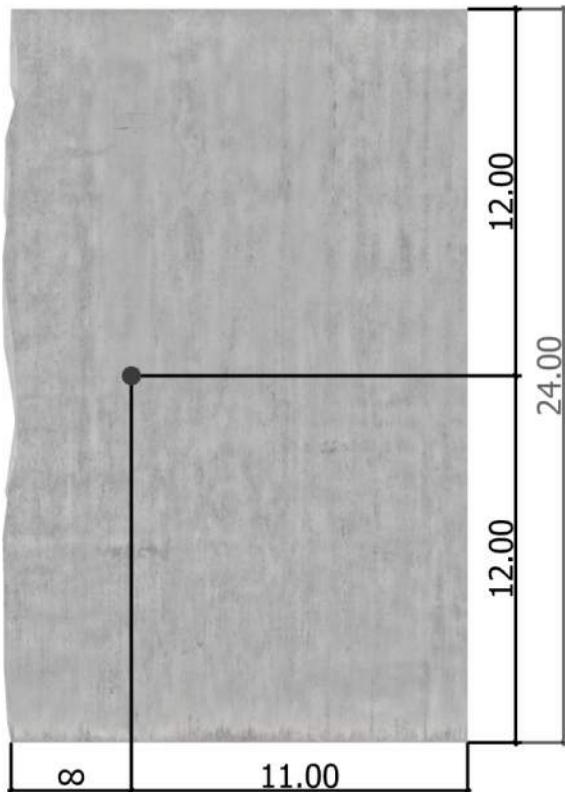
N_{ua} [lb]: 5055V_{uax} [lb]: 0V_{uay} [lb]: 0

<Figure 1>



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<Figure 2>

**3. Resulting Anchor Forces**

Anchor	Tension load, N _{ua} (lb)	Shear load x, V _{uax} (lb)	Shear load y, V _{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	5055.0	0.0	0.0	0.0
Sum	5055.0	0.0	0.0	0.0

Maximum concrete compression strain (%): 0.00

Maximum concrete compression stress (psi): 0

Resultant tension force (lb): 5055

Resultant compression force (lb): 0

Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00

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4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
13100	0.75	9825

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$$N_b = k_c \lambda_a \sqrt{f'_c h_{ef}}^{1.5} \text{ (Eq. 17.6.2.2.1)}$$

k_c	λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	2500	5.000	13416

$$\phi N_{cb} = \phi (A_{Nc}/A_{Nco}) \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.5.1.2 & Eq. 17.6.2.1a)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$c_{a,min}$ (in)	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕN_{cb} (lb)
225.00	225.00	11.00	1.000	1.00	1.000	13416	0.70	9391

6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$$\phi N_{pn} = \phi \Psi_{c,P} N_p = \phi \Psi_{c,P} 8 A_{brg} f'_c \text{ (Sec. 17.5.1.2, Eq. 17.6.3.1 & 17.6.3.2.2a)}$$

$\Psi_{c,P}$	A_{brg} (in ²)	f'_c (psi)	ϕ	ϕN_{pn} (lb)
1.0	0.67	2500	0.70	9394

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11. Results**Interaction of Tensile and Shear Forces (Sec. 17.8)**

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	5055	9825	0.51	Pass
Concrete breakout	5055	9391	0.54	Pass (Governs)
Pullout	5055	9394	0.54	Pass

5/8"Ø Heavy Hex Bolt, F1554 Gr. 36 with hef = 5.000 inch meets the selected design criteria.**12. Warnings**

- Designer must exercise own judgement to determine if this design is suitable.

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1. Project information

Project description:

Comment:

Location:

Fastening description: HDU5 anchor -- wind loading

2. Input Data & Anchor Parameters**General**

Design method: ACI 318-19

Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place

Material: F1554 Grade 36

Diameter (inch): 0.625

Effective Embedment depth, h_{ef} (inch): 6.000

Anchor category: -

Anchor ductility: Yes

 h_{min} (inch): 7.38 C_{min} (inch): 3.75 S_{min} (inch): 3.75**Base Material**

Concrete: Normal-weight

Concrete thickness, h (inch): 12.00

State: Cracked

Compressive strength, f_c (psi): 2500 $\Psi_{c,v}$: 1.0

Reinforcement condition: Supplementary reinforcement not present

Supplemental edge reinforcement: Not applicable

Reinforcement provided at corners: No

Ignore concrete breakout in tension: No

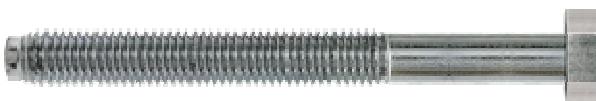
Ignore concrete breakout in shear: No

Ignore 6do requirement: No

Build-up grout pad: No

Recommended Anchor

Anchor Name: Heavy Hex Bolt - 5/8"Ø Heavy Hex Bolt, F1554 Gr. 36



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Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: No

Anchors subjected to sustained tension: Not applicable

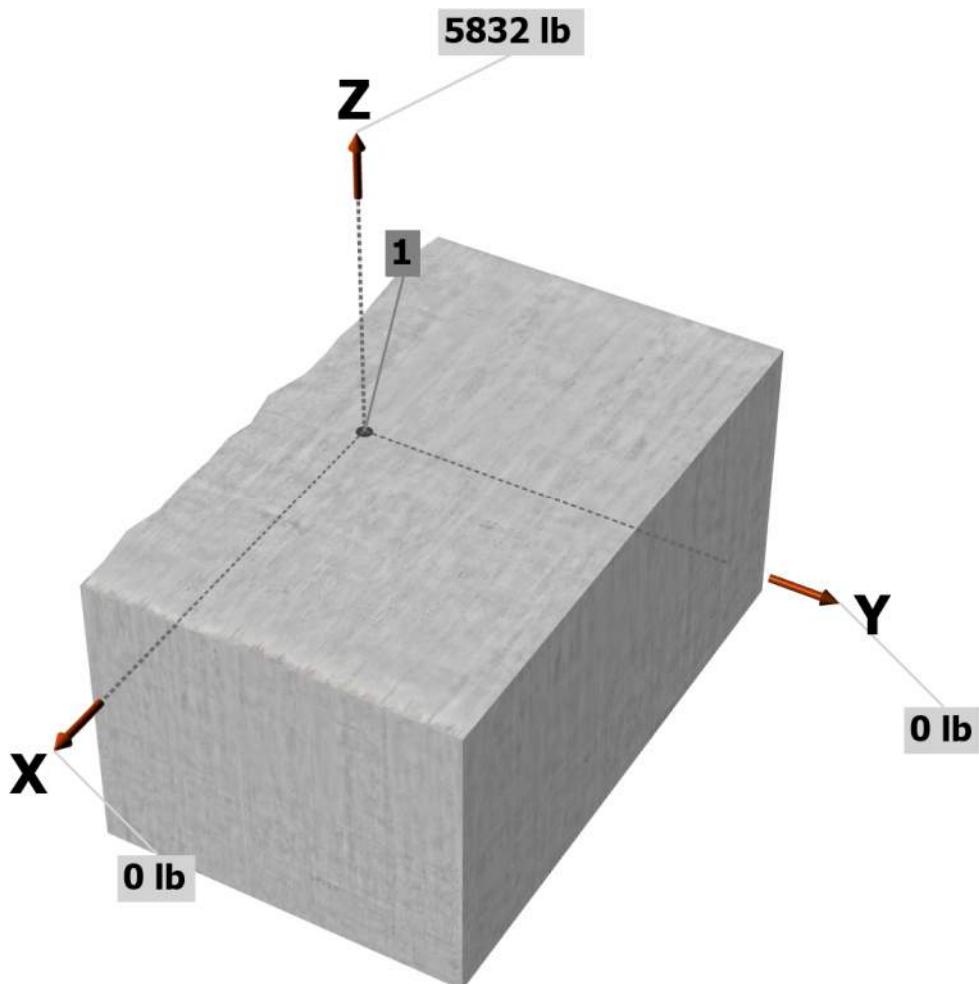
Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: Yes

Strength level loads:

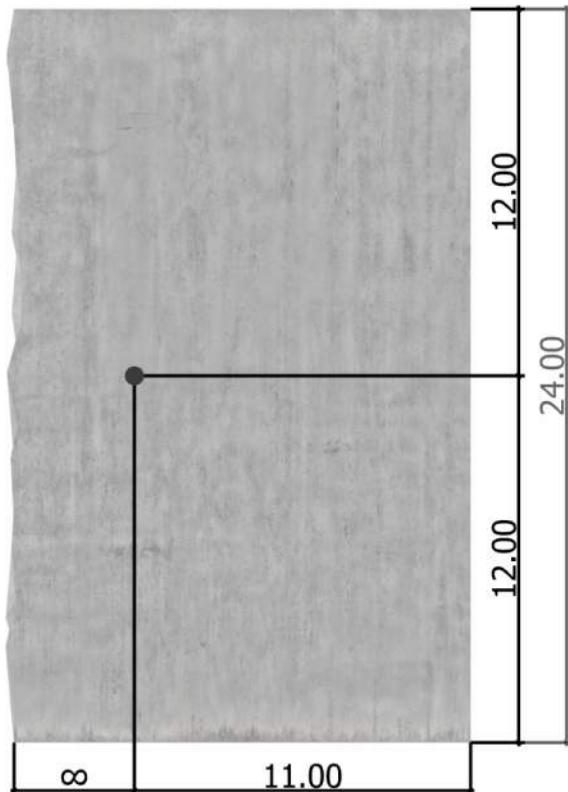
N_{ua} [lb]: 5832V_{uax} [lb]: 0V_{uay} [lb]: 0

<Figure 1>



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<Figure 2>

**3. Resulting Anchor Forces**

Anchor	Tension load, N _{ua} (lb)	Shear load x, V _{uax} (lb)	Shear load y, V _{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	5832.0	0.0	0.0	0.0
Sum	5832.0	0.0	0.0	0.0

Maximum concrete compression strain (%): 0.00

Maximum concrete compression stress (psi): 0

Resultant tension force (lb): 5832

Resultant compression force (lb): 0

Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00

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4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
13100	0.75	9825

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$$N_b = k_c \lambda_a \sqrt{f'_c h_{ef}}^{1.5} \text{ (Eq. 17.6.2.2.1)}$$

k_c	λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	2500	6.000	17636

$$\phi N_{cb} = \phi (A_{Nc}/A_{Nco}) \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.5.1.2 & Eq. 17.6.2.1a)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$c_{a,min}$ (in)	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕN_{cb} (lb)
324.00	324.00	11.00	1.000	1.00	1.000	17636	0.70	12345

6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$$\phi N_{pn} = \phi \Psi_{c,P} N_p = \phi \Psi_{c,P} 8 A_{brg} f'_c \text{ (Sec. 17.5.1.2, Eq. 17.6.3.1 & 17.6.3.2.2a)}$$

$\Psi_{c,P}$	A_{brg} (in ²)	f'_c (psi)	ϕ	ϕN_{pn} (lb)
1.0	0.67	2500	0.70	9394

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11. Results**Interaction of Tensile and Shear Forces (Sec. 17.8)**

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	5832	9825	0.59	Pass
Concrete breakout	5832	12345	0.47	Pass
Pullout	5832	9394	0.62	Pass (Governs)

5/8"Ø Heavy Hex Bolt, F1554 Gr. 36 with hef = 6.000 inch meets the selected design criteria.**12. Warnings**

- Designer must exercise own judgement to determine if this design is suitable.