

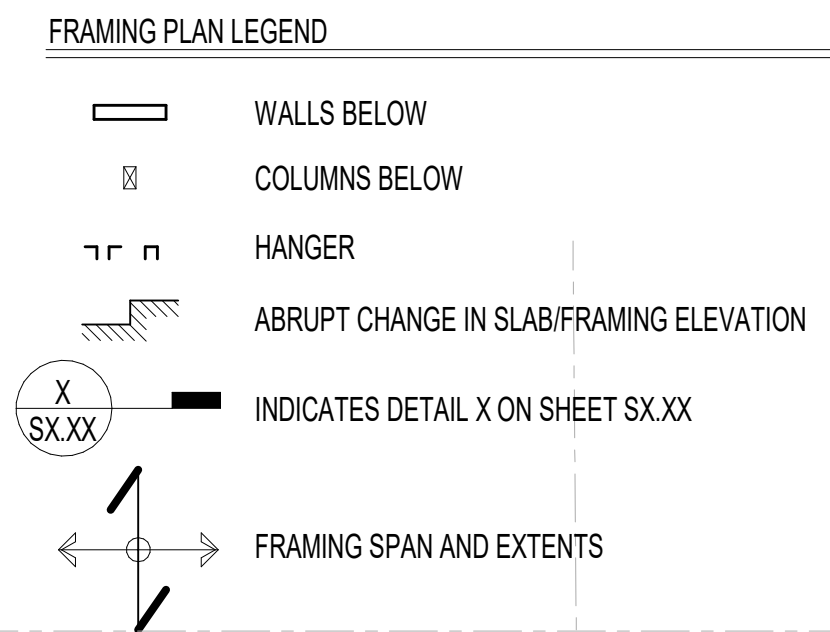
STRUCTURAL CALCULATIONS

Nestler-Spare Residence
8265 SE 61st St.
Mercer Island, WA 98040

Studio Diaa
3125 Eastlake Ave E, Suite C
Seattle, WA 98102

March 25, 2025





- FRAMING PLAN NOTES** (TYPICAL UNLESS NOTED OTHERWISE)
1. FLOOR SHEATHING SHALL BE 23/32" TONGUE AND GROOVE APA RATED SHEATHING (SPAN RATING 40/20), NAIL AT ALL FRAMED PANEL EDGES AND OVER SHEAR WALLS w/ 10d @ 6"oc and 12"oc TO ALL INTERMEDIATE FRAMING
 2. ROOF SHEATHING SHALL BE 15/32" APA RATED SHEATHING (SPAN RATING 24/10). NAIL AT ALL FRAMED PANEL EDGES AND OVER SHEARWALLS w/ 8d @ 6"oc and 12"oc TO ALL INTERMEDIATE FRAMING.
 3. 1SWX INDICATES SHEAR WALL PER SCHEDULE 12/S6.0.
 4. 2SWX INDICATES DOUBLE SIDED SHEAR WALL PER SCHEDULE 12/S6.0.
 5. ALL HEADERS SHALL BE (2)x8 U.N.O. REFER TO NOTE 5 FOR SUPPORT REQUIREMENTS.
 6. COLUMNS SHALL BE DOUBLE STUDS MINIMUM, U.N.O., WITH BEAM OR HEADER BEARING FULLY ON COLUMN.
 7. WHERE FULL HEIGHT LSL STUDS ARE CALLED OUT, INSTALL 1.3E 1 1/2" x 3 1/2" LSL STUDS @ 16"oc.

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CQN
CARTER
QUINN
NORLIN
STRUCTURAL
ENGINEERING

Consultants:

Project

NS Residence
project no. 2401

8265 SE 61st St
Mercer Island, WA 98040

Drawing Title:

Roof Framing Plan

Date: January 16, 2025

Issued For

Drawn By:

Checked By:

Scale: As indicated

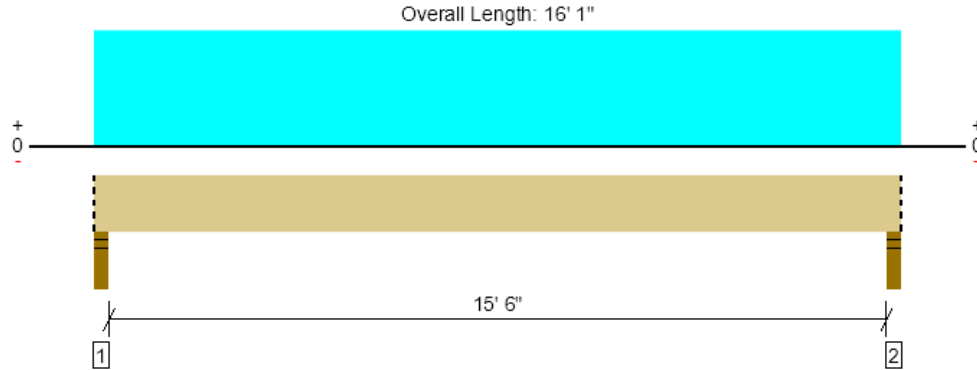
Sheet No.:

S2.3

1 Roof Framing Plan
1/4" = 1'-0"

Roof Framing, Joist A

1 piece(s) 4 x 10 HF No.2 @ 32" 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)	965 @ 2 1/2"	4961 (3.50")	Passed (19%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	838 @ 1' 3/4"	3723	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3682 @ 8' 1/2"	4879	Passed (75%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.301 @ 8' 1/2"	0.522	Passed (L/624)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.542 @ 8' 1/2"	0.783	Passed (L/347)	--	1.0 D + 1.0 S (All Spans)

- 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.

Member Length : 16' 1"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.50"	429	536	965	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	429	536	965	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)	16' 1" o/c	
Bottom Edge (Lu)	16' 1" o/c	

Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 16' 1"	32"	20.0	25.0	Default Load

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

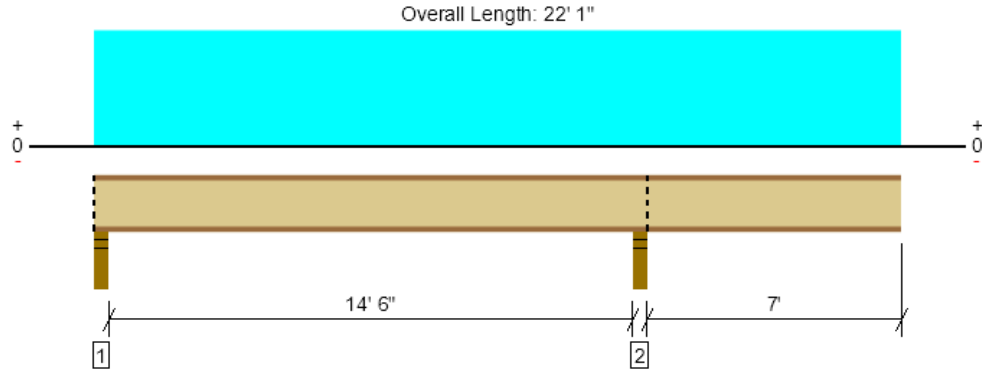
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Roof Framing, Joist B

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)	1462 @ 14' 11 1/4"	3450 (3.50")	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	770 @ 14' 9 1/2"	2358	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-2298 @ 14' 11 1/4"	10925	Passed (21%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.121 @ 22' 1"	0.476	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.166 @ 22' 1"	0.715	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)

- 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 Length : 22' 1"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.75"	234	335	569	Blocking
2 - Stud wall - HF	3.50"	3.50"	3.50"	650	812	1462	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)	13' 11" o/c	
Bottom Edge (Lu)	11' 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)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 22' 1"	24"	20.0	25.0	Default Load

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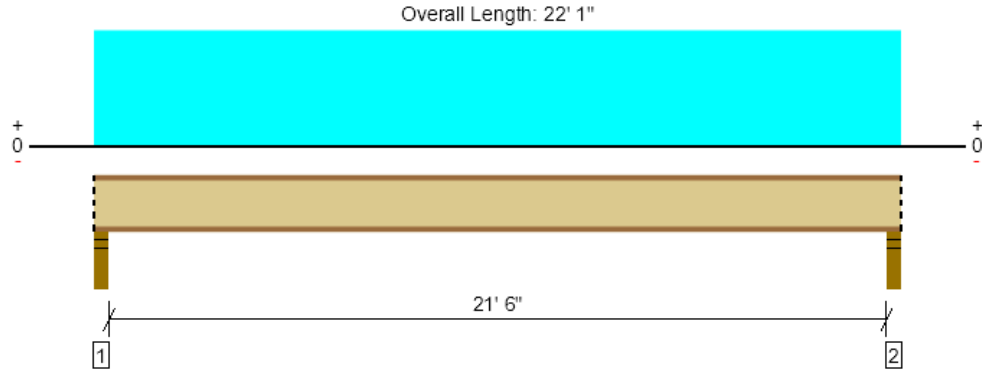
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File Name: Nestler-Spare (2025)

Roof Framing, Joist C

1 piece(s) 11 7/8" TJI® 560 @ 24" OC



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	994 @ 2 1/2"	1984 (3.50")	Passed (50%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	968 @ 3 1/2"	2358	Passed (41%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5281 @ 11' 1/2"	10925	Passed (48%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.435 @ 11' 1/2"	0.722	Passed (L/598)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.783 @ 11' 1/2"	1.083	Passed (L/332)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 22' 1"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.75"	442	552	994	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.75"	442	552	994	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)	22' 1" 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)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 22' 1"	24"	20.0	25.0	Default Load

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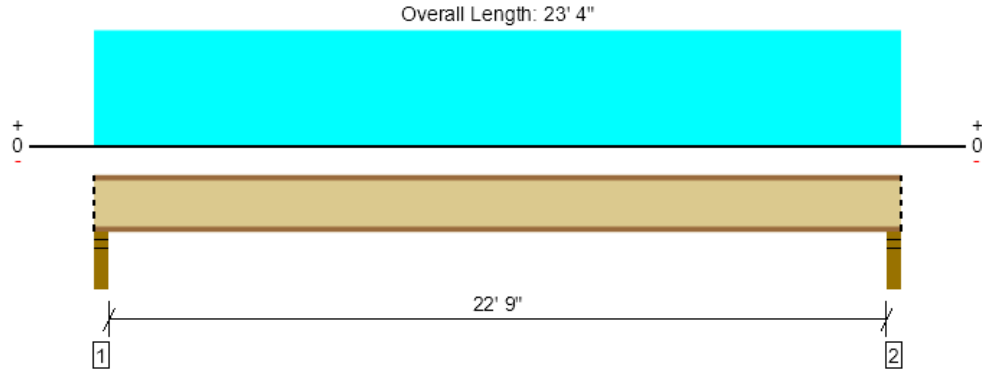
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Roof Framing, Joist D

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)	1050 @ 2 1/2"	1984 (3.50")	Passed (53%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1024 @ 3 1/2"	2358	Passed (43%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5908 @ 11' 8"	10925	Passed (54%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.538 @ 11' 8"	0.764	Passed (L/511)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.969 @ 11' 8"	1.146	Passed (L/284)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 23' 4"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.75"	467	583	1050	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.75"	467	583	1050	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' 2" o/c	
Bottom Edge (Lu)	23' 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)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 23' 4"	24"	20.0	25.0	Default Load

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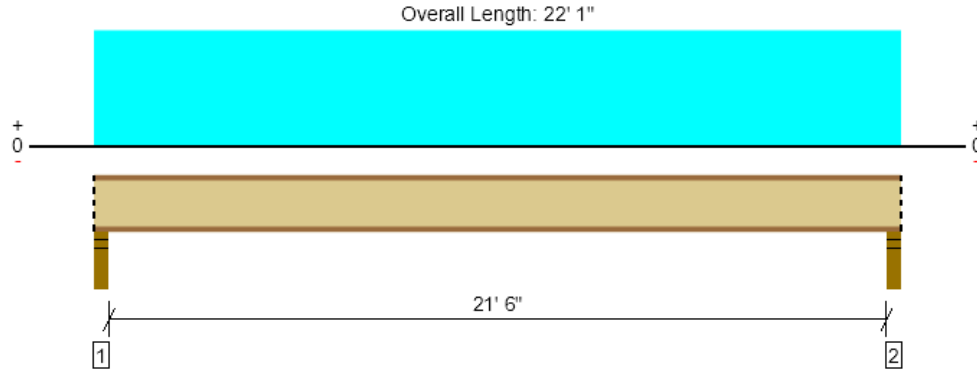
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Roof Framing, Joist E

1 piece(s) 11 7/8" TJI® 560 @ 24" OC



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	994 @ 2 1/2"	1984 (3.50")	Passed (50%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	968 @ 3 1/2"	2358	Passed (41%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5281 @ 11' 1/2"	10925	Passed (48%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.435 @ 11' 1/2"	0.722	Passed (L/598)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.783 @ 11' 1/2"	1.083	Passed (L/332)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 22' 1"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.75"	442	552	994	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.75"	442	552	994	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)	22' 1" 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)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 22' 1"	24"	20.0	25.0	Default Load

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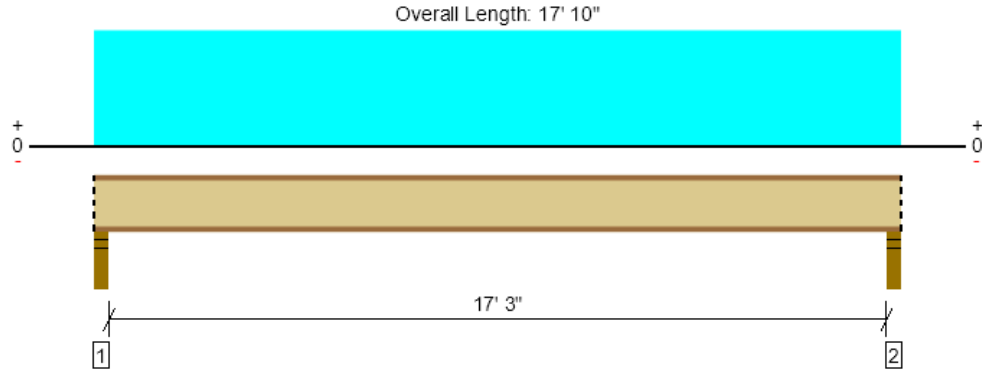
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Roof Framing, Joist F

1 piece(s) 11 7/8" TJI® 110 @ 24" OC



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	803 @ 2 1/2"	1581 (3.50")	Passed (51%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	776 @ 3 1/2"	1794	Passed (43%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3413 @ 8' 11"	3634	Passed (94%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.422 @ 8' 11"	0.581	Passed (L/496)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.759 @ 8' 11"	0.871	Passed (L/275)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 17' 10"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.75"	357	446	803	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.75"	357	446	803	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)	2' 11" o/c	
Bottom Edge (Lu)	17' 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)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 17' 10"	24"	20.0	25.0	Default Load

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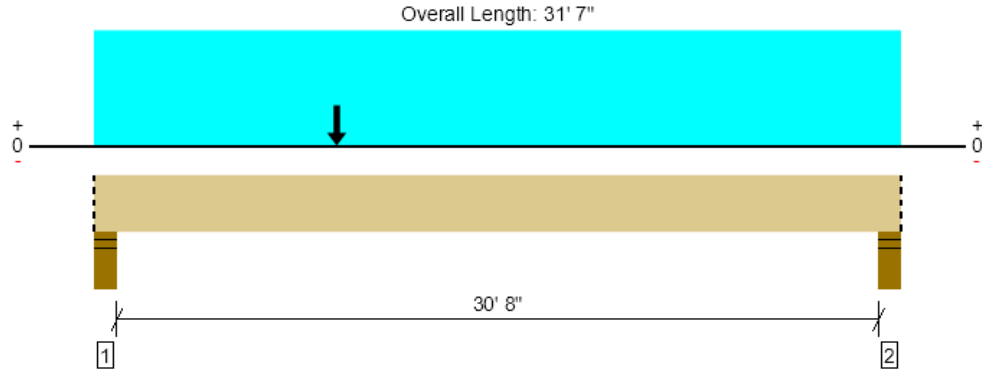
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Roof Framing, Beam 1

1 piece(s) 5 1/8" x 18" 24F-V4 DF Glulam



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)	3870 @ 4"	11416 (5.50")	Passed (34%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3517 @ 1' 11 1/2"	18742	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	28720 @ 13' 4 9/16"	58804	Passed (49%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.550 @ 15' 4 3/8"	1.031	Passed (L/674)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.098 @ 15' 4 13/16"	1.546	Passed (L/338)	--	1.0 D + 1.0 S (All Spans)

Member Length : 31' 7"
 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.
- Volume factor of 0.92 was calculated for positive bending using length L = 30' 11".
- 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.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	5.50"	5.50"	1.86"	1927	1942	3870	Blocking
2 - Stud wall - HF	5.50"	5.50"	1.58"	1657	1618	3275	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' 7" o/c	
Bottom Edge (Lu)	31' 7" 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 31' 7"	N/A	22.4	--	
1 - Uniform (PSF)	0 to 31' 7" (Front)	3' 6"	20.0	25.0	Default Load
2 - Point (lb)	9' 6" (Front)	N/A	665	797	Linked from: Beam 13, Support 1

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

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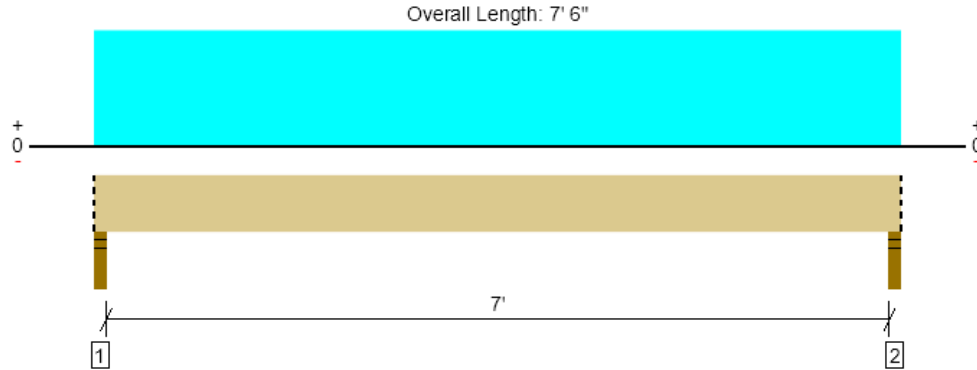
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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Roof Framing, Beam 2
2 piece(s) 2 x 8 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)	1286 @ 1 1/2"	3645 (3.00")	Passed (35%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	993 @ 10 1/4"	2501	Passed (40%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2254 @ 3' 9"	2569	Passed (88%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.094 @ 3' 9"	0.242	Passed (L/924)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.172 @ 3' 9"	0.363	Passed (L/505)	--	1.0 D + 1.0 S (All Spans)

- 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.

Member Length : 7' 6"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	583	703	1286	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	583	703	1286	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' 6" o/c	
Bottom Edge (Lu)	7' 6" 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 7' 6"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 7' 6" (Front)	7' 6"	20.0	25.0	Default Load

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

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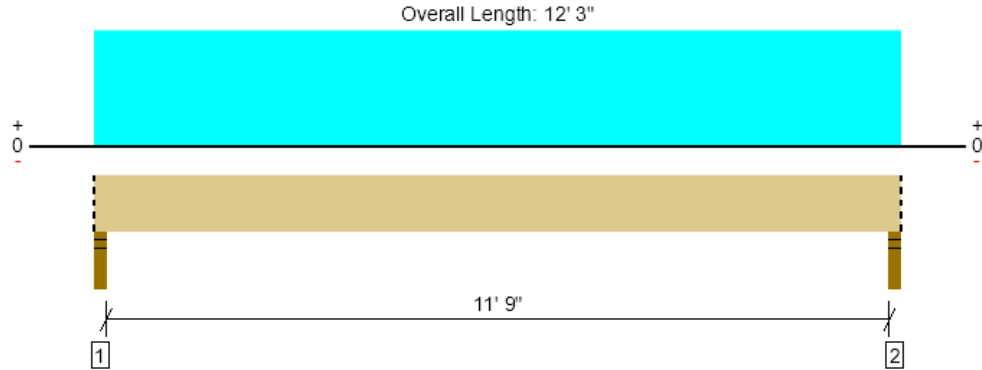
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Roof Framing, Beam 3

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	631 @ 1' 1/2"	4253 (3.00")	Passed (15%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	503 @ 1' 2 7/8"	9878	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1854 @ 6' 1 1/2"	18346	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.034 @ 6' 1 1/2"	0.400	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.070 @ 6' 1 1/2"	0.600	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	325	306	631	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	325	306	631	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' 3" o/c	
Bottom Edge (Lu)	12' 3" 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' 3"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 12' 3" (Front)	2'	20.0	25.0	Default Load

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

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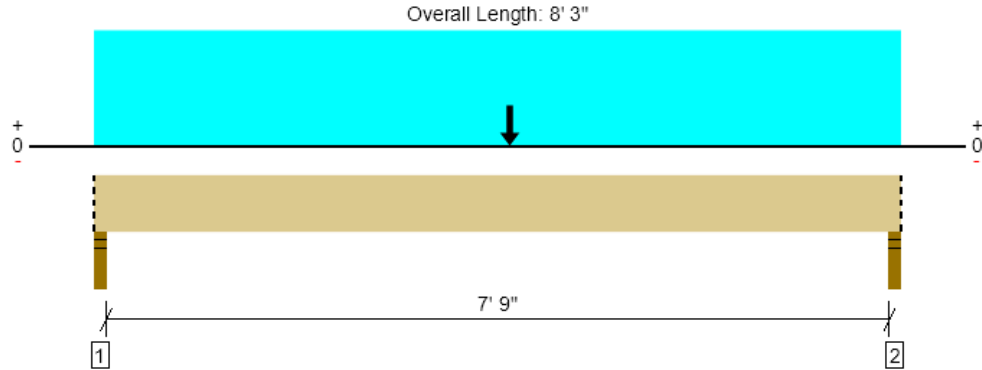
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Roof Framing, Beam 4

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	750 @ 8' 1 1/2"	4253 (3.00")	Passed (18%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	623 @ 7' 1/8"	9878	Passed (6%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2084 @ 4' 3"	18346	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.017 @ 4' 3"	0.267	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.035 @ 4' 3"	0.400	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 8' 3"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	376	354	730	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	386	364	750	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)	8' 3" o/c	
Bottom Edge (Lu)	8' 3" 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 8' 3"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 8' 3" (Front)	2'	20.0	25.0	Default Load
2 - Point (lb)	4' 3" (Front)	N/A	325	306	Linked from: Beam 3, Support 1

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

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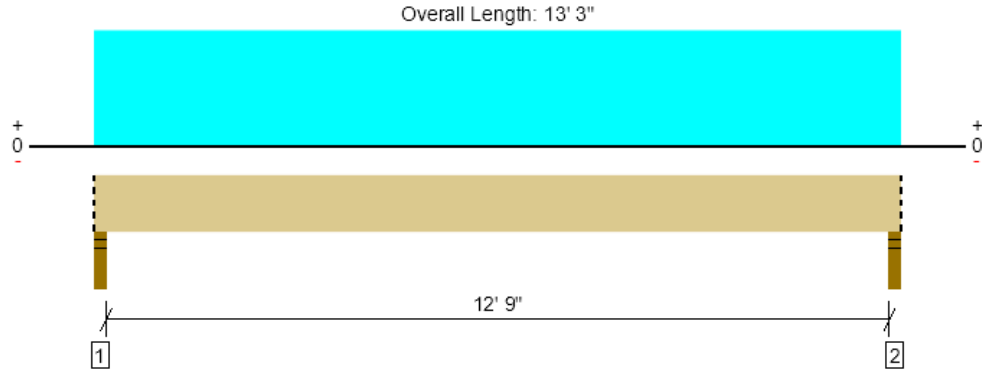
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Roof Framing, Beam 5

1 piece(s) 5 1/4" x 11 7/8" 2.0E 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)	4452 @ 1 1/2"	6379 (3.00")	Passed (70%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3619 @ 1' 2 7/8"	13861	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	14196 @ 6' 7 1/2"	34332	Passed (41%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.173 @ 6' 7 1/2"	0.433	Passed (L/901)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.321 @ 6' 7 1/2"	0.650	Passed (L/486)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 13' 3"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	2.09"	2050	2402	4452	Blocking
2 - Stud wall - HF	3.00"	3.00"	2.09"	2050	2402	4452	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)	13' 3" o/c	
Bottom Edge (Lu)	13' 3" 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 13' 3"	N/A	19.5	--	
1 - Uniform (PSF)	0 to 13' 3" (Front)	14' 6"	20.0	25.0	Default Load

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

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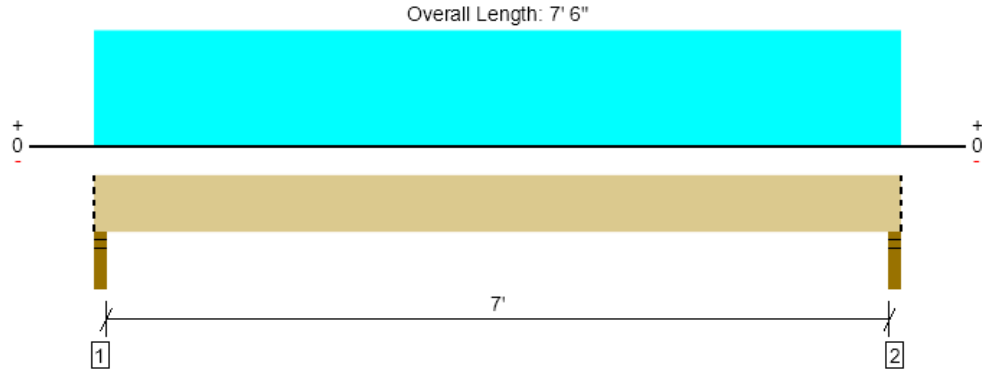
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Roof Framing, Beam 6

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	935 @ 1' 1/2"	4253 (3.00")	Passed (22%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	626 @ 1' 2 7/8"	9878	Passed (6%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1638 @ 3' 9"	18346	Passed (9%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.014 @ 3' 9"	0.242	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.026 @ 3' 9"	0.363	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 7' 6"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	442	492	935	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	442	492	935	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' 6" o/c	
Bottom Edge (Lu)	7' 6" 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 7' 6"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 7' 6" (Front)	5' 3"	20.0	25.0	Default Load

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

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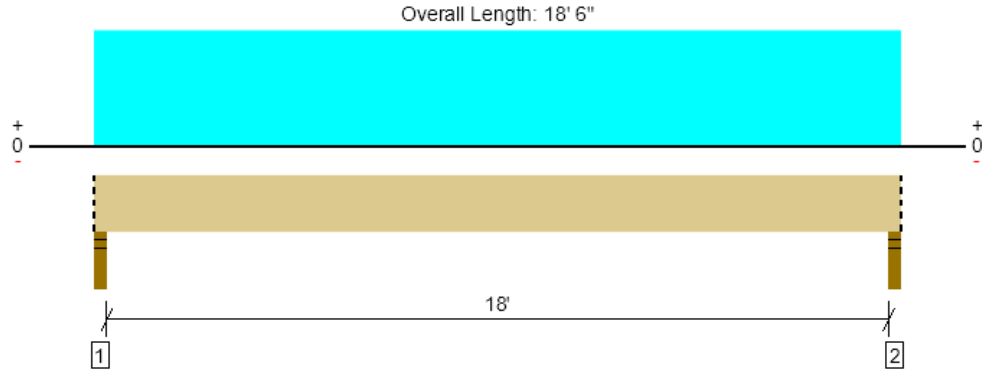
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Roof Framing, Beam 7

1 piece(s) 5 1/4" x 14" 2.0E 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)	4687 @ 1 1/2"	6379 (3.00")	Passed (73%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3969 @ 1' 5"	16342	Passed (24%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	21097 @ 9' 3"	46854	Passed (45%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.297 @ 9' 3"	0.608	Passed (L/738)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.560 @ 9' 3"	0.913	Passed (L/391)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 18' 6"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	2.20"	2201	2486	4687	Blocking
2 - Stud wall - HF	3.00"	3.00"	2.20"	2201	2486	4687	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' 6" o/c	
Bottom Edge (Lu)	18' 6" 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 18' 6"	N/A	23.0	--	
1 - Uniform (PSF)	0 to 18' 6" (Front)	10' 9"	20.0	25.0	Default Load

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

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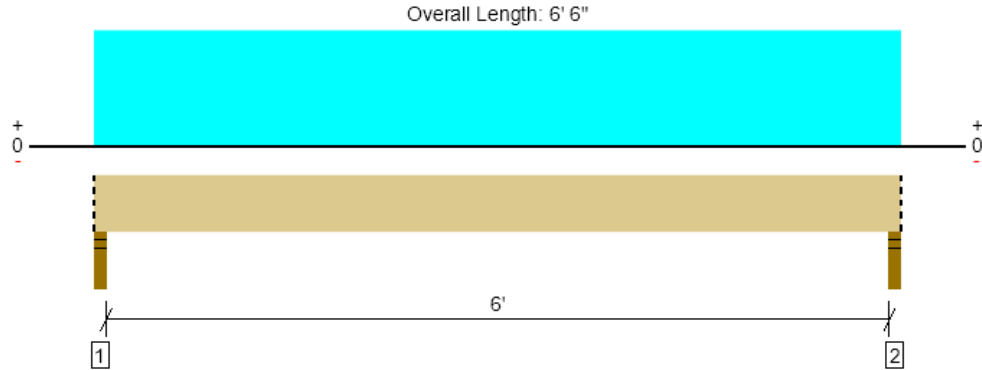
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Roof Framing, Beam 8

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	1724 @ 1' 1/2"	4253 (3.00")	Passed (41%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1067 @ 1' 2 7/8"	9878	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2590 @ 3' 3"	18346	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.018 @ 3' 3"	0.208	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.033 @ 3' 3"	0.313	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	790	934	1724	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	790	934	1724	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' 6" o/c	
Bottom Edge (Lu)	6' 6" 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 6' 6"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 6' 6" (Front)	11' 6"	20.0	25.0	Default Load

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

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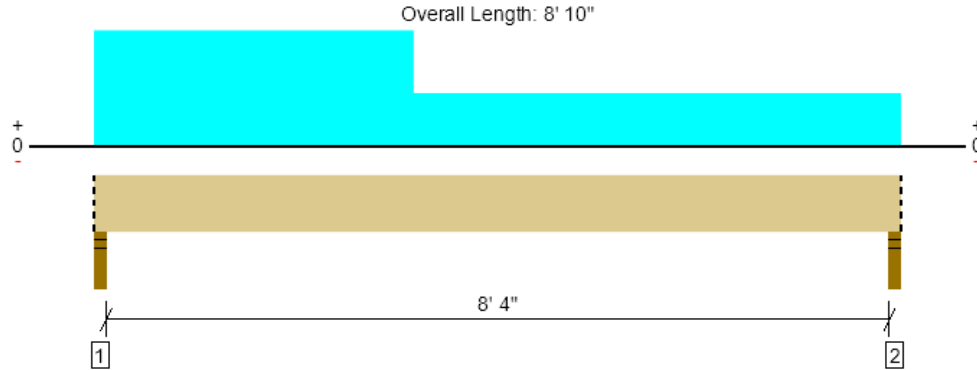
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Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	



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Roof Framing, Beam 9

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	1899 @ 1 1/2"	4253 (3.00")	Passed (45%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1241 @ 1' 2 7/8"	9878	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3166 @ 3' 8"	18346	Passed (17%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.036 @ 4' 3 1/2"	0.286	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.067 @ 4' 3 9/16"	0.429	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 8' 10"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	876	1023	1899	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	604	683	1287	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)	8' 10" o/c	
Bottom Edge (Lu)	8' 10" 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 8' 10"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 3' 6" (Front)	11' 6"	20.0	25.0	Default Load
2 - Uniform (PSF)	3' 6" to 8' 10" (Front)	5' 3"	20.0	25.0	Default Load

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

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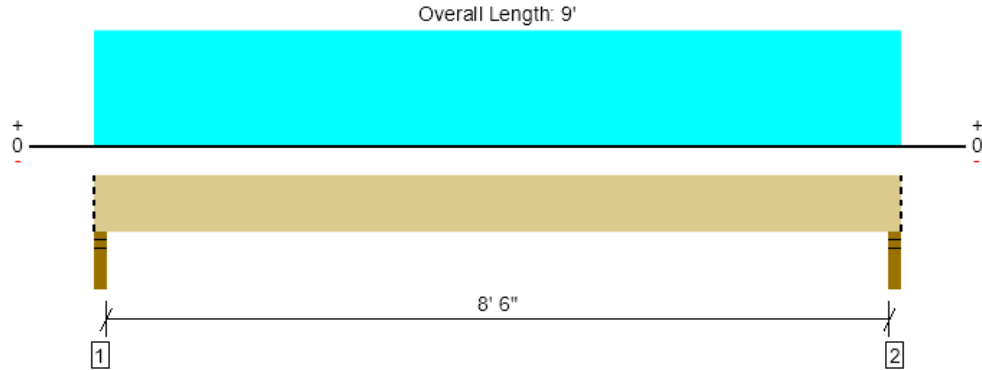
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Roof Framing, Beam 10

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	1678 @ 1 1/2"	4253 (3.00")	Passed (39%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1216 @ 1' 2 7/8"	9878	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3570 @ 4' 6"	18346	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.042 @ 4' 6"	0.292	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.078 @ 4' 6"	0.438	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 9'
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	778	900	1678	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	778	900	1678	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)	9' o/c	
Bottom Edge (Lu)	9' 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 9'	N/A	13.0	--	
1 - Uniform (PSF)	0 to 9' (Front)	8'	20.0	25.0	Default Load

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

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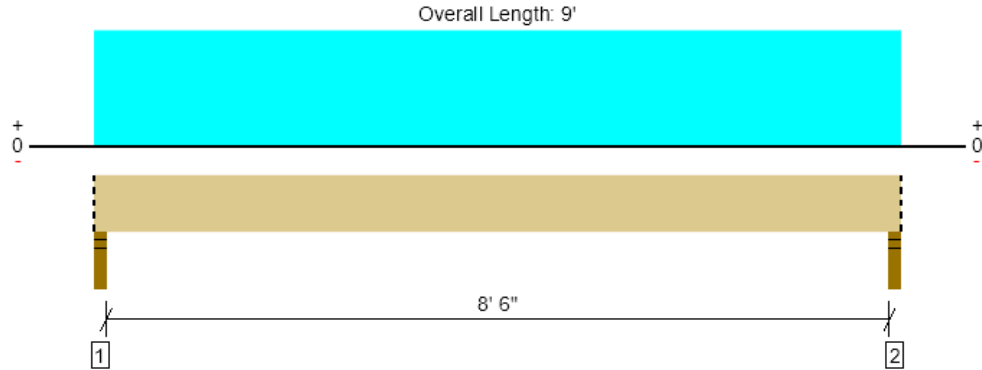
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Roof Framing, Beam 11

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	463 @ 1' 1 1/2"	4253 (3.00")	Passed (11%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	336 @ 1' 2 7/8"	9878	Passed (3%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	986 @ 4' 6"	18346	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.010 @ 4' 6"	0.292	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.021 @ 4' 6"	0.438	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 9'
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	238	225	463	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	238	225	463	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)	9' o/c	
Bottom Edge (Lu)	9' 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 9'	N/A	13.0	--	
1 - Uniform (PSF)	0 to 9' (Front)	2'	20.0	25.0	Default Load

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

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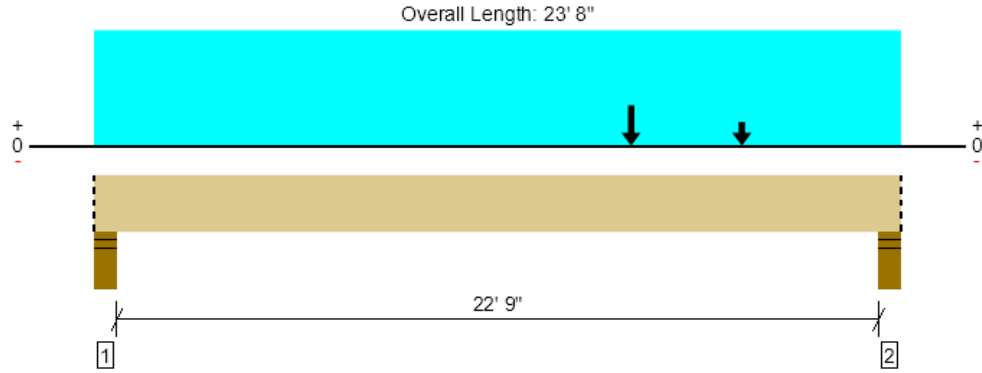
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Roof Framing, Beam 12

1 piece(s) 5 1/4" x 11 7/8" 2.0E 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)	2796 @ 23' 4"	11694 (5.50")	Passed (24%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2638 @ 22' 2 5/8"	13861	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	16275 @ 15' 9"	34332	Passed (47%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.494 @ 12' 5 5/16"	0.767	Passed (L/559)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.000 @ 12' 4 7/8"	1.150	Passed (L/276)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 23' 8"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	5.50"	5.50"	1.50"	1005	931	1936	Blocking
2 - Stud wall - HF	5.50"	5.50"	1.50"	1419	1378	2796	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' 8" o/c	
Bottom Edge (Lu)	23' 8" 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 23' 8"	N/A	19.5	--	
1 - Uniform (PSF)	0 to 23' 8" (Front)	2'	20.0	25.0	Default Load
2 - Point (lb)	15' 9" (Front)	N/A	778	900	Linked from: Beam 10, Support 1
3 - Point (lb)	19' (Front)	N/A	238	225	Linked from: Beam 11, Support 1

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

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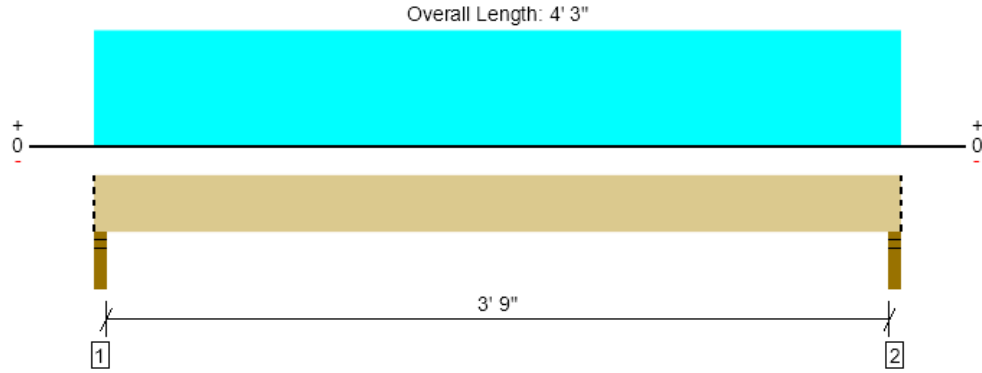
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Roof Framing, Beam 13

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	1462 @ 1 1/2"	4253 (3.00")	Passed (34%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	609 @ 1' 2 7/8"	9878	Passed (6%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1376 @ 2' 1 1/2"	18346	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.006 @ 2' 1 1/2"	0.133	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.010 @ 2' 1 1/2"	0.200	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	665	797	1462	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	665	797	1462	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)	4' 3" o/c	
Bottom Edge (Lu)	4' 3" 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 4' 3"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 4' 3" (Front)	15'	20.0	25.0	Default Load

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

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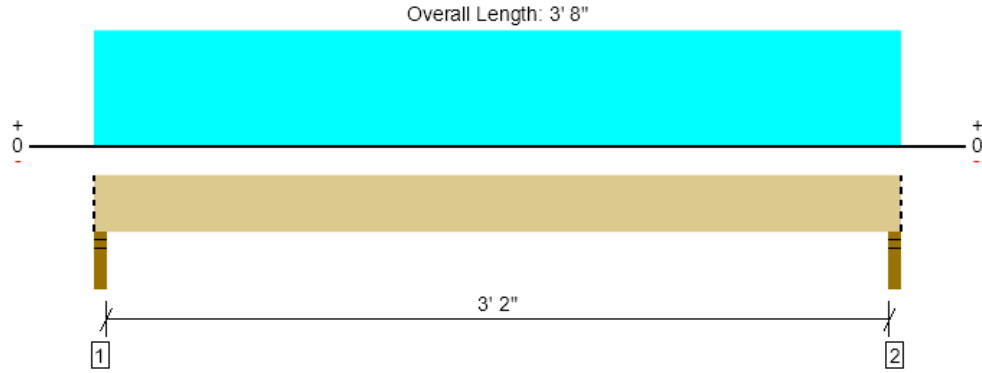
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Roof Framing, Beam 14
2 piece(s) 2 x 8 HF No.2



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)	897 @ 1' 1/2"	3645 (3.00")	Passed (25%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	479 @ 10' 1/4"	2501	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	714 @ 1' 10"	2569	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.007 @ 1' 10"	0.114	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.012 @ 1' 10"	0.171	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

- 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.

Member Length : 3' 8"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	404	493	897	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	404	493	897	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)	3' 8" o/c	
Bottom Edge (Lu)	3' 8" 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 3' 8"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 3' 8" (Front)	10' 9"	20.0	25.0	Default Load

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

Weyerhaeuser Notes

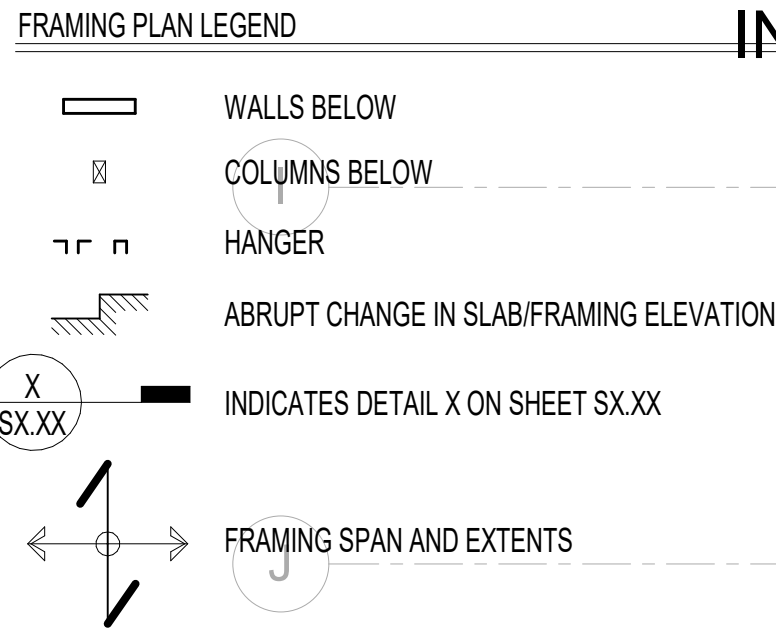
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FRAMING PLAN NOTES (TYPICAL UNLESS NOTED OTHERWISE)

- FLOOR SHEATHING SHALL BE 23/32" TONGUE AND GROOVE APA RATED SHEATHING (SPAN RATING 40/20). NAIL AT ALL FRAMED PANEL EDGES AND OVER SHEAR WALLS w/ 10d @ 6"oc AND 12"oc TO ALL INTERMEDIATE FRAMING
- ROOF SHEATHING SHALL BE 15/32" APA RATED SHEATHING (SPAN RATING 24/0). NAIL AT ALL FRAMED PANEL EDGES AND OVER SHEARWALLS w/ 3d @ 6"oc AND 12"oc TO ALL INTERMEDIATE FRAMING.
- 1SWX INDICATES SHEAR WALL PER SCHEDULE 12/S6.0.
- 2SWX INDICATES DOUBLE SIDED SHEAR WALL PER SCHEDULE 12/S6.0.
- ALL HEADERS SHALL BE (2)x8 U.N.O. REFER TO NOTE 5 FOR SUPPORT REQUIREMENTS.
- COLUMNS SHALL BE DOUBLE STUDS MINIMUM, U.N.O., WITH BEAM OR HEADER BEARING FULLY ON COLUMN.
- WHERE FULL HEIGHT LSL STUDS ARE CALLED OUT, INSTALL 1.3E 1 1/2" x 3 1/2" LSL STUDS @ 16"oc.

WALL/FLOOR INTERACTION

do these studs need to remain

FOUNDATION PLAN LEGEND

- ABRUPT CHANGE IN SLAB/FRAMING ELEVATION
- INDICATES EXISTING FOUNDATION
- INDICATES NEW FOUNDATION
- INDICATES DETAIL X ON SHEET SX.XX
- INDICATES SIMPSON HOLDOWN. REFER TO DETAIL 10/S3.0 & FOUNDATION PLAN NOTES FOR ANCHOR AND STUD STACK REQUIREMENTS.
- 2"Ø PIPE PILE
- 3"Ø PIPE PILE
- 8"Ø HELICAL PILE
- EPOXY EMBED (2#4x2'-0" BOT INTO (E) FOUNDATION 4" MIN USING SET-3G EPOXY

FOUNDATION PLAN NOTES

- SLABS ON GRADE SHALL BE 4" THICK WITH 6x6 W1.4xW1.4 WWM CENTERED, U.N.O. PREPARED SOILS AND PROVIDE MINIMUM 10-MIL VISQUEEN VAPOR BARRIER UNDER ALL SLABS.
- REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS AND TOP OF SLAB ELEVATIONS.
- ALL HOLDOWNS TO BE INSTALLED AS REQUIRED BY MANUFACTURER. REFER TO HOLDOWN SCHEDULE 10/S3.0.
- CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

SITE RETAINING WALLS PER 10/S3.1. EXTENT OF WALL PER ARCH

ADDED PILE SUPPORTED FOOTINGS @ CONCRETE WALLS TYP.

(E) SLAB ON GRADE

(E) FOUNDATION

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Revision: Date:

Stamp:

PRELIMINARY
NOT FOR
CONSTRUCTION

CQN
CARTER QUINN NORLIN
STRUCTURAL
ENGINEERING

DOES THIS
RETAINING WALL
STILL EXIST

Project:

NS Residence
project no. 2401

8265 SE 61st St
Mercer Island, WA 98040

Drawing Title:

Upper Floor Framing
Plan

Date: January 16, 2025

Issued For:

Drawn By:

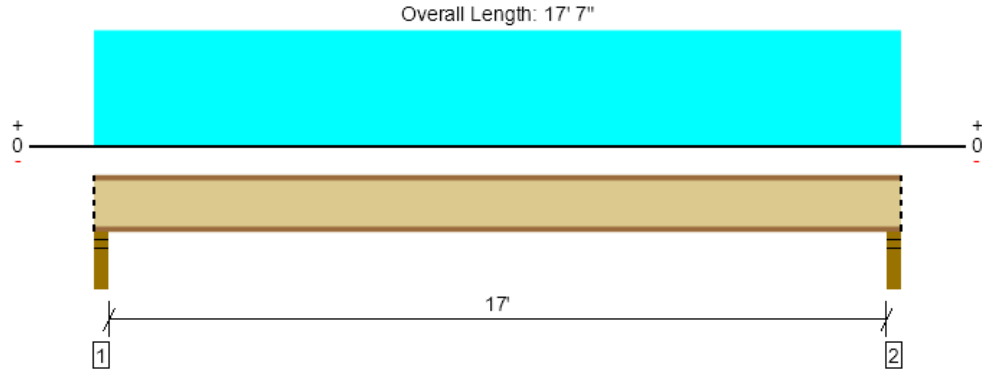
Checked By:

Scale: As indicated

Sheet No.:

S2.2

Upper Floor Framing, Joist A
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)	1758 @ 2 1/2"	1984 (3.50")	Passed (89%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1700 @ 3 1/2"	2358	Passed (72%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	7367 @ 8' 9 1/2"	10925	Passed (67%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.182 @ 8' 9 1/2"	0.572	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.728 @ 8' 9 1/2"	0.858	Passed (L/283)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 17' 7"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	2.75"	1319	440	1758	Blocking
2 - Stud wall - HF	3.50"	3.50"	2.75"	1319	440	1758	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' 4" o/c	
Bottom Edge (Lu)	17' 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)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 17' 7"	24"	15.0	25.0	Default Load
2 - Uniform (PSF)	0 to 17' 7"	24"	60.0	--	Green Roof

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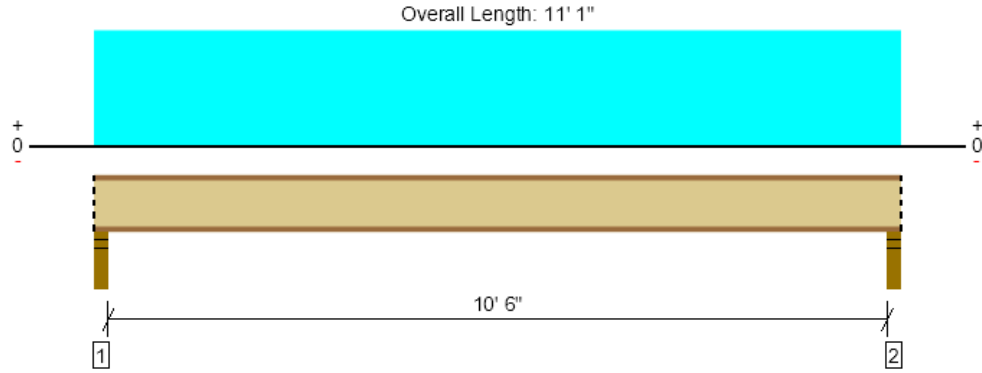
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	



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File Name: Nestler-Spare (2025)

Upper Floor Framing, Joist B
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)	1108 @ 2 1/2"	1581 (3.50")	Passed (70%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1050 @ 3 1/2"	1794	Passed (59%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2844 @ 5' 6 1/2"	3634	Passed (78%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.067 @ 5' 6 1/2"	0.356	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.269 @ 5' 6 1/2"	0.533	Passed (L/475)	--	1.0 D + 1.0 S (All Spans)

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

Member Length : 11' 1"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.95"	831	277	1108	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.95"	831	277	1108	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)	3' 3" o/c	
Bottom Edge (Lu)	11' 1" 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)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 11' 1"	24"	15.0	25.0	Default Load
2 - Uniform (PSF)	0 to 11' 1"	24"	60.0	--	Green Roof

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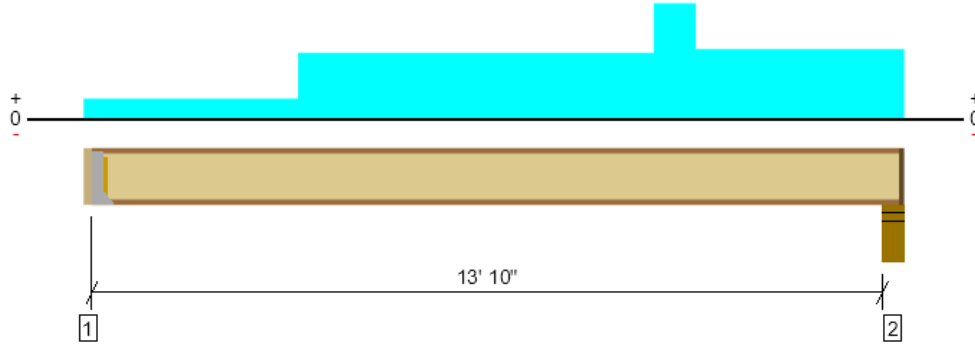
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File Name: Nestler-Spare (2025)

Upper Floor Framing, Joist C
2 piece(s) 11 7/8" TJI® 210 @ 12" OC

Overall Length: 14' 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)	2207 @ 14' 1"	2920 (3.50")	Passed (76%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2097 @ 14'	3310	Passed (63%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	6867 @ 7' 7 3/8"	7590	Passed (90%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.296 @ 7' 1 11/16"	0.348	Passed (L/563)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.400 @ 7' 3 3/16"	0.696	Passed (L/418)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	62	45	Passed	--	--

Member Length : 14' 2 1/4"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) 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 - Hanger on 11 7/8" HF beam	2.00"	Hanger ¹	1.75" / - ²	346	1132	1478	See note ¹	W
2 - Stud wall - HF	5.50"	4.25"	2.13"	1069	1170	2239	1 1/4" Rim Board	A3

- 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)	3' 10" o/c	
Bottom Edge (Lu)	14' 2" 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	MIU4.28/9	2.50"	N/A	16-10d	2-10dx1.5	Web Stiffeners

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

Vertical Loads	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 14' 5 1/2"	12"	30.0	60.0	Default Load
2 - Uniform (PSF)	10' to 14' 5 1/2"	12"	220.0	--	Default Load
3 - Uniform (PSF)	3' 9" to 10' 9"	12"	--	205.0	Default Load

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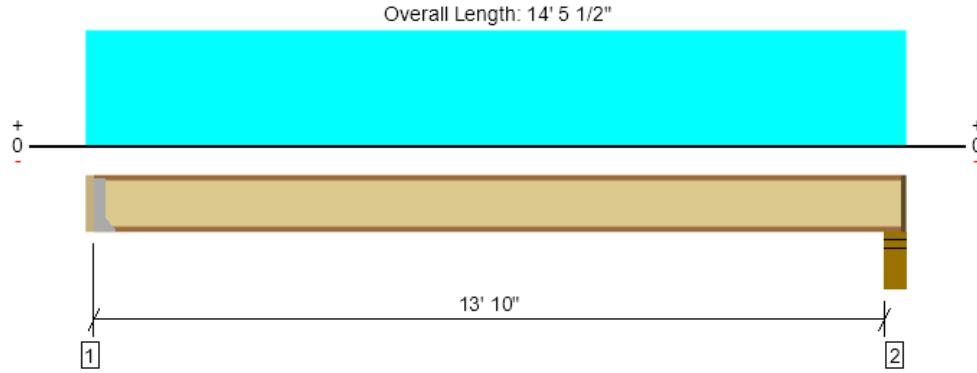
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Upper Floor Framing, Joist D
1 piece(s) 11 7/8" TJI® 360 @ 16" OC



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)	1392 @ 2"	1392 (3.03")	Passed (100%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1392 @ 2"	1705	Passed (82%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4842 @ 7' 1 1/2"	6180	Passed (78%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.171 @ 7' 1 1/2"	0.348	Passed (L/978)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.427 @ 7' 1 1/2"	0.696	Passed (L/391)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	52	45	Passed	--	--

Member Length : 14' 2 1/4"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) 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 - Hanger on 11 7/8" HF beam	2.00"	Hanger ¹	3.03" / - ²	855	570	1425	See note ¹	--
2 - Stud wall - HF	5.50"	4.25"	3.26"	880	587	1467	1 1/4" Rim Board	A3

- 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)	4' 1" o/c	
Bottom Edge (Lu)	14' 2" 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	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	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 14' 5 1/2"	16"	30.0	60.0	Default Load
2 - Uniform (PSF)	0 to 14' 5 1/2"	16"	60.0	--	Default Load

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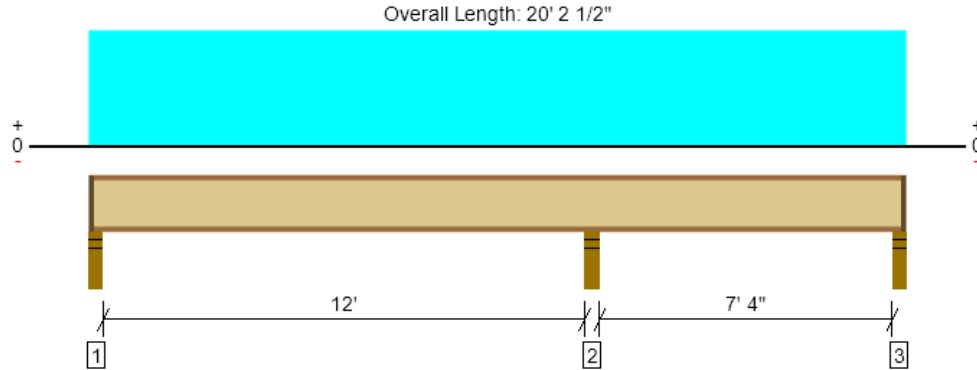
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Upper Floor Framing, Joist E
1 piece(s) 11 7/8" TJI® 110 @ 16" OC



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)	950 @ 12' 5 1/4"	1935 (3.50")	Passed (49%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	499 @ 12' 3 1/2"	1716	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-1047 @ 12' 5 1/4"	3160	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.068 @ 5' 10 11/16"	0.306	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.092 @ 5' 10 3/16"	0.611	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	57	45	Passed	--	--

Member Length : 20'
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) 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 - Stud wall - HF	3.50"	2.25"	1.75"	103	287/-6	390	1 1/4" Rim Board	A3
2 - Stud wall - SPF	3.50"	3.50"	3.50"	259	691	950	None	--
3 - Stud wall - HF	3.50"	2.25"	1.75"	42	194/-76	236/-34	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)	5' 10" o/c	
Bottom Edge (Lu)	5' 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 20' 2 1/2"	16"	15.0	40.0	Default Load

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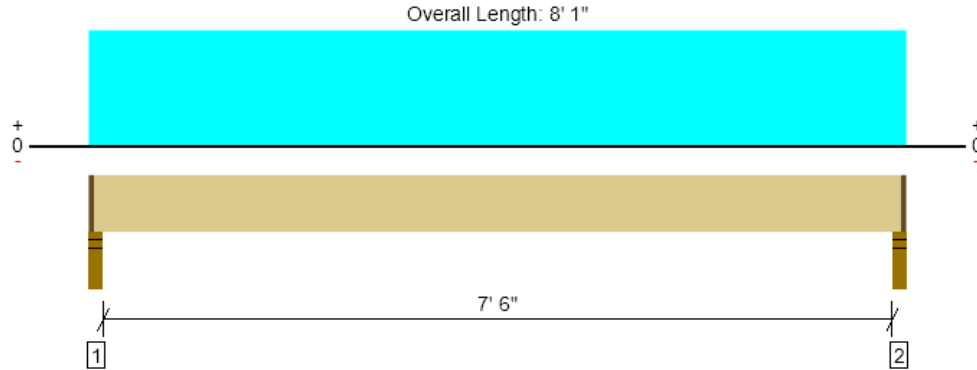
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Upper Floor Framing, Joist F
1 piece(s) 4 x 12 HF No.2 @ 24" OC



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)	433 @ 2' 1/2"	3189 (2.25")	Passed (14%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	309 @ 1' 2 3/4"	3938	Passed (8%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	808 @ 4' 1/2"	6615	Passed (12%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.012 @ 4' 1/2"	0.192	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.016 @ 4' 1/2"	0.383	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 7' 10 1/2"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) 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 - Stud wall - HF	3.50"	2.25"	1.50"	121	323	445	1 1/4" Rim Board
2 - Stud wall - HF	3.50"	2.25"	1.50"	121	323	445	1 1/4" Rim Board

• 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)	7' 11" o/c	
Bottom Edge (Lu)	7' 11" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 8' 1"	24"	15.0	40.0	Default Load

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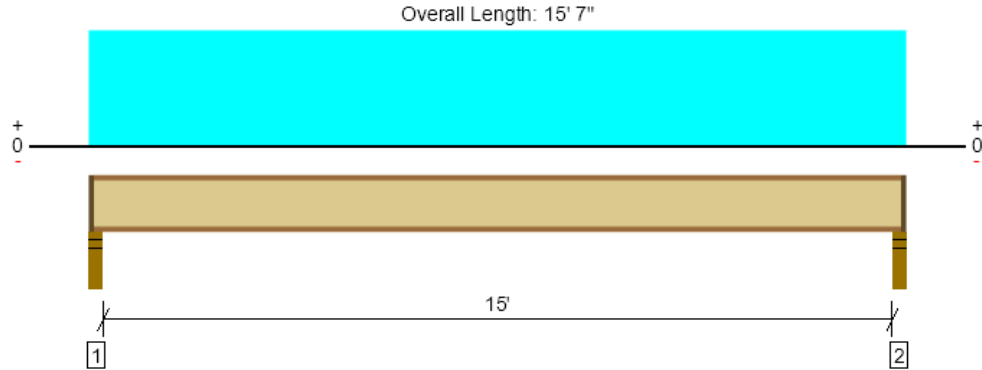
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	



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File Name: Nestler-Spare (2025)

Upper Floor Framing, Joist G
1 piece(s) 11 7/8" 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)	564 @ 2 1/2"	1041 (2.25")	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	550 @ 3 1/2"	1560	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2109 @ 7' 9 1/2"	3160	Passed (67%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.217 @ 7' 9 1/2"	0.379	Passed (L/840)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.298 @ 7' 9 1/2"	0.758	Passed (L/611)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	46	45	Passed	--	--

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/480) 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 - Stud wall - HF	3.50"	2.25"	1.75"	156	416	571	1 1/4" Rim Board	A3
2 - Stud wall - HF	3.50"	2.25"	1.75"	156	416	571	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)	3' 10" o/c	
Bottom Edge (Lu)	15' 5" 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 15' 7"	16"	15.0	40.0	Default Load

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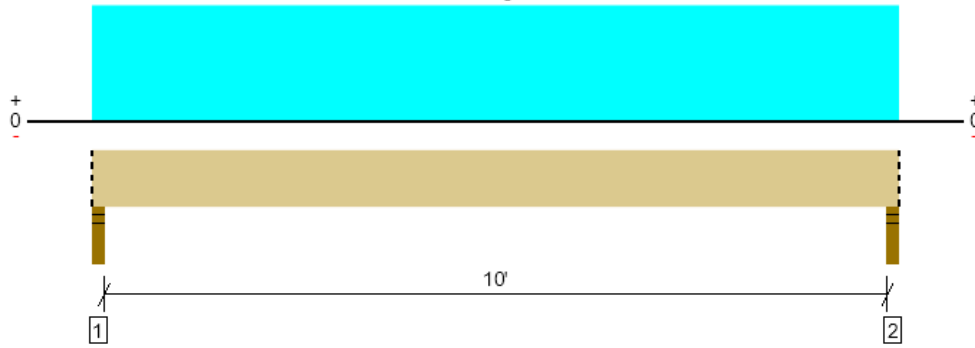


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File Name: Nestler-Spare (2025)

Upper Floor Framing, Beam 1

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL

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)	1617 @ 1 1/2"	4253 (3.00")	Passed (38%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1235 @ 1' 2 7/8"	8590	Passed (14%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4045 @ 5' 3"	15953	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.060 @ 5' 3"	0.256	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.116 @ 5' 3"	0.512	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 10' 6"
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	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	777	840	131	1617	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	777	840	131	1617	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' 6" o/c	
Bottom Edge (Lu)	10' 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)	Comments
0 - Self Weight (PLF)	0 to 10' 6"	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 10' 6" (Front)	4'	15.0	40.0	--	Default Load
2 - Uniform (PSF)	0 to 10' 6" (Front)	1'	75.0	--	25.0	Default Load

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

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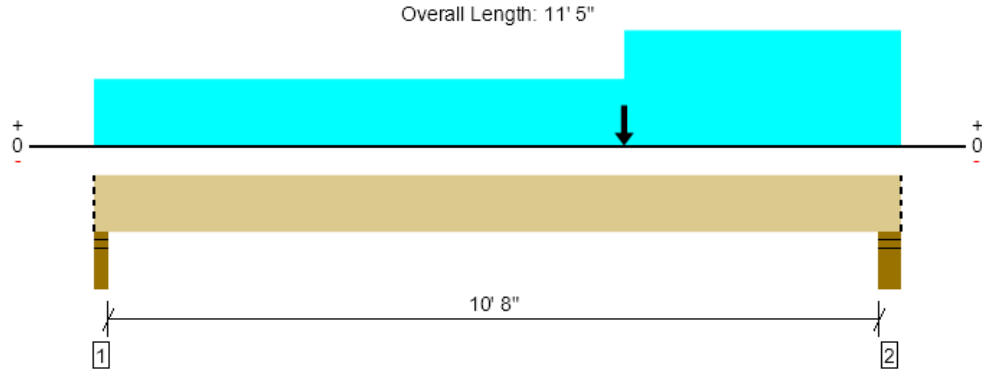
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File Name: Nestler-Spare (2025)

Upper Floor Framing, Beam 2

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	2556 @ 2"	4961 (3.50")	Passed (52%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2753 @ 9' 11 5/8"	8590	Passed (32%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	8550 @ 7' 6"	15953	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.122 @ 5' 9 5/16"	0.273	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.282 @ 5' 10 1/4"	0.546	Passed (L/465)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 11' 5"
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	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.80"	1359	815	781	2556	Blocking
2 - Stud wall - HF	5.50"	5.50"	2.77"	2527	1010	848	3921	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)	11' 5" o/c	
Bottom Edge (Lu)	11' 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 11' 5"	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 7' 6" (Front)	1'	30.0	60.0	--	Default Load
2 - Uniform (PSF)	0 to 7' 6" (Front)	1'	15.0	40.0	--	Default Load
3 - Uniform (PSF)	0 to 7' 6" (Front)	5' 3"	20.0	--	25.0	Default Load
4 - Uniform (PSF)	7' 6" to 11' 5" (Front)	5' 3"	75.0	--	25.0	Default Load
5 - Uniform (PSF)	7' 6" to 11' 5" (Front)	1'	75.0	60.0	--	Default Load
6 - Point (lb)	7' 6" (Front)	N/A	777	840	131	Linked from: Beam 1, Support 1

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

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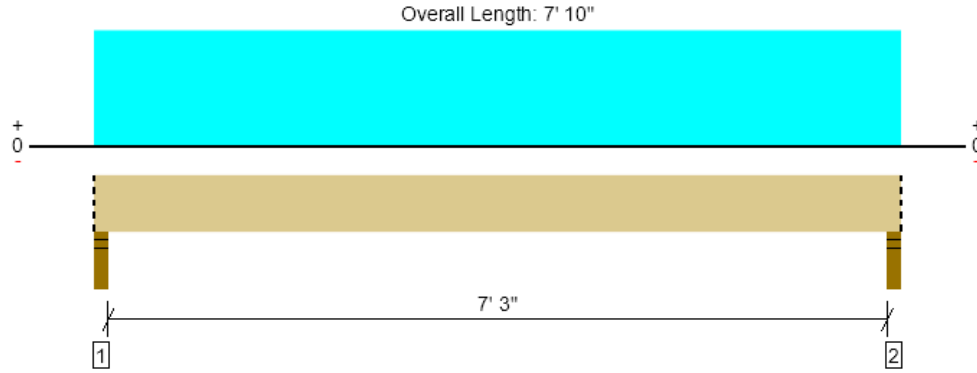
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Upper Floor Framing, Beam 3

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	4364 @ 2"	4961 (3.50")	Passed (88%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2936 @ 1' 3 3/8"	9878	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	7835 @ 3' 11"	18346	Passed (43%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.041 @ 3' 11"	0.188	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.133 @ 3' 11"	0.375	Passed (L/678)	--	1.0 D + 1.0 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 7' 10"
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	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	3.08"	3018	157	1346	4364	Blocking
2 - Stud wall - HF	3.50"	3.50"	3.08"	3018	157	1346	4364	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' 10" o/c	
Bottom Edge (Lu)	7' 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)	Comments
0 - Self Weight (PLF)	0 to 7' 10"	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 7' 10" (Front)	1'	15.0	40.0	--	Default Load
2 - Uniform (PSF)	0 to 7' 10" (Front)	8' 6"	75.0	--	25.0	Default Load
3 - Uniform (PSF)	0 to 7' 10" (Front)	5' 3"	20.0	--	25.0	Default Load

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

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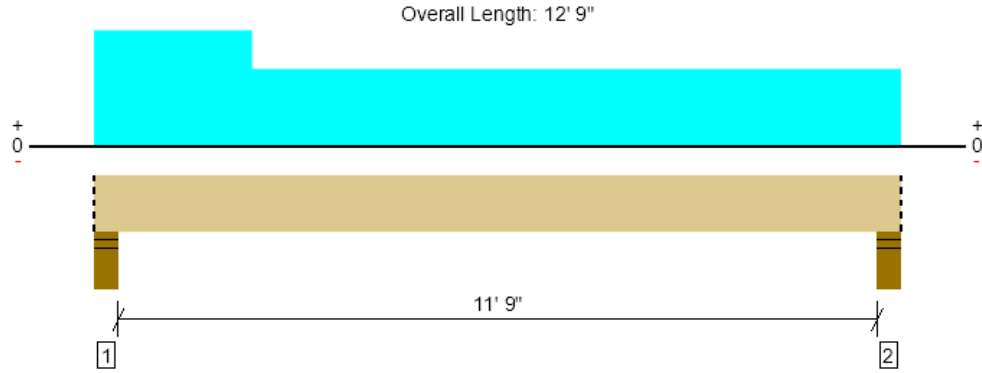
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Upper Floor Framing, Beam 4
1 piece(s) 5 1/4" x 14" 2.0E Parallam® PSL



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)	13047 @ 4 1/2"	12758 (6.00")	Passed (102%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	8723 @ 1' 8"	14210	Passed (61%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	32204 @ 6' 3 3/8"	40743	Passed (79%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.290 @ 6' 4 9/16"	0.300	Passed (L/497)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.400 @ 6' 4 3/16"	0.600	Passed (L/360)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 12' 9"
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	Factored	
1 - Stud wall - HF	6.00"	6.00"	6.00"	4747	8300	13047	Blocking
2 - Stud wall - HF	6.00"	6.00"	5.28"	2920	8300	11221	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' 9" o/c	
Bottom Edge (Lu)	12' 9" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 12' 9"	N/A	23.0	--	
1 - Uniform (PSF)	0 to 2' 6" (Front)	7' 2"	120.0	--	Default Load
2 - Uniform (PSF)	0 to 12' 9" (Front)	4' 3"	15.0	40.0	Default Load
3 - Uniform (PLF)	0 to 12' 9" (Front)	N/A	346.0	1132.0	Linked from: Joist C, Support 1

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

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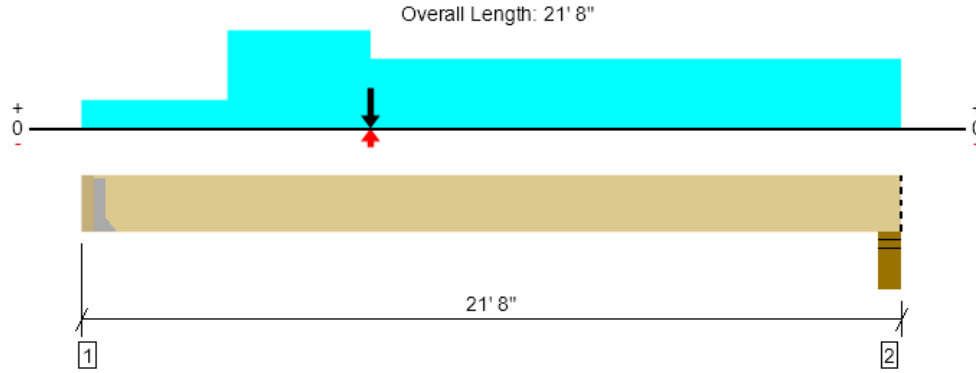
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Upper Floor Framing, Beam 5
1 piece(s) 7" x 11 7/8" 2.0E Parallam® PSL



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)	4036 @ 3"	6563 (1.50")	Passed (62%)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	3794 @ 1' 2 7/8"	16071	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	23728 @ 7' 6"	39805	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.432 @ 10' 3 1/8"	0.527	Passed (L/585)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Total Load Defl. (in)	0.993 @ 10' 5 5/8"	1.054	Passed (L/255)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]

- Deflection criteria: LL (L/480) and TL (L/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.

Member Length : 21' 5"
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	Snow	Factored	
1 - Hanger on 11 7/8" DF beam	3.00"	Hanger ¹	1.50"	2166	1791	733	4059	See note ¹
2 - Stud wall - HF	5.50"	5.50"	1.50"	2346	776	1058	3722	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)	21' 5" o/c	
Bottom Edge (Lu)	21' 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	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" to 21' 8"	N/A	26.0	--	--	
1 - Uniform (PSF)	3' 9" to 21' 8" (Front)	9'	12.0	--	--	
2 - Uniform (PSF)	0 to 7' 6" (Front)	2'	15.0	40.0	--	
3 - Uniform (PSF)	3' 9" to 21' 8" (Front)	4'	15.0	--	25.0	
4 - Point (lb)	7' 6" (Front)	N/A	719	1967/-185	--	Linked from: Beam 9/10 Cont., Support 1

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

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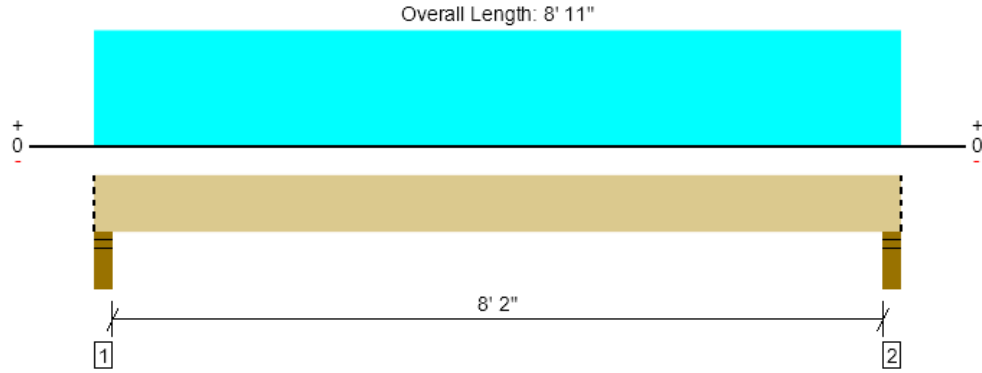
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Upper Floor Framing, Beam 6

2 piece(s) 2 x 8 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)	376 @ 3"	5468 (4.50")	Passed (7%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	293 @ 11 3/4"	2501	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	746 @ 4' 5 1/2"	2569	Passed (29%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.040 @ 4' 5 1/2"	0.210	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.077 @ 4' 5 1/2"	0.421	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Member Length : 8' 11"
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	Snow	Factored	
1 - Stud wall - HF	4.50"	4.50"	1.50"	181	195	376	Blocking
2 - Stud wall - HF	4.50"	4.50"	1.50"	181	195	376	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)	8' 11" o/c	
Bottom Edge (Lu)	8' 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 8' 11"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 8' 11" (Front)	1' 9"	20.0	25.0	Default Load

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

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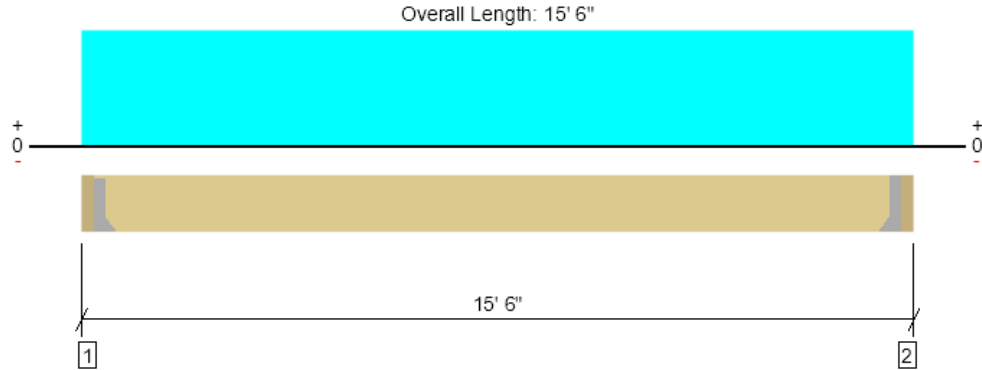
ForteWEB Software Operator	Job Notes
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File Name: Nestler-Spare (2025)

Upper Floor Framing, Beam 7

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	1269 @ 3"	4725 (1.50")	Passed (27%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	972 @ 1' 2 7/8"	8590	Passed (11%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4197 @ 7' 9"	15953	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.144 @ 7' 9"	0.375	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.272 @ 7' 9"	0.750	Passed (L/663)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 15'
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	Snow	Factored	
1 - Hanger on 11 7/8" HF beam	3.00"	Hanger ¹	1.50"	611	543	388	1308	See note ¹
2 - Hanger on 11 7/8" HF beam	3.00"	Hanger ¹	1.50"	611	543	388	1308	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' o/c	
Bottom Edge (Lu)	15' 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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3" to 15' 3"	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 15' 6" (Front)	1' 9"	15.0	40.0	--	Default Load
2 - Uniform (PSF)	0 to 15' 6" (Front)	2'	20.0	--	25.0	Default Load

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

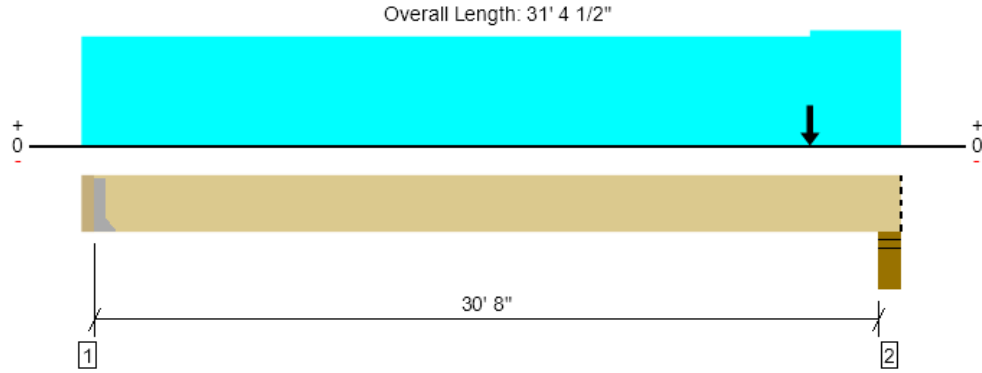
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Upper Floor Framing, Beam 8
1 piece(s) 5 1/2" x 24" 24F-V4 DF Glulam



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)	9257 @ 3"	9257 (2.59")	Passed (100%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	9058 @ 28' 11"	26818	Passed (34%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Pos Moment (Ft-lbs)	72366 @ 15' 10 5/8"	108286	Passed (67%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.557 @ 15' 8 11/16"	0.770	Passed (L/663)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	1.089 @ 15' 8 5/8"	1.540	Passed (L/339)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 31' 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).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Volume factor of 0.89 was calculated for positive bending using length L = 30' 9 1/2".
- 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.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Hanger on 24" HF beam	3.00"	Hanger ¹	2.59"	4588	2460	3952	9397	See note ¹
2 - Stud wall - HF	5.50"	5.50"	4.75"	5136	2988	4280	10587	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)	28' 8" o/c	
Bottom Edge (Lu)	31' 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	HGU5.62-SDS H=24	5.25"	N/A	36-SDS25212	24-SDS25212	

- 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" to 31' 4 1/2"	N/A	32.1	--	--	
1 - Uniform (PSF)	0 to 31' 4 1/2" (Front)	3' 10"	15.0	40.0	--	Default Load
2 - Uniform (PSF)	27' 10" to 31' 4 1/2" (Front)	8"	15.0	40.0	--	Default Load
3 - Uniform (PSF)	0 to 31' 4 1/2" (Front)	10'	20.0	--	25.0	Default Load
4 - Point (lb)	27' 10" (Front)	N/A	611	543	388	Linked from: Beam 7, Support 1

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

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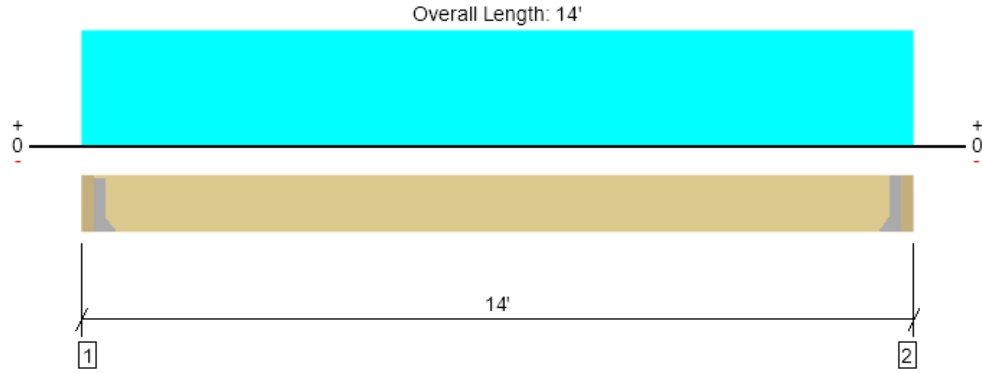
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Upper Floor Framing, Beam 9
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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)	2575 @ 3"	3413 (1.50")	Passed (75%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2193 @ 1' 3"	7420	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	8690 @ 7'	16800	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.222 @ 7'	0.338	Passed (L/728)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.314 @ 7'	0.675	Passed (L/516)	--	1.0 D + 1.0 L (All Spans)

Member Length : 13' 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).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Volume factor of 1.00 was calculated for positive bending using length L = 13' 6".
- 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.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 12" HF beam	3.00"	Hanger ¹	1.50"	778	1890	2668	See note ¹
2 - Hanger on 12" HF beam	3.00"	Hanger ¹	1.50"	778	1890	2668	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' 6" o/c	
Bottom Edge (Lu)	13' 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)	3" to 13' 9"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 14' (Front)	6' 9"	15.0	40.0	Default Load

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

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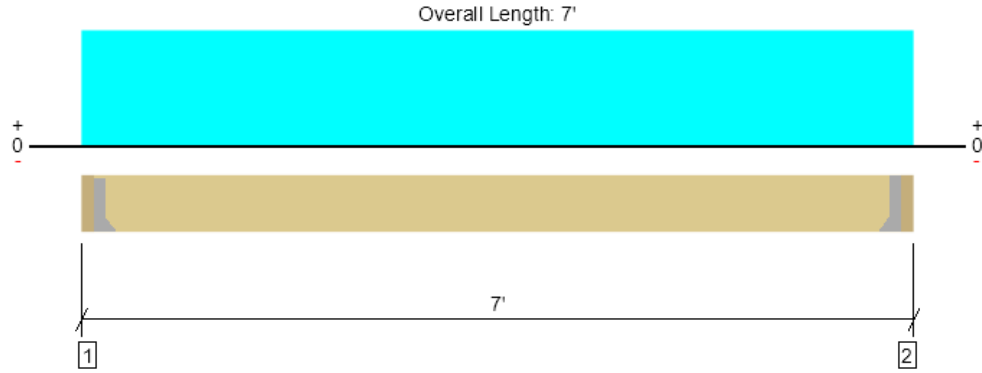
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Upper Floor Framing, Beam 10
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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)	1955 @ 3"	3413 (1.50")	Passed (57%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1353 @ 1' 3"	7420	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	3176 @ 3' 6"	16800	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.019 @ 3' 6"	0.162	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.027 @ 3' 6"	0.325	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 6' 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).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Volume factor of 1.00 was calculated for positive bending using length L = 6' 6".
- 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.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 12" HF beam	3.00"	Hanger ¹	1.50"	598	1505	2103	See note ¹
2 - Hanger on 12" HF beam	3.00"	Hanger ¹	1.50"	598	1505	2103	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' 6" o/c	
Bottom Edge (Lu)	6' 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	HUS412	2.00"	N/A	10-10d	10-10d	
2 - Face Mount Hanger	HUS412	2.00"	N/A	10-10d	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)	3" to 6' 9"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 7' (Front)	10' 9"	15.0	40.0	Default Load

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

FortewEB Software Operator	Job Notes
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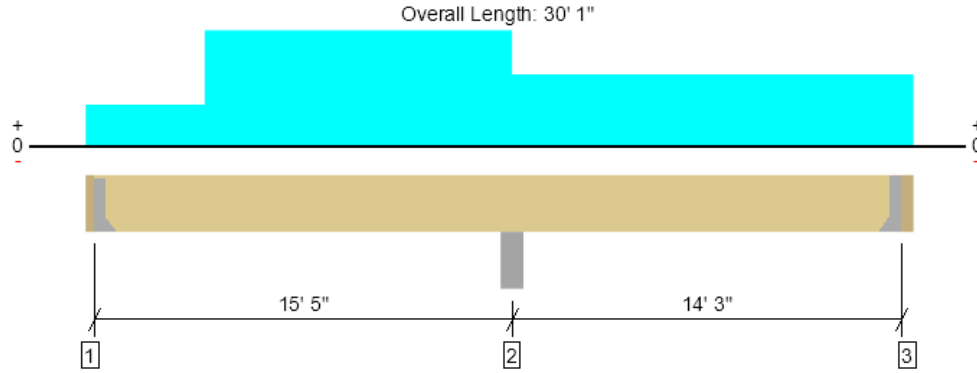
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Upper Floor Framing, Beam 9/10 Cont.
1 piece(s) 3 1/2" x 12" 24F-V8 DF Glulam



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)	2651 @ 2"	3413 (1.50")	Passed (78%)	--	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	4540 @ 14' 4 1/4"	7420	Passed (61%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	11521 @ 7' 1 7/8"	16800	Passed (69%)	1.00	1.0 D + 1.0 L (Alt Spans)
Neg Moment (Ft-lbs)	-13086 @ 15' 7"	16800	Passed (78%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.370 @ 7' 6 7/8"	0.385	Passed (L/501)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.481 @ 7' 5 11/16"	0.771	Passed (L/385)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 29' 8"
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).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Volume factor of 1.00 was calculated for positive bending using length L = 13' 2 1/8".
- Volume factor of 1.00 was calculated for negative bending using length L = 7' 10 5/16".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 12" HF beam	2.00"	Hanger ¹	1.50"	719	1967/-185	2686	See note ¹
2 - Plate - steel	5.50"	5.50"	3.90"	2560	6322	8883	None
3 - Hanger on 12" HF beam	3.00"	Hanger ¹	1.50"	545	1739/-359	2284	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.
- Steel plate supports are only used to determine the bearing length for supported member(s). Additional consideration is required to determine steel plate specifications.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	25' 10" o/c	
Bottom Edge (Lu)	21' 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	HHUS410	3.00"	N/A	30-10d	10-10d	
3 - Face Mount Hanger	HUS412	2.00"	N/A	10-16d	10-16d	

- 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)	Comments
0 - Self Weight (PLF)	2" to 29' 10"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 4' 3" (Front)	3' 10"	15.0	40.0	Default Load
2 - Uniform (PSF)	4' 3" to 15' 7" (Front)	10' 9"	15.0	40.0	Default Load
3 - Uniform (PSF)	15' 7" to 30' 1" (Front)	6' 8"	15.0	40.0	Default Load

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

ForteWEB Software Operator	Job Notes
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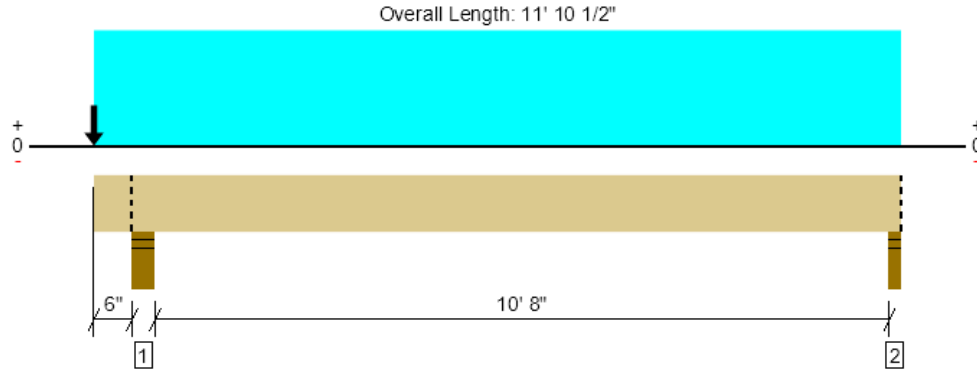
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Upper Floor Framing, Beam 11
1 piece(s) 5 1/4" x 11 7/8" 2.0E Parallam® PSL



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)	10051 @ 8 3/4"	11694 (5.50")	Passed (86%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	4488 @ 0	12053	Passed (37%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-6501 @ 8 3/4"	29854	Passed (22%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	-0.042 @ 5' 4 3/4"	0.276	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.032 @ 0	0.200	Passed (2L/546)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 11' 10 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 (0.2").
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 367 lbs uplift at support located at 11' 9". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	5.50"	5.50"	4.73"	2977	7074	10051	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	52	301/-420	353/-367	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)	11' 11" o/c	
Bottom Edge (Lu)	11' 11" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 11' 10 1/2"	N/A	19.5	--	
1 - Uniform (PSF)	0 to 11' 10 1/2" (Front)	1' 4"	15.0	40.0	Default Load
2 - Point (lb)	0 (Front)	N/A	2560	6322	Linked from: Beam 9/10 Cont., Support 2

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

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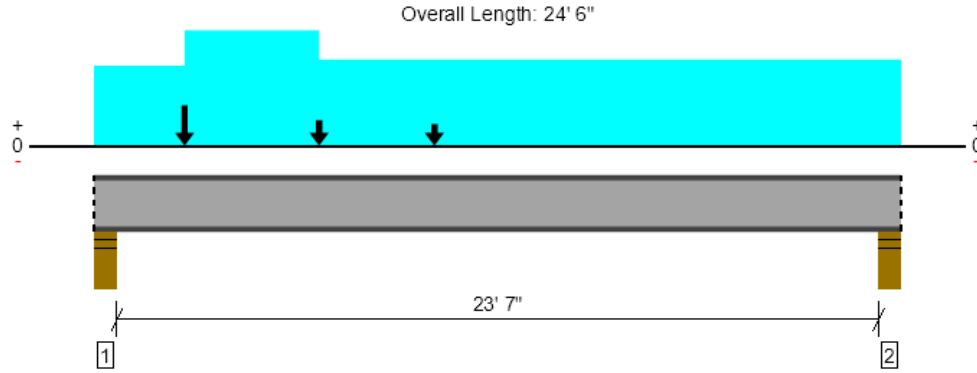
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Upper Floor Framing, Beam 12
1 piece(s) W10X45 (A992) ASTM Steel



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)
Member Reaction (lbs)	13953 @ 4"	17865 (5.50")	Passed (78%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	13883 @ 5' 1/2"	70700	Passed (20%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	48415 @ 6' 10"	93730	Passed (52%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.313 @ 11' 3 3/8"	0.596	Passed (L/915)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.643 @ 11' 3 9/16"	1.192	Passed (L/445)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

- 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.

Member Length : 24' 6"
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	Snow	Factored	
1 - Stud wall - HF	5.50"	5.50"	5.50"	7115	3469	5648	13953	Blocking
2 - Stud wall - HF	5.50"	5.50"	5.50"	2421	1366	1488	4562	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)	Comments
0 - Self Weight (PLF)	0 to 24' 6"	N/A	45.0	--	--	
1 - Uniform (PSF)	0 to 24' 6" (Front)	1' 9"	20.0	--	25.0	Default Load
2 - Uniform (PSF)	2' 9" to 24' 6" (Front)	1'	15.0	40.0	--	Default Load
3 - Uniform (PSF)	0 to 6' 10" (Front)	1'	20.0	--	25.0	Default Load
4 - Point (lb)	6' 10" (Front)	N/A	1927	--	1942	Linked from: Beam 1, Support 1
5 - Point (lb)	2' 9" (Front)	N/A	4588	2460	3952	Linked from: Beam 8, Support 1
6 - Point (lb)	10' 4" (Front)	N/A	598	1505	--	Linked from: Beam 10, Support 1

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

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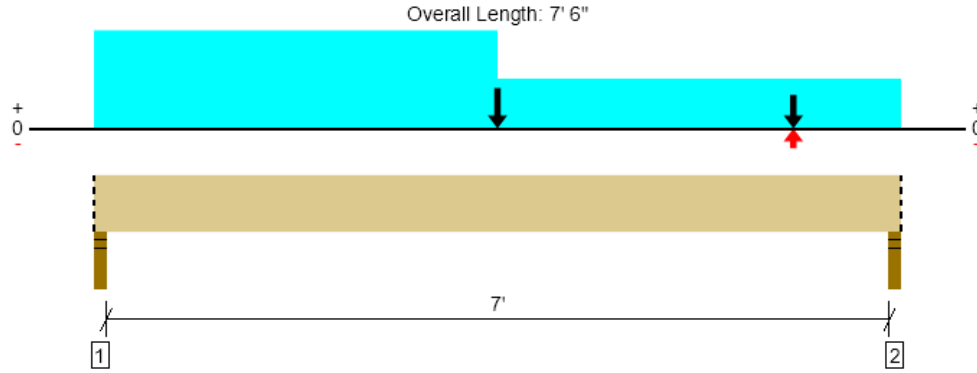
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Upper Floor Framing, Beam 13
1 piece(s) 5 1/4" x 11 7/8" 2.0E Parallam® PSL



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)	3931 @ 7' 4 1/2"	6379 (3.00")	Passed (62%)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	2997 @ 6' 3 1/8"	12053	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	7782 @ 3' 9"	34332	Passed (23%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Live Load Defl. (in)	0.029 @ 3' 9"	0.181	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Total Load Defl. (in)	0.059 @ 3' 9"	0.363	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 7' 6"
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	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	1373	1061	854	2810	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.85"	1791	1903	951	3931	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' 6" o/c	
Bottom Edge (Lu)	7' 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)	Comments
0 - Self Weight (PLF)	0 to 7' 6"	N/A	19.5	--	--	
1 - Uniform (PSF)	0 to 3' 9" (Front)	6' 2"	15.0	40.0	--	Default Load
2 - Uniform (PSF)	0 to 7' 6" (Front)	1'	15.0	40.0	--	Default Load
3 - Uniform (PSF)	3' 9" to 7' 6" (Front)	1'	75.0	--	25.0	Default Load
4 - Uniform (PSF)	3' 9" to 7' 6" (Front)	1'	20.0	--	25.0	Default Load
5 - Point (lb)	3' 9" (Front)	N/A	1657	--	1618	Linked from: Beam 1, Support 2
6 - Point (lb)	6' 6" (Front)	N/A	545	1739/-359	--	Linked from: Beam 9/10 Cont., Support 3

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

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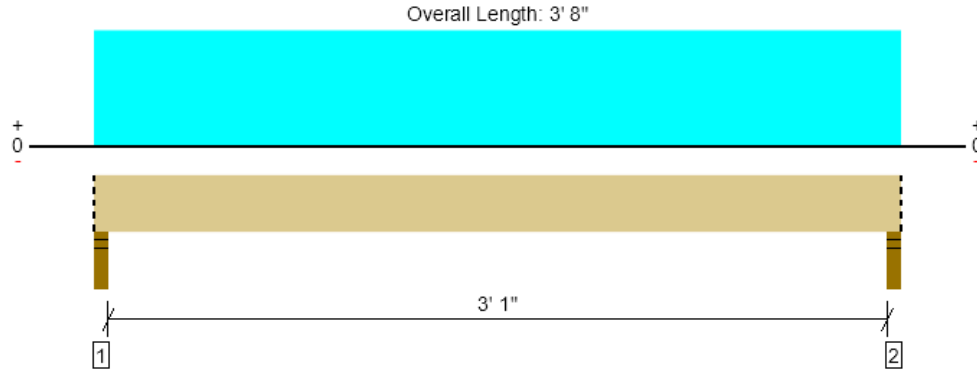
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Upper Floor Framing, Beam 14

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	617 @ 2"	4961 (3.50")	Passed (12%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	186 @ 1' 3 3/8"	9878	Passed (2%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	467 @ 1' 10"	18346	Passed (3%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.001 @ 1' 10"	0.083	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.003 @ 1' 10"	0.167	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 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	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.50"	299	183	241	617	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	299	183	241	617	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)	3' 8" o/c	
Bottom Edge (Lu)	3' 8" 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 3' 8"	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 3' 8" (Front)	1'	30.0	60.0	--	Default Load
2 - Uniform (PSF)	0 to 3' 8" (Front)	1'	15.0	40.0	--	Default Load
3 - Uniform (PSF)	0 to 3' 8" (Front)	5' 3"	20.0	--	25.0	Default Load

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

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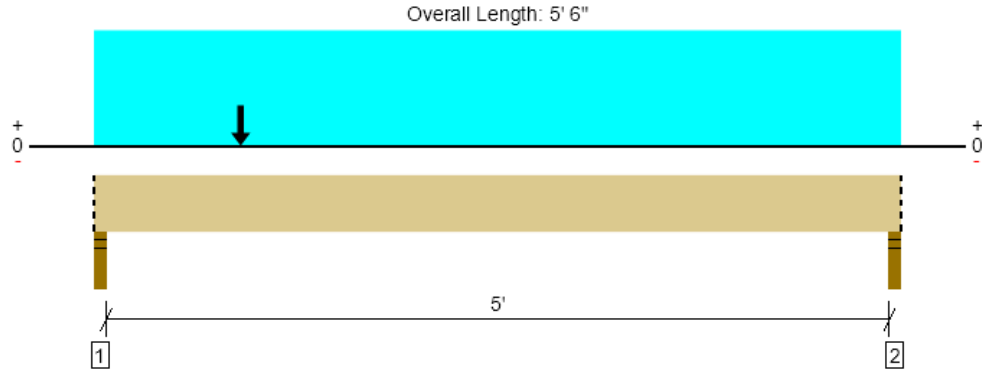
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Upper Floor Framing, Beam 15

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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)	3787 @ 1' 1/2"	4253 (3.00")	Passed (89%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2854 @ 1' 2 7/8"	9878	Passed (29%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3300 @ 1'	18346	Passed (18%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.012 @ 2' 4 13/16"	0.131	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.024 @ 2' 4 15/16"	0.262	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 5' 6"
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	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	2.67"	1785	110	2002	3787	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	419	110	400	819	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)	5' 6" o/c	
Bottom Edge (Lu)	5' 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)	Comments
0 - Self Weight (PLF)	0 to 5' 6"	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 5' 6" (Front)	1'	15.0	40.0	--	Default Load
2 - Point (lb)	1' (Front)	N/A	2050	--	2402	Linked from: Beam 5, Support 2

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

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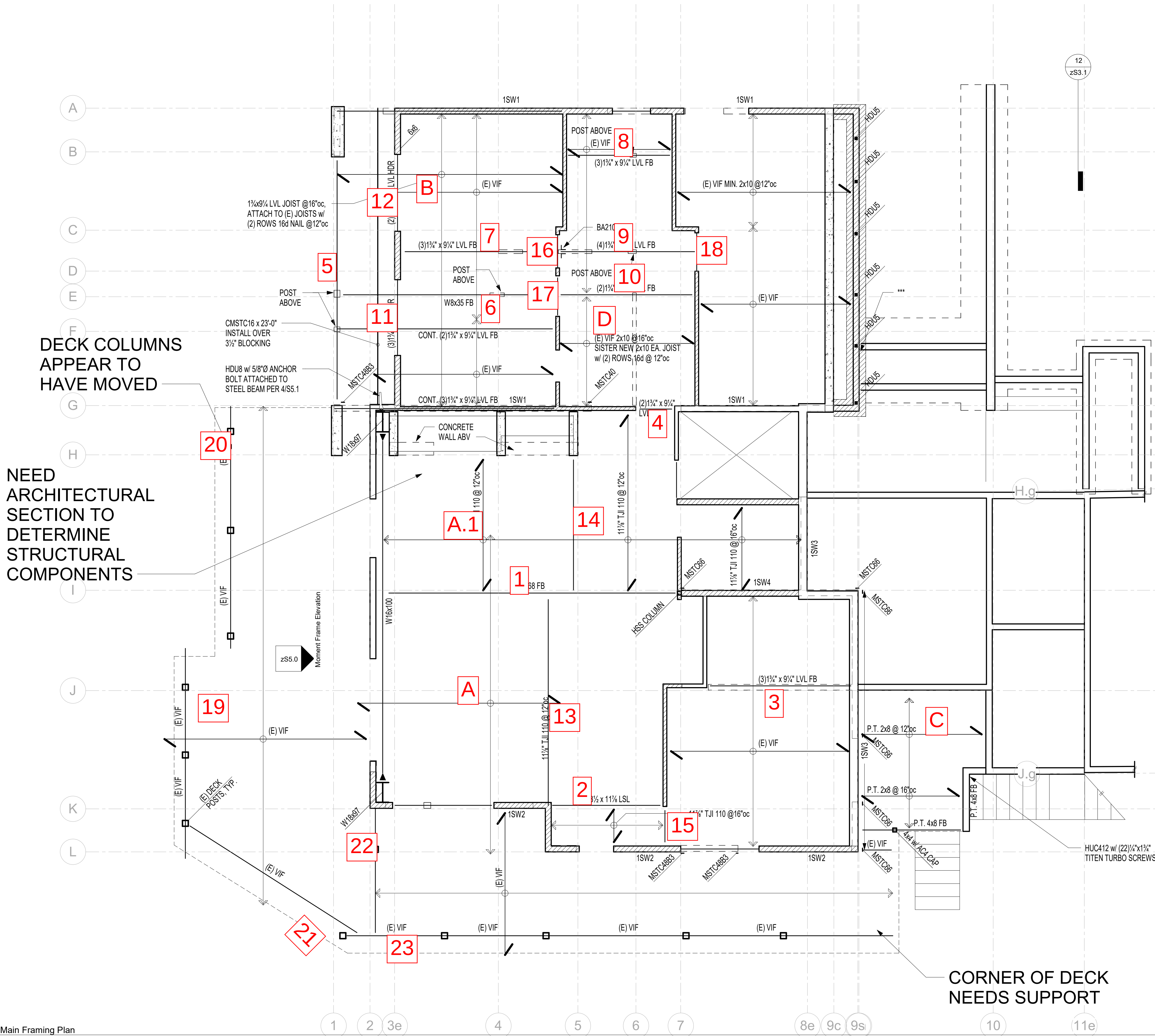
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FOUNDATION PLAN LEGEND

- ABRUPT CHANGE IN SLAB/FRAMING ELEVATION
- INDICATES EXISTING FOUNDATION
- INDICATES NEW FOUNDATION
- INDICATES DETAIL X ON SHEET SX.XX
- INDICATES SIMPSON HOLDOWN. REFER TO DETAIL 10/S3.0 & FOUNDATION PLAN NOTES FOR ANCHOR AND STUD STACK REQUIREMENTS.
- 2"Ø PIPE PILE
- 3"Ø PIPE PILE
- 8"Ø HELICAL PILE
- EPOXY EMBED (2)#4x2'-0" BOT INTO (E) FOUNDATION 4" MIN USING SET-3G EPOXY

FOUNDATION PLAN NOTES

- SLABS ON GRADE SHALL BE 4" THICK WITH 6x6 W1.4xW1.4 WWM CENTERED, U.N.O. PREPARED SOILS AND PROVIDE MINIMUM 10-MIL VISQUEEN VAPOR BARRIER UNDER ALL SLABS.
- REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS AND TOP OF SLAB ELEVATIONS.
- ALL HOLDOWNS TO BE INSTALLED AS REQUIRED BY MANUFACTURER. REFER TO HOLDOWN SCHEDULE 10/S3.0.
- CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

FRAMING PLAN LEGEND

- WALLS BELOW
- COLUMNS BELOW
- HANGER
- ABRUPT CHANGE IN SLAB/FRAMING ELEVATION
- INDICATES DETAIL X ON SHEET SX.XX
- FRAMING SPAN AND EXTENTS

FRAMING PLAN NOTES (TYPICAL UNLESS NOTED OTHERWISE)

- FLOOR SHEATHING SHALL BE 23/32" TONGUE AND GROOVE APA RATED SHEATHING (SPAN RATING 40/20). NAIL AT ALL FRAMED PANEL EDGES AND OVER SHEAR WALLS w/ 10d @ 6"oc AND 12"oc TO ALL INTERMEDIATE FRAMING
- ROOF SHEATHING SHALL BE 15/32" APA RATED SHEATHING (SPAN RATING 24/0). NAIL AT ALL FRAMED PANEL EDGES AND OVER SHEARWALLS w/ 8d @ 6"oc AND 12"oc TO ALL INTERMEDIATE FRAMING.
- 1SWX INDICATES SHEAR WALL PER SCHEDULE 12/S6.0.
- 2SWX INDICATES DOUBLE SIDED SHEAR WALL PER SCHEDULE 12/S6.0.
- ALL HEADERS SHALL BE (2)2x8 U.N.O. REFER TO NOTE 5 FOR SUPPORT REQUIREMENTS.
- COLUMNS SHALL BE DOUBLE STUDS MINIMUM, U.N.O., WITH BEAM OR HEADER BEARING FULLY ON COLUMN.
- WHERE FULL HEIGHT LSL STUDS ARE CALLED OUT, INSTALL 1.3E 1 1/2" x 3 1/2" LSL STUDS @ 16"oc.

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CQN CARTER QUINN NORLIN
STRUCTURAL ENGINEERING

Consultants:

Project:

NS Residence
project no. 2401

8265 SE 61st St
Mercer Island, WA 98040

Drawing Title:

Main Floor Framing
Plan

Date: January 16, 2025

Issued For:

Drawn By:

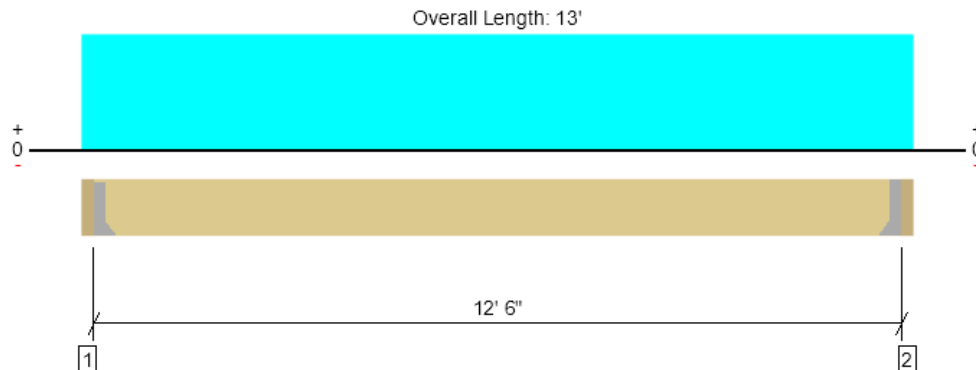
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Scale: As indicated

Sheet No.:

S2.1

Main Floor Framing, Joist A
1 piece(s) 2 x 10 HF No.2 @ 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)	558 @ 3"	911 (1.50")	Passed (61%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	489 @ 1' 1/4"	1388	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1745 @ 6' 6"	1917	Passed (91%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.228 @ 6' 6"	0.313	Passed (L/658)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.382 @ 6' 6"	0.625	Passed (L/393)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 12' 6"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/480) 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 beam	3.00"	Hanger ¹	1.50"	234	347	581	See note ¹
2 - Hanger on 9 1/4" HF beam	3.00"	Hanger ¹	1.50"	234	347	581	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' 9" o/c	
Bottom Edge (Lu)	12' 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	LU28	1.50"	N/A	8-10dx1.5	6-10dx1.5	
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 Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 13'	16"	27.0	40.0	Default Load

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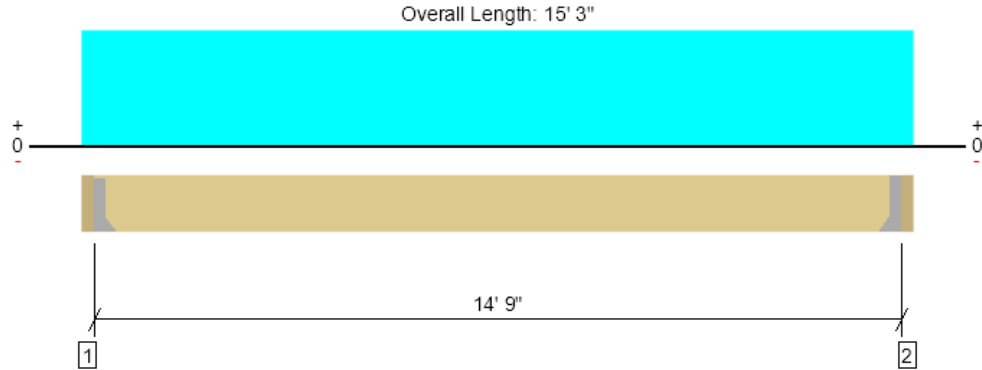
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
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 ForteWEB v3.9, Engine: V8.4.3.94, Data: V8.1.7.3
 File Name: Nestler-Spare (2025)

Main Floor Framing, Joist A.1
2 piece(s) 2 x 10 HF No.2 @ 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)	659 @ 3"	1823 (1.50")	Passed (36%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	590 @ 1' 1/4"	2775	Passed (21%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2429 @ 7' 7 1/2"	3833	Passed (63%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.221 @ 7' 7 1/2"	0.369	Passed (L/802)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.370 @ 7' 7 1/2"	0.738	Passed (L/479)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 14' 9"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/480) 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 beam	3.00"	Hanger ¹	1.50"	275	407	681	See note ¹
2 - Hanger on 9 1/4" HF beam	3.00"	Hanger ¹	1.50"	275	407	681	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' 4" o/c	
Bottom Edge (Lu)	14' 9" 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	LUS28-2	2.00"	N/A	6-10dx1.5	3-10d	
2 - Face Mount Hanger	LUS28-2	2.00"	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 15' 3"	16"	27.0	40.0	Default Load

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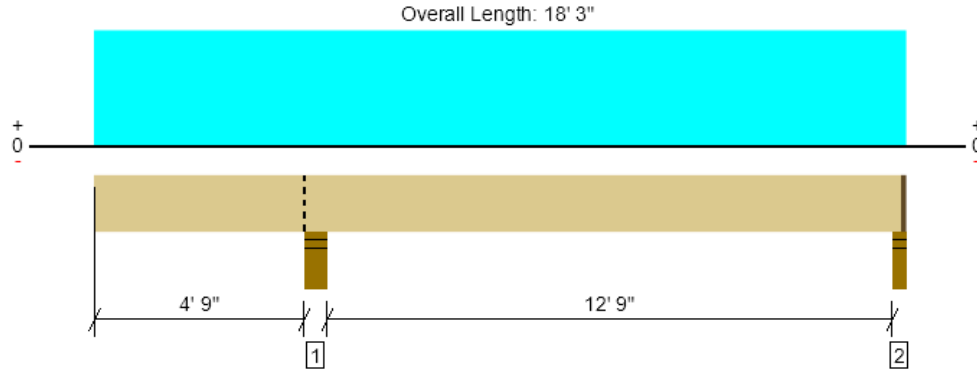
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 File Name: Nestler-Spare (2025)

Main Floor Framing, Joist B

1 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL @ 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)	559 @ 18' 1/2"	1595 (2.25")	Passed (35%)	--	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	579 @ 5' 11 3/4"	3076	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1689 @ 11' 10 11/16"	5826	Passed (29%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.126 @ 0	0.249	Passed (2L/948)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.205 @ 11' 7 7/8"	0.653	Passed (L/763)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	52	45	Passed	--	--

Member Length : 18' 1 3/4"
System : Floor
Member Type : Joist
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.
- A 4% increase in the moment capacity has been added to account for repetitive member usage.
- 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 - Stud wall - HF	5.50"	5.50"	1.57"	449	665	1113	Blocking
2 - Stud wall - HF	3.50"	2.25"	1.50"	208	359/-45	568	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)	18' 2" o/c	
Bottom Edge (Lu)	18' 2" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 18' 3"	16"	27.0	40.0	Default Load

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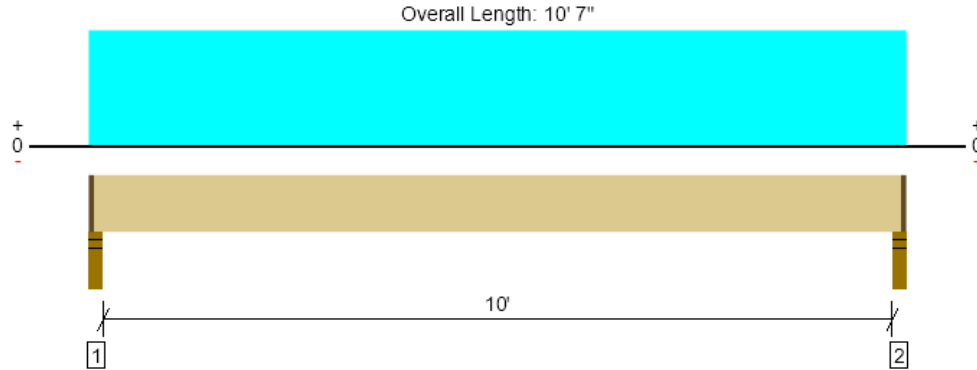
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Main Floor Framing, Joist C
1 piece(s) 2 x 8 HF No.2 @ 12" OC



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)	389 @ 2 1/2"	1367 (2.25")	Passed (28%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	330 @ 10 3/4"	1088	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	969 @ 5' 3 1/2"	1284	Passed (75%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.233 @ 5' 3 1/2"	0.254	Passed (L/524)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.291 @ 5' 3 1/2"	0.508	Passed (L/419)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 10' 4 1/2"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) 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 - Stud wall - HF	3.50"	2.25"	1.50"	79	318	397	1 1/4" Rim Board
2 - Stud wall - HF	3.50"	2.25"	1.50"	79	318	397	1 1/4" Rim Board

• 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)	7' 8" 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)	Comments
1 - Uniform (PSF)	0 to 10' 7"	12"	15.0	60.0	Default Load

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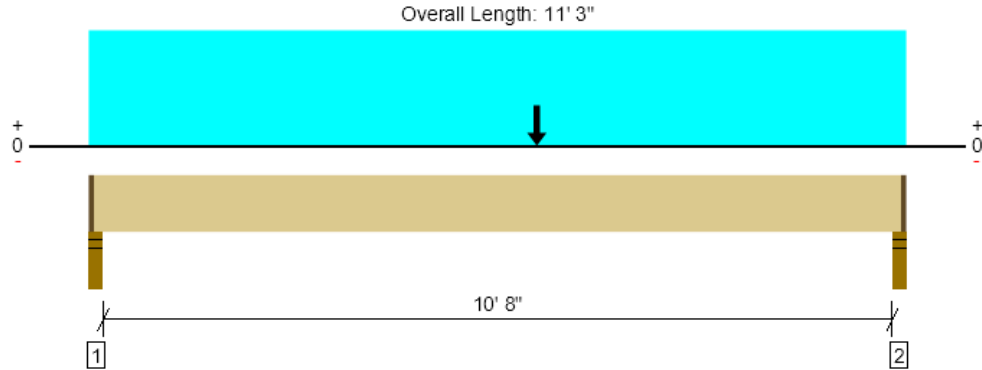
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Main Floor Framing, Joist D
2 piece(s) 2 x 10 HF No.2 @ 16" OC



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)	1007 @ 11' 1/2"	2734 (2.25")	Passed (37%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	877 @ 10' 2 1/4"	2775	Passed (32%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3585 @ 6' 2"	3833	Passed (94%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.086 @ 5' 8 3/16"	0.271	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.279 @ 5' 8 9/16"	0.542	Passed (L/466)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 11' 1/2"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) 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 - Stud wall - HF	3.50"	2.25"	1.50"	587	300	129	908	1 1/4" Rim Board
2 - Stud wall - HF	3.50"	2.25"	1.50"	672	300	158	1015	1 1/4" Rim Board

• 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)	5' 1" o/c	
Bottom Edge (Lu)	11' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 11' 3"	16"	27.0	40.0	--	Default Load
2 - Point (PLF)	6' 2"	16"	640.0	--	215.0	

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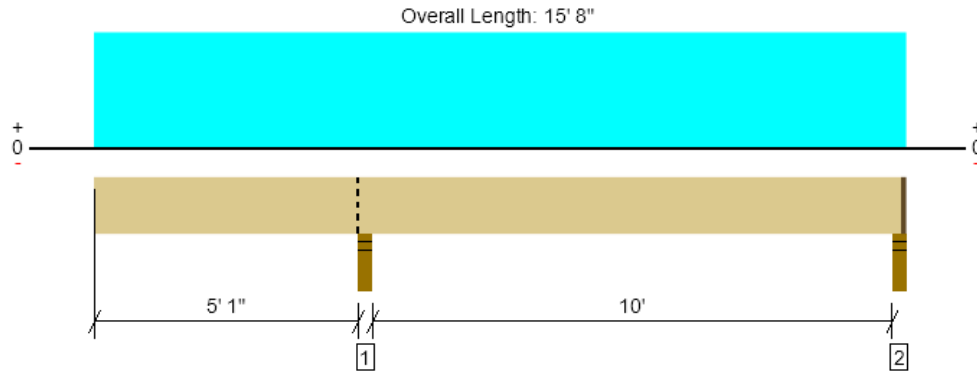
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Main Floor Framing, Joist E
1 piece(s) 2 x 12 HF No.2 @ 16" OC



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)	1246 @ 5' 2 3/4"	2126 (3.50")	Passed (59%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	573 @ 6' 3 3/4"	1688	Passed (34%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-1458 @ 5' 2 3/4"	1933	Passed (75%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.201 @ 0	0.261	Passed (2L/622)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.222 @ 0	0.523	Passed (2L/564)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 15' 6 3/4"
System : Floor
Member Type : Joist
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.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Moment capacity over cantilever support 1 has been reduced by 25% to lessen the effects of buckling.
- 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 - Stud wall - HF	3.50"	3.50"	2.05"	311	934	1246	Blocking
2 - Stud wall - HF	3.50"	2.25"	1.50"	106	426/-99	532	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)	10' 3" o/c	
Bottom Edge (Lu)	8' 1" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 15' 8"	16"	20.0	60.0	Default Load

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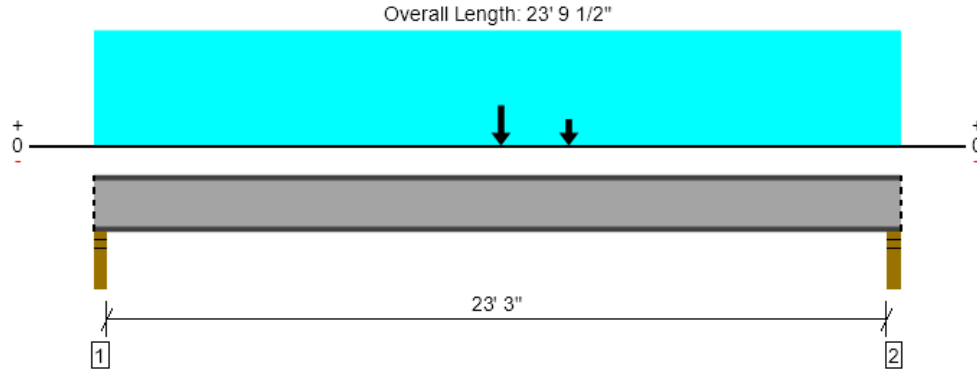
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File Name: Nestler-Spare (2025)

Main Floor Framing, Beam 1
1 piece(s) W8X67 (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)
Member Reaction (lbs)	7792 @ 1 1/2"	10060 (3.00")	Passed (77%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	8634 @ 23' 6"	102600	Passed (8%)	--	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	78065 @ 12'	147208	Passed (53%)	--	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.465 @ 12' 1 1/8"	0.587	Passed (L/606)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.856 @ 12' 15/16"	1.175	Passed (L/329)	--	1.0 D + 1.0 L (All Spans)

- 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.

Member Length : 23' 9 1/2"
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	Factored	
1 - Stud wall - HF	3.00"	3.00"	3.00"	3706	4087	7792	Blocking
2 - Stud wall - HF	3.50"	3.50"	3.50"	4080	4613	8693	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)	Comments
0 - Self Weight (PLF)	0 to 23' 9 1/2"	N/A	67.0	--	
1 - Uniform (PSF)	0 to 23' 9 1/2" (Front)	2'	27.0	40.0	Default Load
2 - Point (lb)	12' (Front)	N/A	3043	4152	Linked from: Beam 13, Support 2
3 - Point (lb)	14' (Front)	N/A	1864	2644	Linked from: Beam 14, Support 1

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

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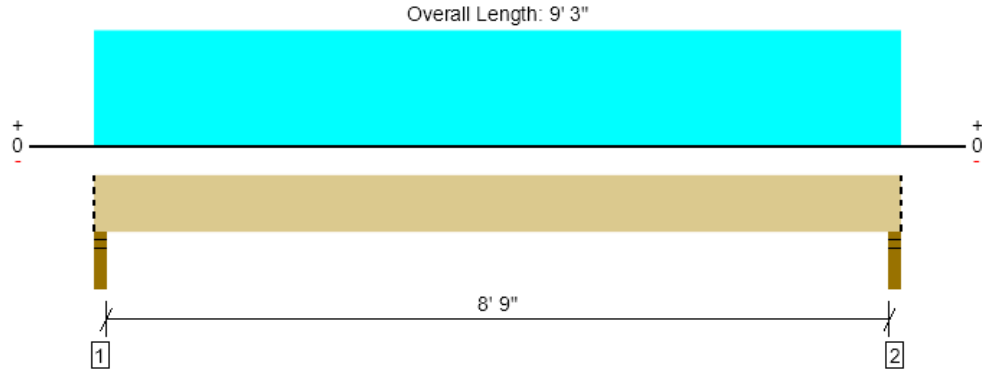
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	



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File Name: Nestler-Spare (2025)

Main Floor Framing, Beam 2
1 piece(s) 4 x 10 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)	968 @ 1' 1/2"	4253 (3.00")	Passed (23%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	754 @ 1' 1/4"	3238	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2118 @ 4' 7 1/2"	4242	Passed (50%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.059 @ 4' 7 1/2"	0.225	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.103 @ 4' 7 1/2"	0.450	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Member Length : 9' 3"
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	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	413	555	968	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	413	555	968	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)	9' 3" o/c	
Bottom Edge (Lu)	9' 3" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 3"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 9' 3" (Front)	3'	27.0	40.0	Default Load

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

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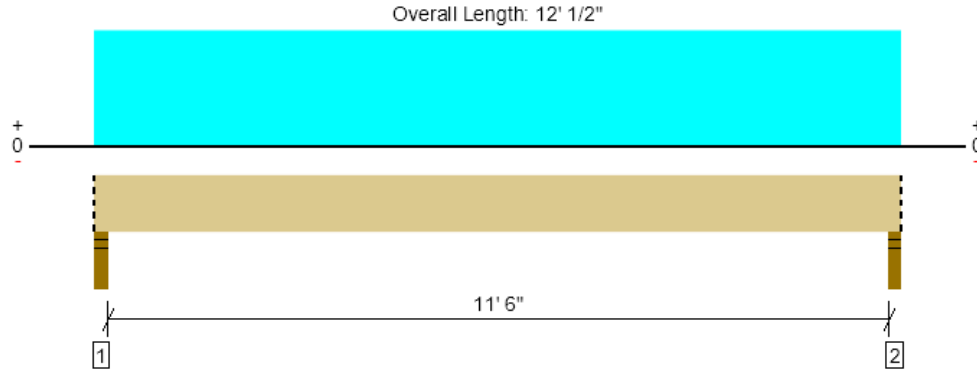
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File Name: Nestler-Spare (2025)

Main Floor Framing, Beam 3
3 piece(s) 1 3/4" x 9 1/4" 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)	3271 @ 11' 11"	6379 (3.00")	Passed (51%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2714 @ 1' 3/4"	10611	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	9408 @ 6' 1/2"	19327	Passed (49%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.182 @ 6' 1/2"	0.294	Passed (L/777)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.360 @ 6' 1/2"	0.587	Passed (L/392)	--	1.0 D + 1.0 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 12' 1/2"
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	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.55"	1632	322	1661	3294	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.54"	1621	320	1650	3271	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' 1" o/c	
Bottom Edge (Lu)	12' 1" 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 12' 1/2"	N/A	14.2	--	--	
1 - Uniform (PSF)	0 to 12' 1/2" (Front)	1' 4"	27.0	40.0	--	Default Load
2 - Uniform (PSF)	0 to 12' 1/2" (Front)	11'	20.0	--	25.0	Default Load

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

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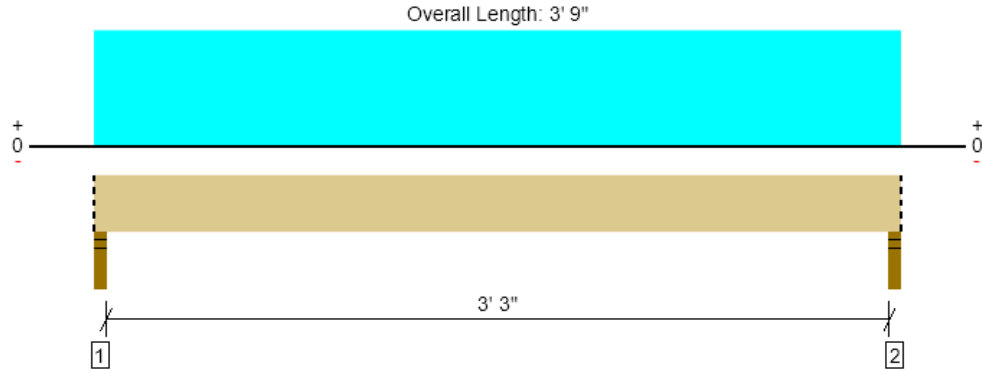
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Main Floor Framing, Beam 4
2 piece(s) 2 x 10 HF No.2



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)	181 @ 1' 1/2"	3645 (3.00")	Passed (5%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	82 @ 1' 1/4"	2775	Passed (3%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	148 @ 1' 10 1/2"	3333	Passed (4%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.001 @ 1' 10 1/2"	0.087	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.001 @ 1' 10 1/2"	0.175	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Member Length : 3' 9"
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	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	81	100	181	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	81	100	181	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)	3' 9" o/c	
Bottom Edge (Lu)	3' 9" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 9"	N/A	7.0	--	
1 - Uniform (PSF)	0 to 3' 9" (Front)	1' 4"	27.0	40.0	Default Load

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

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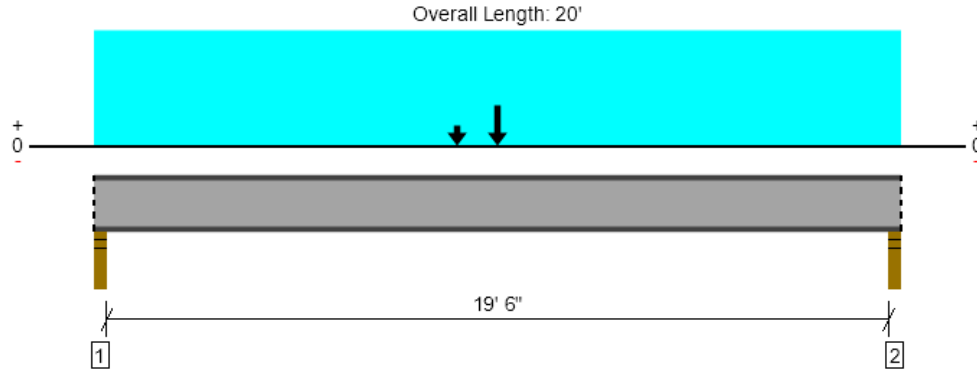
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Main Floor Framing, Beam 5
1 piece(s) W8X58 (A992) ASTM Steel



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)
Member Reaction (lbs)	8914 @ 1 1/2"	9987 (3.00")	Passed (89%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	8865 @ 3"	89250	Passed (10%)	--	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	77457 @ 10'	128144	Passed (60%)	--	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.400 @ 10'	0.494	Passed (L/593)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.681 @ 9' 11 13/16"	0.988	Passed (L/348)	--	1.0 D + 1.0 L (All Spans)

- 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.

Member Length : 20'
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	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	3.00"	3764	5150	514	8914	Blocking
2 - Stud wall - HF	3.00"	3.00"	3.00"	3684	5150	420	8834	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)	Comments
0 - Self Weight (PLF)	0 to 20'	N/A	58.0	--	--	
1 - Uniform (PSF)	0 to 20' (Front)	2' 6"	15.0	40.0	--	Default Load
2 - Point (lb)	9' (Front)	N/A	790	--	934	Linked from: Beam 8, Support 1
3 - Point (lb)	10' (Front)	N/A	4747	8300	--	Linked from: Beam 4, Support 1

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

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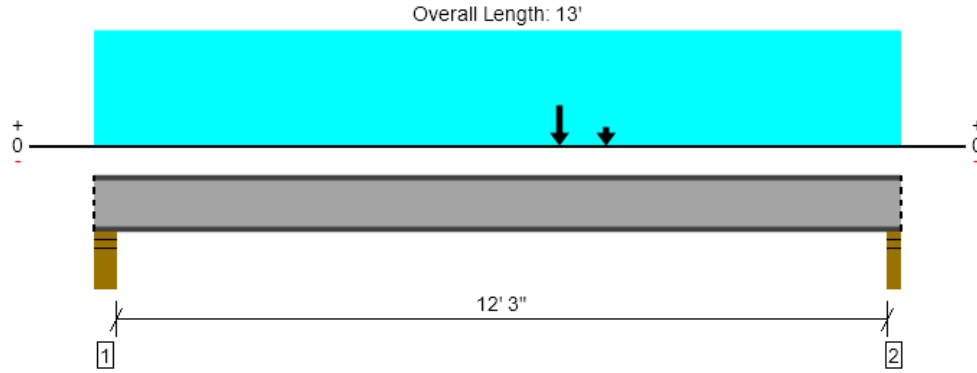
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Main Floor Framing, Beam 6
1 piece(s) W8X24 (A992) ASTM Steel



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)
Member Reaction (lbs)	7465 @ 12' 10"	9214 (3.50")	Passed (81%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	7432 @ 12' 8 1/2"	38857	Passed (19%)	--	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	37741 @ 7' 6"	46758	Passed (81%)	--	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.254 @ 6' 9 3/4"	0.313	Passed (L/592)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.358 @ 6' 9 3/4"	0.625	Passed (L/419)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Bearing reinforcement may be required for point load located at 7' 6".
- Applicable calculations are based on ANSI/AISC 360-16.
- A lateral-torsional buckling factor (C_b) of 1.0 has been assumed.

Member Length : 13'
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	Snow	Factored	
1 - Stud wall - HF	5.50"	5.50"	5.50"	1751	3960	88	5710	Blocking
2 - Stud wall - HF	3.50"	3.50"	3.50"	2249	5217	153	7465	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)	Comments
0 - Self Weight (PLF)	0 to 13'	N/A	24.0	--	--	
1 - Uniform (PSF)	0 to 13' (Front)	1' 4"	27.0	40.0	--	Default Load
2 - Point (lb)	7' 6" (Front)	N/A	2920	8300	--	Linked from: Beam 4, Support 2
3 - Point (lb)	8' 3" (Front)	N/A	299	183	241	Linked from: Beam 14, Support 1

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

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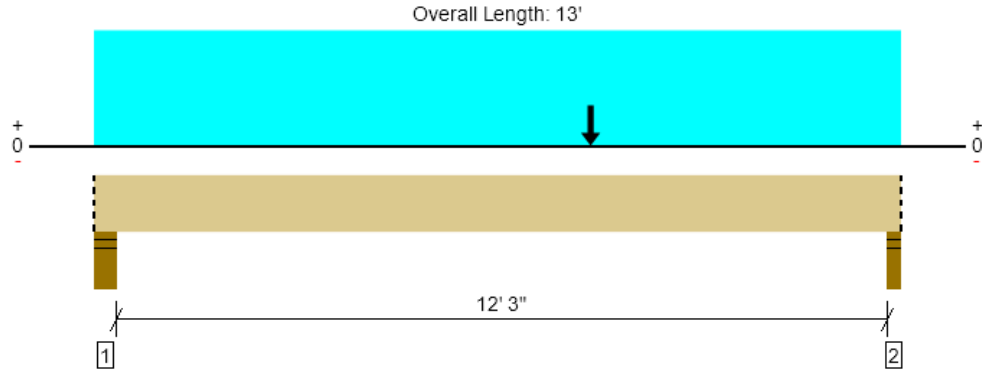
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Main Floor Framing, Beam 7

3 piece(s) 1 3/4" x 9 1/4" 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)	2525 @ 12' 10"	7442 (3.50")	Passed (34%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2183 @ 11' 11 1/4"	9227	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	9791 @ 8'	16806	Passed (58%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.186 @ 6' 10 11/16"	0.313	Passed (L/806)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.395 @ 6' 10 11/16"	0.625	Passed (L/379)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 13'
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	Snow	Factored	
1 - Stud wall - HF	5.50"	5.50"	1.50"	971	737	395	1820	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	1339	954	627	2525	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)	13' o/c	
Bottom Edge (Lu)	13' 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 13'	N/A	14.2	--	--	
1 - Uniform (PSF)	0 to 13' (Front)	1' 4"	27.0	40.0	--	Default Load
2 - Point (lb)	8' (Front)	N/A	1359	815	781	Linked from: Beam 2, Support 1
3 - Point (lb)	8' (Front)	N/A	299	183	241	Linked from: Beam 14, Support 1

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

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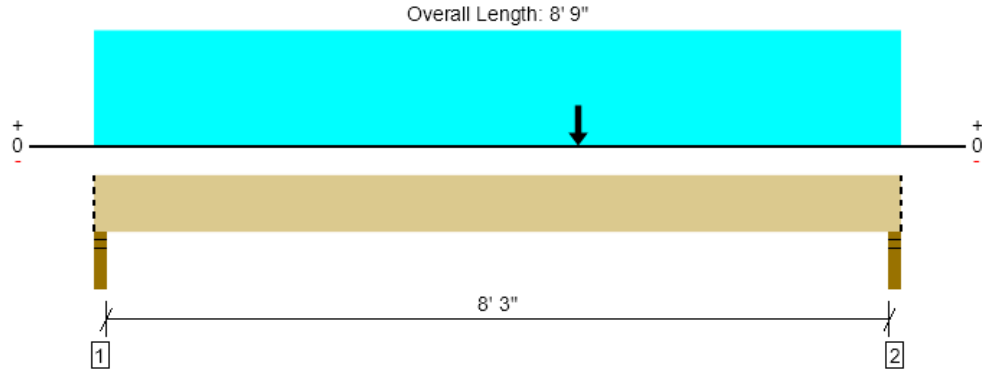
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Main Floor Framing, Beam 8

3 piece(s) 1 3/4" x 9 1/4" 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)	4971 @ 8' 7 1/2"	6379 (3.00")	Passed (78%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	4879 @ 7' 8 3/4"	10611	Passed (46%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	16226 @ 5' 3"	19327	Passed (84%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.085 @ 4' 6 13/16"	0.213	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.278 @ 4' 6 7/8"	0.425	Passed (L/367)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 8' 9"

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	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.60"	2342	629	793	3408	Blocking
2 - Stud wall - HF	3.00"	3.00"	2.34"	3442	834	1204	4971	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)	8' 9" o/c	
Bottom Edge (Lu)	8' 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)	Comments
0 - Self Weight (PLF)	0 to 8' 9"	N/A	14.2	--	--	
1 - Uniform (PSF)	0 to 8' 9" (Front)	1' 4"	27.0	40.0	--	Default Load
2 - Point (lb)	5' 3" (Front)	N/A	1550	--	520	
3 - Point (lb)	5' 3" (Front)	N/A	777	840	131	Linked from: Beam 1, Support 1
4 - Point (lb)	5' 3" (Front)	N/A	3018	157	1346	Linked from: Beam 3, 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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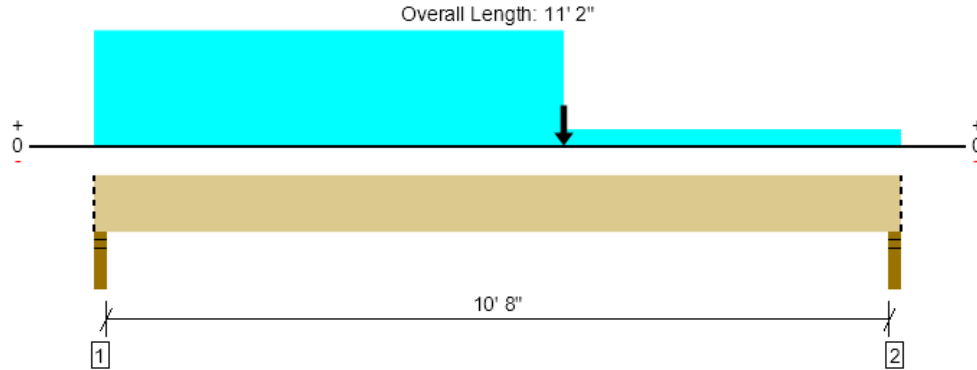


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File Name: Nestler-Spare (2025)

Main Floor Framing, Beam 9
4 piece(s) 1 3/4" x 9 1/4" 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)	4812 @ 1' 1/2"	8505 (3.00")	Passed (57%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	4154 @ 1' 1/4"	12303	Passed (34%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	17067 @ 6' 6"	22408	Passed (76%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.156 @ 5' 6 13/16"	0.273	Passed (L/839)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.421 @ 5' 8"	0.546	Passed (L/311)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/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.

Member Length : 11' 2"
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	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.70"	2640	2172	693	4812	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.58"	2902	1115	973	4468	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)	11' 2" o/c	
Bottom Edge (Lu)	11' 2" 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 11' 2"	N/A	18.9	--	--	
1 - Uniform (PSF)	0 to 11' 2" (Front)	1' 4"	27.0	40.0	--	Default Load
2 - Uniform (PSF)	0 to 6' 6" (Front)	9' 9"	15.0	40.0	--	Default Load
3 - Point (lb)	6' 6" (Front)	N/A	960	--	320	
4 - Point (lb)	6' 6" (Front)	N/A	3018	157	1346	Linked from: Beam 3, Support 1

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

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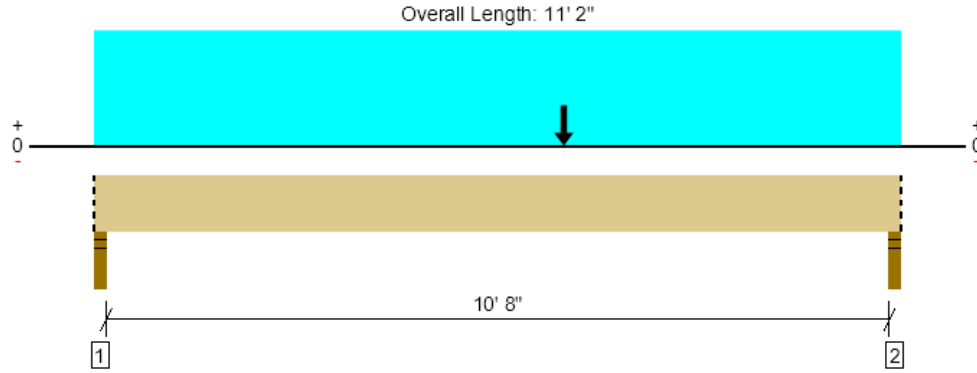
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File Name: Nestler-Spare (2025)

Main Floor Framing, Beam 10
2 piece(s) 1 3/4" x 9 1/4" 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)	1178 @ 11' 1/2"	4253 (3.00")	Passed (28%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1011 @ 10' 1 3/4"	6151	Passed (16%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3976 @ 6' 6"	11204	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.055 @ 5' 8 1/4"	0.273	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.191 @ 5' 8 13/16"	0.546	Passed (L/687)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 11' 2"
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	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	653	298	133	976	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	814	298	187	1178	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)	11' 2" o/c	
Bottom Edge (Lu)	11' 2" 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 11' 2"	N/A	9.4	--	--	
1 - Uniform (PSF)	0 to 11' 2" (Front)	1' 4"	27.0	40.0	--	Default Load
2 - Point (lb)	6' 6" (Front)	N/A	960	--	320	

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

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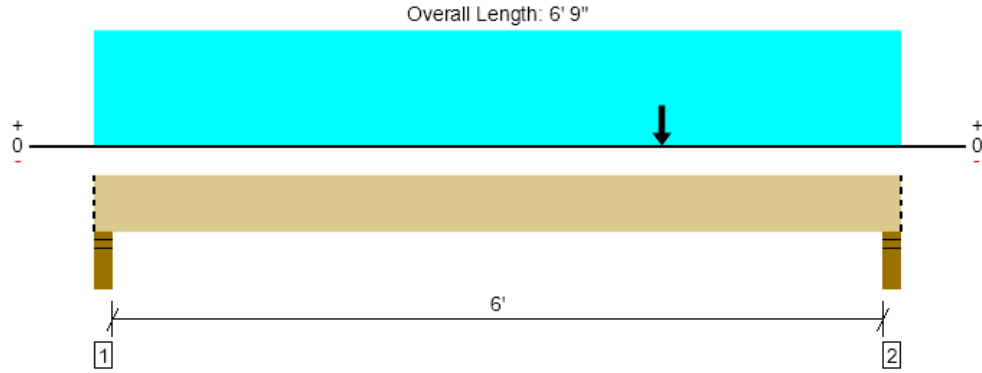
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File Name: Nestler-Spare (2025)

Main Floor Framing, Beam 11
2 piece(s) 1 3/4" x 9 1/4" 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)	6122 @ 6' 6"	6379 (4.50")	Passed (96%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	5440 @ 5' 7 1/4"	6151	Passed (88%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	9541 @ 4' 9"	11204	Passed (85%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.102 @ 3' 6 7/8"	0.156	Passed (L/732)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.156 @ 3' 6 13/16"	0.313	Passed (L/481)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 6' 9"
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	Snow	Factored	
1 - Stud wall - HF	4.50"	4.50"	2.55"	1319	2290	25	3610	Blocking
2 - Stud wall - HF	4.50"	4.50"	4.32"	2090	4032	63	6122	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' 9" o/c	
Bottom Edge (Lu)	6' 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)	Comments
0 - Self Weight (PLF)	0 to 6' 9"	N/A	9.4	--	--	
1 - Uniform (PSF)	0 to 6' 9" (Front)	8' 9"	27.0	40.0	--	Default Load
2 - Point (lb)	4' 9" (Front)	N/A	1751	3960	88	Linked from: Beam 6, Support 1

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

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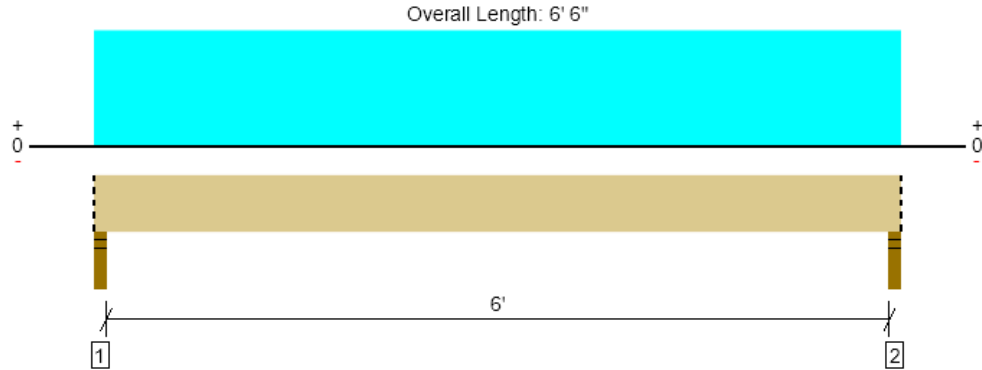
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Main Floor Framing, Beam 12

2 piece(s) 2 x 10 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)	1928 @ 1' 1/2"	3645 (3.00")	Passed (53%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1323 @ 1' 1/4"	2775	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2897 @ 3' 3"	3333	Passed (87%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.047 @ 3' 3"	0.156	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.079 @ 3' 3"	0.313	Passed (L/947)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Member Length : 6' 6"
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	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.59"	791	1138	1928	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.59"	791	1138	1928	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' 6" o/c	
Bottom Edge (Lu)	6' 6" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 6' 6"	N/A	7.0	--	
1 - Uniform (PSF)	0 to 6' 6" (Front)	8' 9"	27.0	40.0	Default Load

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

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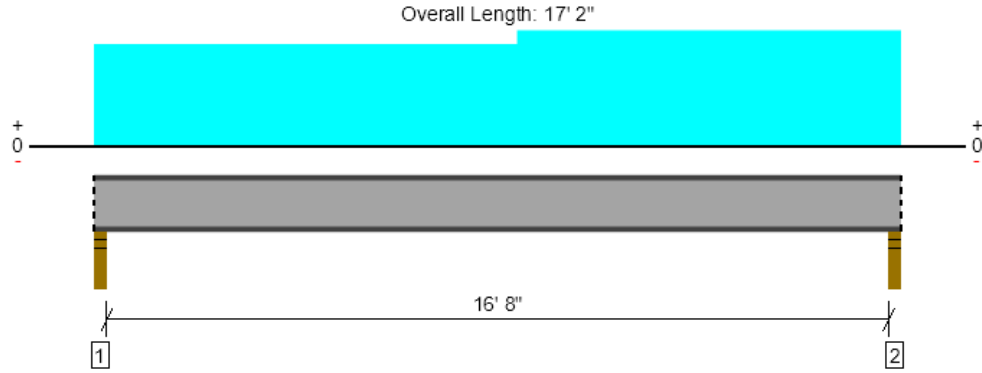
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Main Floor Framing, Beam 13
1 piece(s) W8X28 (A992) ASTM Steel



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)
Member Reaction (lbs)	7195 @ 17' 1/2"	7946 (3.00")	Passed (91%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	6979 @ 16' 11"	45942	Passed (15%)	--	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	29014 @ 8' 10"	49236	Passed (59%)	--	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.303 @ 8' 7 1/2"	0.423	Passed (L/670)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.526 @ 8' 7 1/2"	0.846	Passed (L/386)	--	1.0 D + 1.0 L (All Spans)

- 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.

Member Length : 17' 2"
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	Factored	
1 - Stud wall - HF	3.00"	3.00"	3.00"	2867	3891	6758	Blocking
2 - Stud wall - HF	3.00"	3.00"	3.00"	3043	4152	7195	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)	Comments
0 - Self Weight (PLF)	0 to 17' 2"	N/A	28.0	--	
1 - Uniform (PSF)	0 to 9' (Front)	11'	27.0	40.0	Default Load
2 - Uniform (PSF)	9' to 17' 2" (Front)	12' 6"	27.0	40.0	Default Load

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

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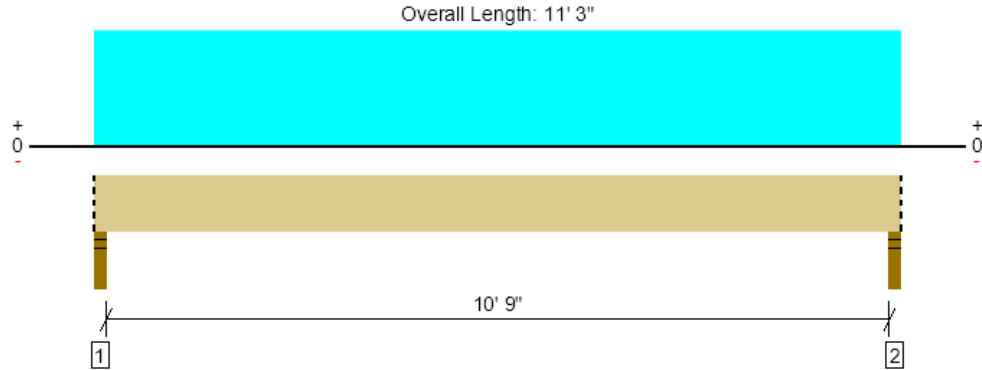
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File Name: Nestler-Spare (2025)

Main Floor Framing, Beam 14

3 piece(s) 1 3/4" x 9 1/4" 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)	4508 @ 1' 1/2"	6379 (3.00")	Passed (71%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3690 @ 1' 1/4"	9227	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	12121 @ 5' 7 1/2"	16806	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.240 @ 5' 7 1/2"	0.275	Passed (L/549)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.410 @ 5' 7 1/2"	0.550	Passed (L/322)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 11' 3"
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	Factored	
1 - Stud wall - HF	3.00"	3.00"	2.12"	1864	2644	4508	Blocking
2 - Stud wall - HF	3.00"	3.00"	2.12"	1864	2644	4508	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)	11' 3" o/c	
Bottom Edge (Lu)	11' 3" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 11' 3"	N/A	14.2	--	
1 - Uniform (PSF)	0 to 11' 3" (Front)	11' 9"	27.0	40.0	Default Load

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

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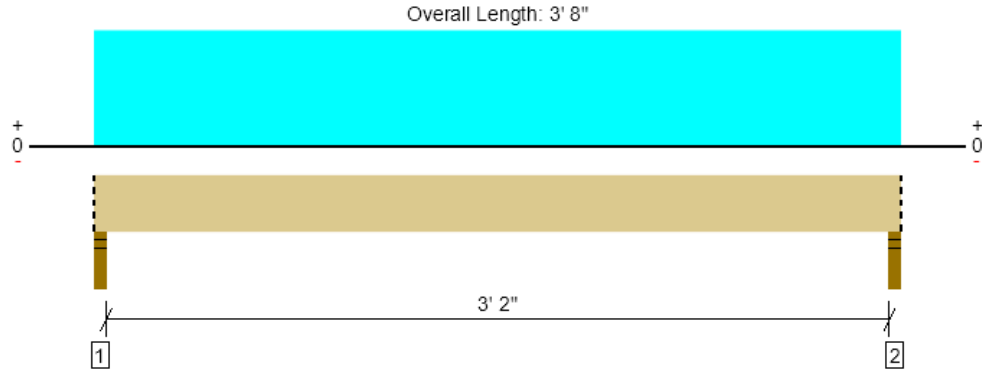
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Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	



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Main Floor Framing, Beam 15

1 piece(s) 4 x 10 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)	1059 @ 1' 1/2"	4253 (3.00")	Passed (25%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	469 @ 1' 1/4"	3238	Passed (14%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	843 @ 1' 10"	4242	Passed (20%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.003 @ 1' 10"	0.085	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.006 @ 1' 10"	0.171	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Member Length : 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	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	436	623	1059	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	436	623	1059	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)	3' 8" o/c	
Bottom Edge (Lu)	3' 8" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 8"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 3' 8" (Front)	8' 6"	27.0	40.0	Default Load

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

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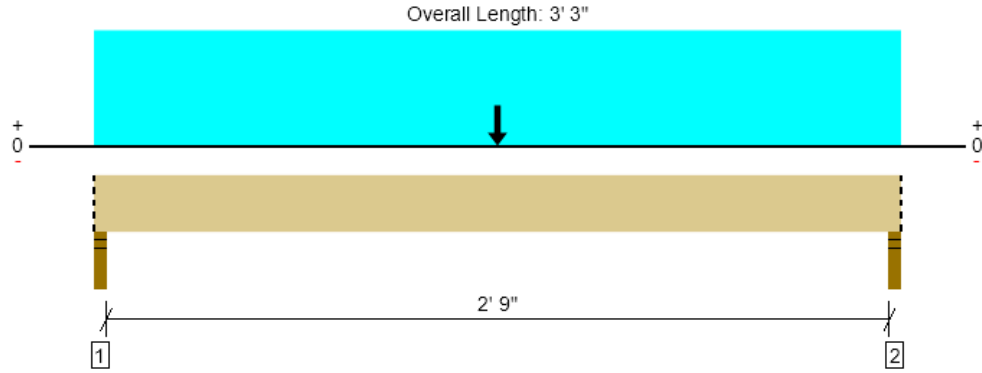
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Main Floor Framing, Beam 16
3 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL



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)	4603 @ 1' 1/2"	6379 (3.00")	Passed (72%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3943 @ 1' 1/4"	9227	Passed (43%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	6056 @ 1' 7 1/2"	16806	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.012 @ 1' 7 1/2"	0.075	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.026 @ 1' 7 1/2"	0.150	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Member Length : 3' 3"
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	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	2.16"	2293	2311	660	4603	Blocking
2 - Stud wall - HF	3.00"	3.00"	2.16"	2293	2311	660	4603	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)	3' 3" o/c	
Bottom Edge (Lu)	3' 3" 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 3' 3"	N/A	14.2	--	--	
1 - Uniform (PSF)	0 to 3' 3" (Front)	11' 6"	15.0	40.0	--	Default Load
2 - Point (lb)	1' 7 1/2" (Front)	N/A	1339	954	627	Linked from: Beam 7, Support 2
3 - Point (lb)	1' 7 1/2" (Front)	N/A	2640	2172	693	Linked from: Beam 9, Support 1

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

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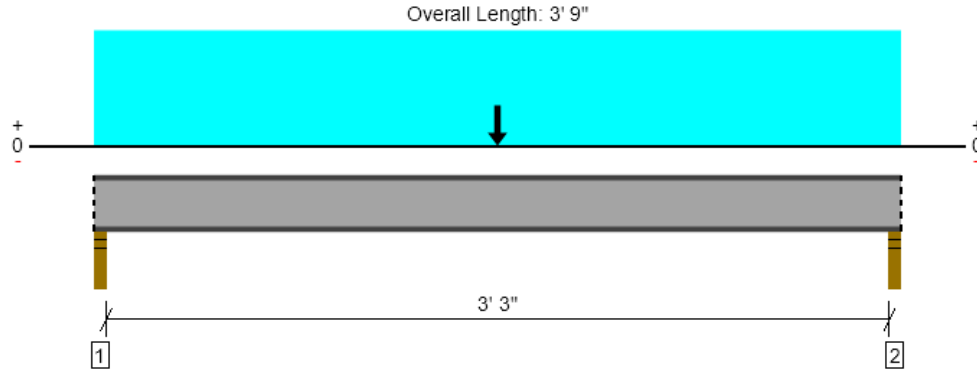
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Main Floor Framing, Beam 17
1 piece(s) W8X18 (A992) ASTM Steel



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)
Member Reaction (lbs)	5428 @ 1' 1/2"	6379 (3.00")	Passed (85%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	5266 @ 3"	37444	Passed (14%)	--	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	8361 @ 1' 10 1/2"	42415	Passed (20%)	--	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.006 @ 1' 10 1/2"	0.087	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.008 @ 1' 10 1/2"	0.175	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Bearing reinforcement may be required for point load located at 1' 10 1/2".
- Applicable calculations are based on ANSI/AISC 360-16.
- A lateral-torsional buckling factor (C_b) of 1.0 has been assumed.

Member Length : 3' 9"
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	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	3.00"	1808	3620	143	5428	Blocking
2 - Stud wall - HF	3.00"	3.00"	3.00"	1808	3620	143	5428	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)	Comments
0 - Self Weight (PLF)	0 to 3' 9"	N/A	18.0	--	--	
1 - Uniform (PSF)	0 to 3' 9" (Front)	11' 6"	15.0	40.0	--	Default Load
2 - Point (lb)	1' 10 1/2" (Front)	N/A	2249	5217	153	Linked from: Beam 6, Support 2
3 - Point (lb)	1' 10 1/2" (Front)	N/A	653	298	133	Linked from: Beam 10, Support 1

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

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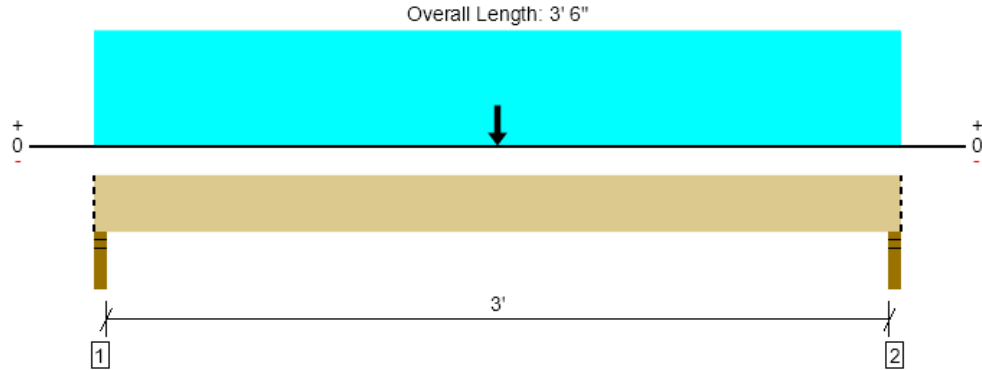
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Main Floor Framing, Beam 18
3 piece(s) 2 x 10 HF No.2



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)	3079 @ 1' 1/2"	5468 (3.00")	Passed (56%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2437 @ 1' 1/4"	4163	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4040 @ 1' 9"	5000	Passed (81%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.007 @ 1' 9"	0.081	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.017 @ 1' 9"	0.162	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Member Length : 3' 6"
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	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.69"	1745	1293	487	3079	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.69"	1745	1293	487	3079	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)	3' 6" o/c	
Bottom Edge (Lu)	3' 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)	Comments
0 - Self Weight (PLF)	0 to 3' 6"	N/A	10.6	--	--	
1 - Uniform (PSF)	0 to 3' 6" (Front)	10' 6"	15.0	40.0	--	Default Load
2 - Point (lb)	1' 9" (Front)	N/A	2902	1115	973	Linked from: Beam 9, Support 2

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

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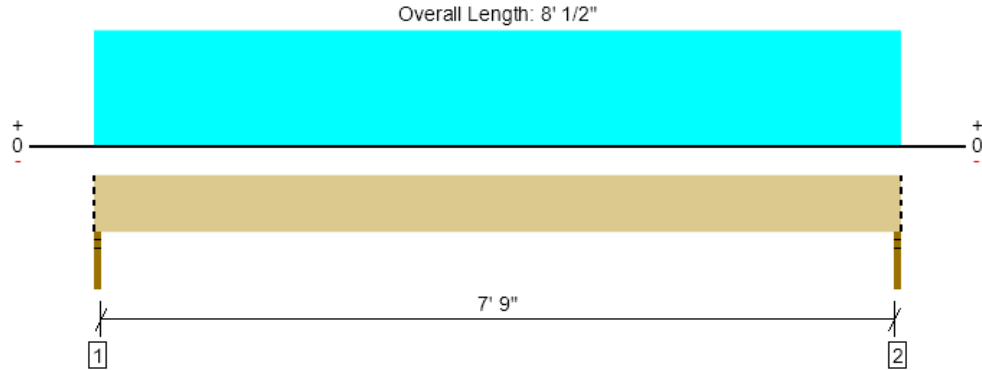
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Main Floor Framing, Beam 19

1 piece(s) 6 x 12 DF 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)	3388 @ 1/4"	3898 (1.75")	Passed (87%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2458 @ 1' 1 1/4"	7168	Passed (34%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	6742 @ 4' 1/4"	8840	Passed (76%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.063 @ 4' 1/4"	0.200	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.086 @ 4' 1/4"	0.400	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/480) 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.

Member Length : 8' 1/2"
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	Factored	
1 - Stud wall - HF	1.75"	1.75"	1.52"	895	2493	3388	Blocking
2 - Stud wall - HF	1.75"	1.75"	1.52"	895	2493	3388	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)	8' 1" o/c	
Bottom Edge (Lu)	8' 1" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 8' 1/2"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 8' 1/2" (Front)	10' 4"	20.0	60.0	Default Load

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

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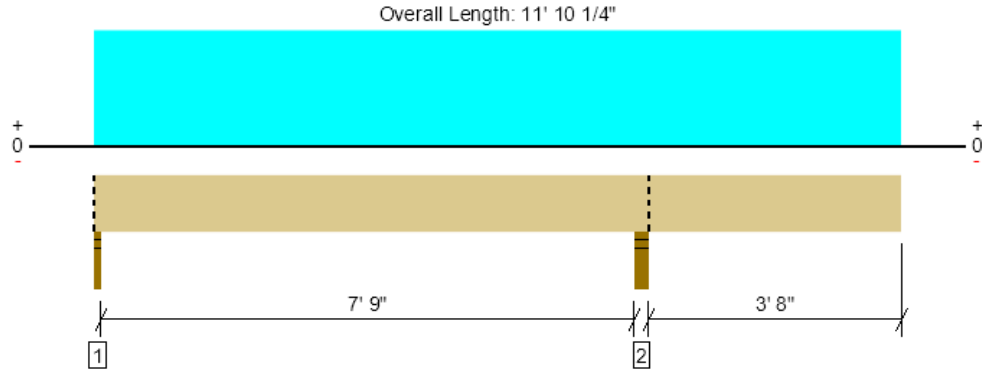
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Main Floor Framing, Beam 20

1 piece(s) 6 x 12 DF 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)	5203 @ 8' 1/2"	7796 (3.50")	Passed (67%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2272 @ 6' 11 1/4"	7168	Passed (32%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-4332 @ 8' 1/2"	8840	Passed (49%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.083 @ 11' 10 1/4"	0.200	Passed (2L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.089 @ 11' 10 1/4"	0.381	Passed (2L/999+)	--	1.0 D + 1.0 L (Alt Spans)

- 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.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Member Length : 11' 10 1/4"
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	Factored	
1 - Stud wall - HF	1.75"	1.75"	1.50"	503	1754/-394	2257	Blocking
2 - Stud wall - HF	3.50"	3.50"	2.34"	1406	3797	5203	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)	11' 10" o/c	
Bottom Edge (Lu)	11' 10" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 11' 10 1/4"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 11' 10 1/4" (Front)	7' 3"	20.0	60.0	Default Load

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

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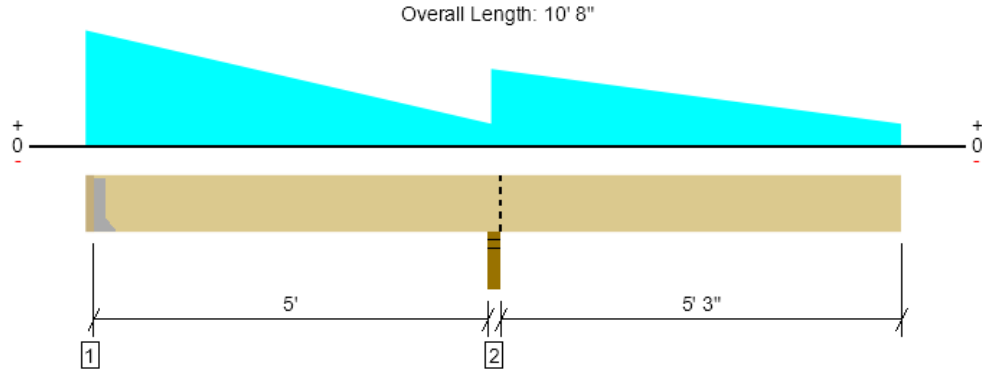
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Main Floor Framing, Beam 21

1 piece(s) 4 x 10 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)	1955 @ 5' 3 1/2"	4253 (3.00")	Passed (46%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	839 @ 4' 4 3/4"	3238	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-2237 @ 5' 3 1/2"	4242	Passed (53%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.144 @ 10' 8"	0.269	Passed (2L/896)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.192 @ 10' 8"	0.538	Passed (2L/672)	--	1.0 D + 1.0 L (Alt Spans)

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) 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.
- Applicable calculations are based on NDS.

Member Length : 10' 6"
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	Factored	
1 - Hanger on 9 1/4" HF beam	2.00"	Hanger ¹	1.50"	104	629/-257	733/-153	See note ¹
2 - Stud wall - HF	3.00"	3.00"	1.50"	555	1400	1955	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)	10' 6" o/c	
Bottom Edge (Lu)	10' 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	LUS48	2.00"	N/A	6-10dx1.5	4-10d	

- 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)	2" to 10' 8"	N/A	8.2	--	
1 - Tapered (PSF)	0 to 5' 3" (Front)	5' 3" to 1'	20.0	60.0	Default Load
2 - Tapered (PSF)	5' 3" to 10' 8" (Front)	3' 6" to 1'	20.0	60.0	Default Load

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

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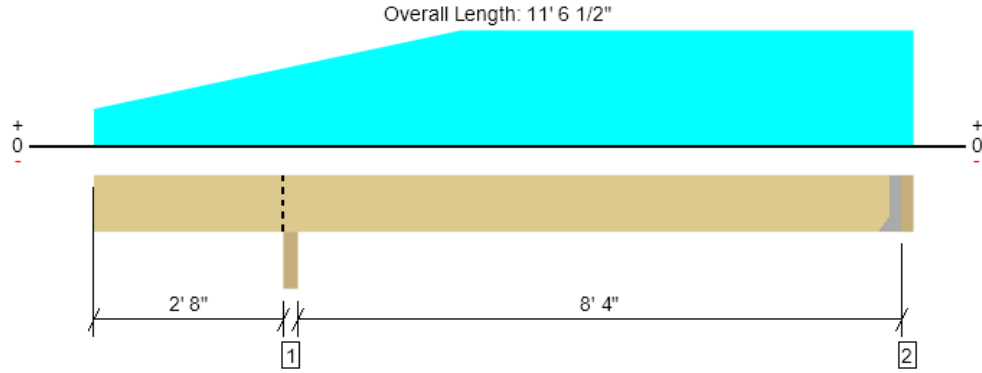
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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Main Floor Framing, Beam 22

1 piece(s) 4 x 12 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)	2113 @ 11' 3 1/2"	2126 (1.50")	Passed (99%)	--	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	1676 @ 3' 10 3/4"	3938	Passed (43%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4378 @ 7' 1 3/4"	5752	Passed (76%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.079 @ 7' 13/16"	0.212	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.104 @ 7' 1 1/16"	0.424	Passed (L/978)	--	1.0 D + 1.0 L (Alt Spans)

- 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.
- Applicable calculations are based on NDS.

Member Length : 11' 3 1/2"
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	Factored	
1 - Beam - HF	3.50"	3.50"	2.00"	764	2066	2830	Blocking
2 - Hanger on 11 1/4" HF beam	3.00"	Hanger ¹	1.50"	568	1670	2238	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' 4" o/c	
Bottom Edge (Lu)	11' 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
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)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 11' 3 1/2"	N/A	10.0	--	
1 - Tapered (PSF)	0 to 5' 3" (Front)	2' to 6' 3"	20.0	60.0	Default Load
2 - Uniform (PSF)	5' 3" to 11' 6 1/2" (Front)	6' 3"	20.0	60.0	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

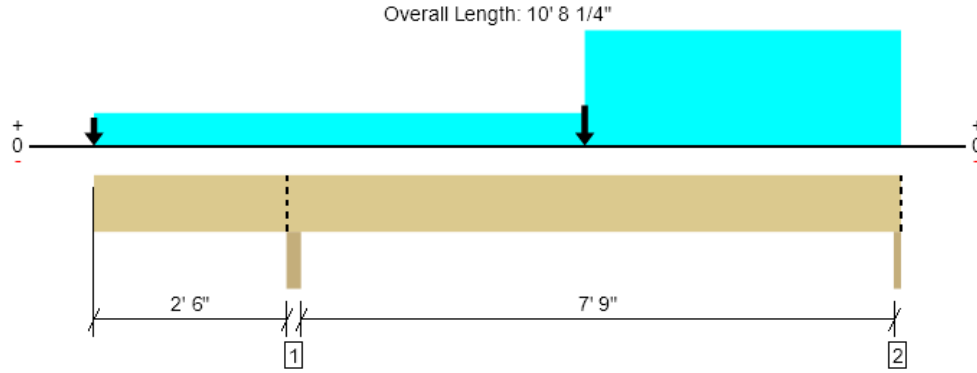
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Main Floor Framing, Beam 23

1 piece(s) 6 x 12 DF 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)	3104 @ 10' 8"	3898 (1.75")	Passed (80%)	--	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	3136 @ 3' 9"	7168	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	7883 @ 6' 6"	8840	Passed (89%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.074 @ 0	0.200	Passed (2L/864)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.076 @ 0	0.265	Passed (2L/832)	--	1.0 D + 1.0 L (Alt Spans)

- 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.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Member Length : 10' 8 1/4"
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	Factored	
1 - Beam - HF	3.50"	3.50"	2.58"	1641	4111	5751	Blocking
2 - Beam - HF	1.75"	1.75"	1.50"	696	2408/-514	3104	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' 8" o/c	
Bottom Edge (Lu)	10' 8" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 10' 8 1/4"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 6' 6" (Front)	2'	20.0	60.0	Default Load
2 - Uniform (PSF)	6' 6" to 10' 8 1/4" (Front)	7'	20.0	60.0	Default Load
3 - Point (lb)	0 (Front)	N/A	555	1400	Linked from: Beam 21, Support 2
4 - Point (lb)	6' 6" (Front)	N/A	764	2066	Linked from: Beam 22, Support 1

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

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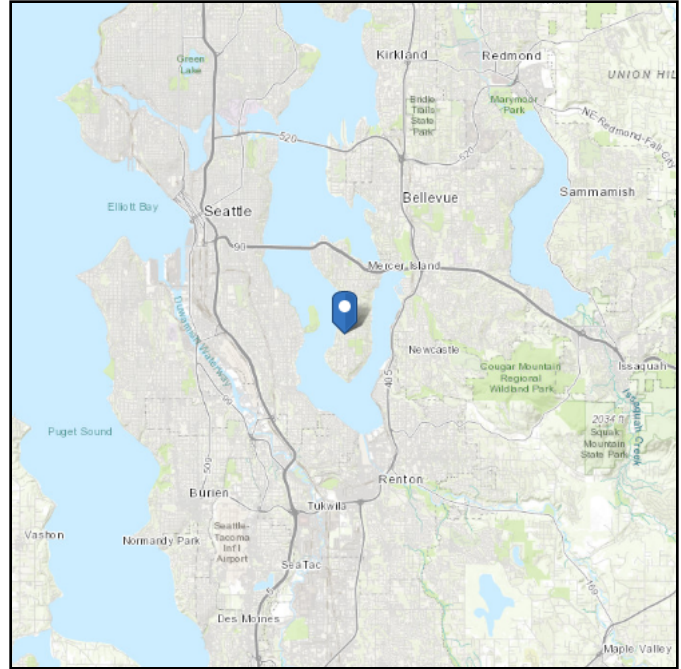
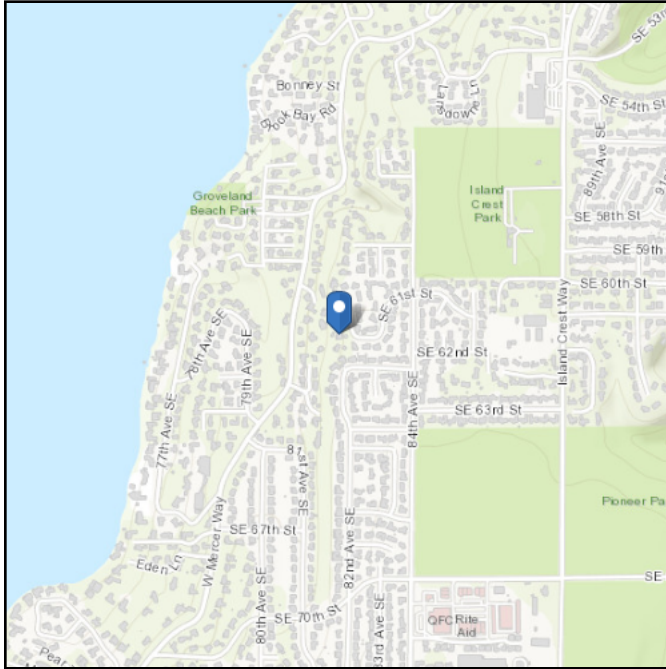
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File Name: Nestler-Spare (2025)

Address:
8265 SE 61st St
Mercer Island, Washington
98040

ASCE 7 Hazards Report

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Latitude: 47.547915
Longitude: -122.22965
Elevation: 271.8787392939514 ft
 (NAVD 88)



Wind

Results:

Wind Speed	98 Vmph
10-year MRI	67 Vmph
25-year MRI	74 Vmph
50-year MRI	78 Vmph
100-year MRI	83 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Fri Dec 15 2023

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

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

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

Results:

S_S :	1.464	S_{D1} :	N/A
S_1 :	0.508	T_L :	6
F_a :	1.2	PGA :	0.627
F_v :	N/A	PGA_M :	0.753
S_{MS} :	1.757	F_{PGA} :	1.2
S_{M1} :	N/A	I_e :	1
S_{DS} :	1.172	C_v :	1.393

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

Data Accessed: Fri Dec 15 2023

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

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Seismic (Overall - R=6.5)

Project: Nestler-Spare Residence (OVERALL)

Seismic Design Parameters		
Site Class	D	
Risk Category	II	Table 1.5-1
Importance Factor	1	Table 1.5-2
S _s	1.464	From USGS
S ₁	0.508	
F _a	1.000	Table 11.4-1
F _v	1.800	Table 11.4-2
S _{ms}	1.464	Eq. 11.4-1
S _{m1}	0.914	Eq. 11.4-2
S _{ds}	0.976	Eq. 11.4-3
S _{d1}	0.610	Eq. 11.4-4
R	6.5	Table 12.2-1
C _s	0.150	Eq. 12.8-2
T _a	0.250	12.8-7 - for "All other structural systems"
k	1	12.8.3
Seismic Design Category	D	Table 11.6-1

Seismic Base Shear		
V _{ultimate} (k)	39.2	Eq. 12.8-1
V _{allowable} (k)	27.4	

Level	Weight (k)	Height (ft)	$w_x f_x^k$	C _{vx}	F _x (ult.)	F _x (allow.)
Roof	90.3	29	2619.1	0.52	20.4	14.3
Upper Floor	75.5	19.5	1471.3	0.29	11.4	8.0
Main Floor	95.3	10	953.3	0.19	7.4	5.2
TOTAL	261.1	-	5043.6	1	39.2	27.4

All references are from ASCE 7-16: Minimum Design Loads and Associated Criteria for Buildings and Other Structures

Wind (Overall)

Project: Nestler-Spare Residence (OVERALL)

Wind Load Parameters

Exposure	C
Risk Category	II
Mean Roof Height (ft)	25.83
Roof Slope (X/12)	1
Angle	4.8
a (ft)	3.8
K _d	0.85
K _{zt}	1.6
V (mph)	98
K _z	0.95
q _h (psf)	31.65
Minimum Wind Pressure on Walls (psf)	16
Minimum Wind Pressure on Roof (psf)	8

Chapter 28 - Envelope Procedure

Sec. 26.7

Table 1.5-1

Figure 28.3-1 Note "a"

Table 26.6-1

Table 26.10-1

Eq. 26.10-1

Sec. 28.3.4

Building Geometry

Level	Height (ft)	Trib. Height (ft)	Load Case A Direction (ft)	Load Case B Direction (ft)
			Plan North/South	Plan East/West
Above Roof	2	2	52	88
Roof	8.83	4.415	52	88
Upper Floor	9	8.915	52	38
Main Floor	8.5	8.75	52	38

Height below Level

GC_{pf} Values Summary (28.3-1)

Building Surface	Load Case A	Load Case B
Roof	0.32	-
Roof Corners	0.54	-
Wall	0.69	0.69
Wall Corners	1.04	1.04

Load Case A - Plan North/South

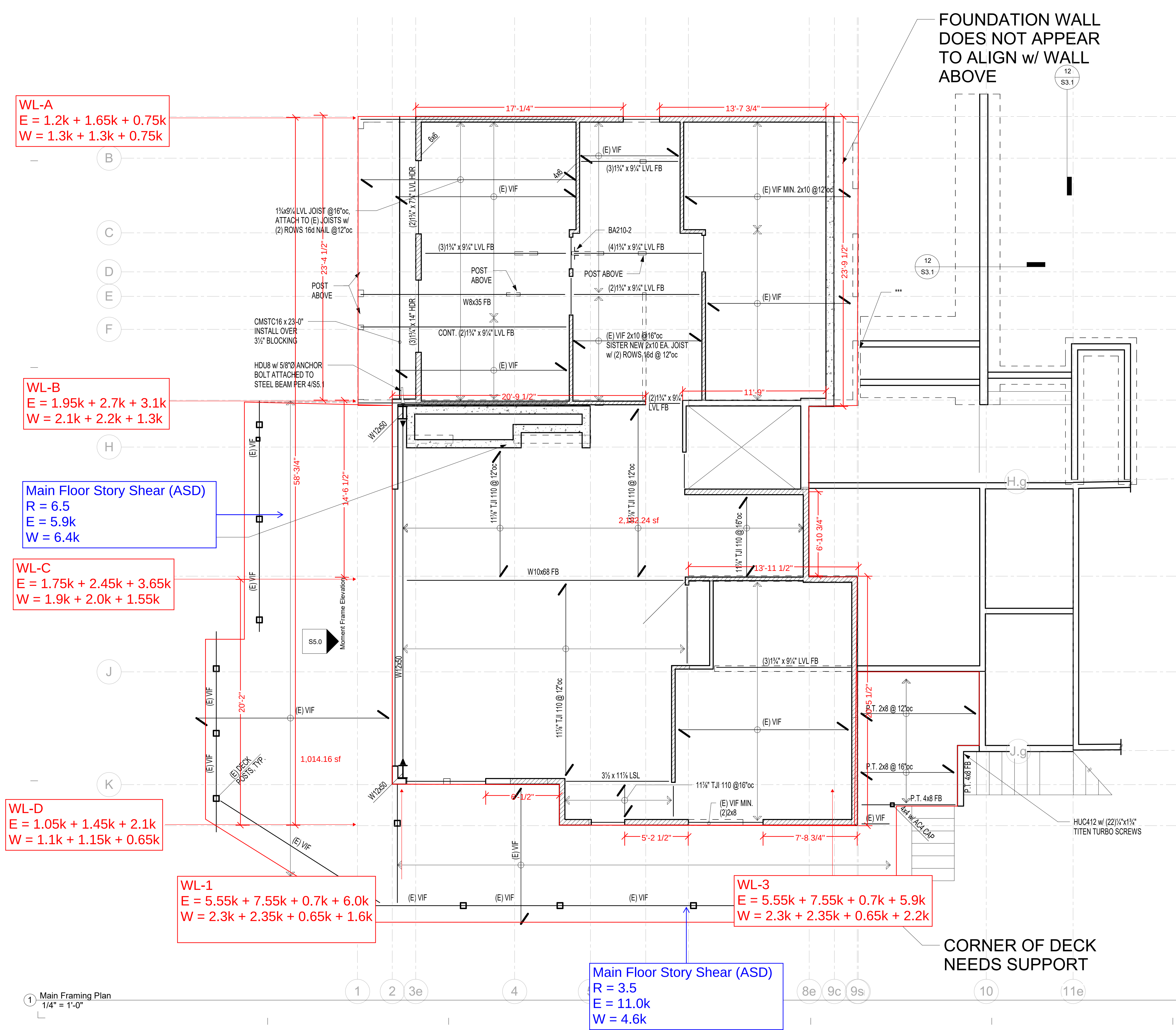
Level	A (ft ²)	F = q _h *GC _{pf} *A (k)		Total Wind Load (Ultimate, k)	Minimum Load (Ultimate, k)	Total (allowable, k)
Roof - roof	89	0.90		1.16	0.83	0.69
Corners	15	0.26				
Roof - walls	196	4.28		5.39	3.67	3.23
Corners	34	1.10				
Upper Floor	396	8.65		10.88	7.42	6.53
Corners	68	2.23				
Main Floor	389	8.49		10.67	7.28	6.40
Corners	67	2.19				

Load Case B - Plan East/West

Level	A (ft ²)	F = q _h *GC _{pf} *A (k)		Total Wind Load (Ultimate, k)	Minimum Load (Ultimate, k)	Total (allowable, k)
Roof - roof	168	3.68		3.93	1.41	2.36
Corners	8	0.25				
Roof - walls	372	8.12		8.67	6.22	5.20
Corners	17	0.55				
Upper Floor	305	6.66		7.77	5.42	4.66
Corners	34	1.12				
Main Floor	299	6.54		7.63	5.32	4.58
Corners	33	1.09				

Wind Loads Summary

Level	Plan North/South		Plan East/West	
	Wind Load (Ultimate, k)	Wind Load (Allowable, k)	Wind Load (Ultimate, k)	Wind Load (Allowable, k)
Roof	6.54	3.92	12.60	7.56
Upper Floor	10.88	6.53	7.77	4.66
Main Floor	10.67	6.40	7.63	4.58
Base Shear	28.09	16.85	28.00	16.80



FOUNDATION PLAN LEGEND

- ABRUPT CHANGE IN SLAB/FRAMING ELEVATION
- INDICATES EXISTING FOUNDATION
- INDICATES NEW FOUNDATION
- INDICATES DETAIL X ON SHEET SX.XX
- INDICATES SIMPSON HOLDOWN. REFER TO DETAIL 10/S3.0 & FOUNDATION PLAN NOTES FOR ANCHOR AND STUD STACK REQUIREMENTS.
- 2" PIPE PILE
- 3" PIPE PILE
- 8" HELICAL PILE
- EPOXY EMBED (2#4x2'-0" BOT INTO (E) FOUNDATION 4" MIN USING SET-3G EPOXY

FOUNDATION PLAN NOTES

- SLABS ON GRADE SHALL BE 4" THICK WITH 6x6 W1.4xW1.4 WWM CENTERED, U.N.O. PREPARED SOILS AND PROVIDE MINIMUM 10-MIL VISQUEEN VAPOR BARRIER UNDER ALL SLABS.
- REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS AND TOP OF SLAB ELEVATIONS.
- ALL HOLDOWNS TO BE INSTALLED AS REQUIRED BY MANUFACTURER. REFER TO HOLDOWN SCHEDULE 10/S3.0.
- CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

FRAMING PLAN LEGEND

- WALLS BELOW
- COLUMNS BELOW
- HANGER
- ABRUPT CHANGE IN SLAB/FRAMING ELEVATION
- INDICATES DETAIL X ON SHEET SX.XX
- FRAMING SPAN AND EXTENTS

FRAMING PLAN NOTES (TYPICAL UNLESS NOTED OTHERWISE)

- FLOOR SHEATHING SHALL BE 23/32" TONGUE AND GROOVE APA RATED SHEATHING (SPAN RATING 40/20). NAIL AT ALL FRAMED PANEL EDGES AND OVER SHEAR WALLS w/ 10d @ 6"oc AND 12"oc TO ALL INTERMEDIATE FRAMING
- ROOF SHEATHING SHALL BE 15/32" APA RATED SHEATHING (SPAN RATING 24/0). NAIL AT ALL FRAMED PANEL EDGES AND OVER SHEARWALLS w/ 8d @ 6"oc AND 12"oc TO ALL INTERMEDIATE FRAMING.
- 1SWX INDICATES SHEAR WALL PER SCHEDULE 12/S6.0.
- 2SWX INDICATES DOUBLE SIDED SHEAR WALL PER SCHEDULE 12/S6.0.
- ALL HEADERS SHALL BE (2)2x8 U.N.O. REFER TO NOTE 5 FOR SUPPORT REQUIREMENTS.
- COLUMNS SHALL BE DOUBLE STUDS MINIMUM, U.N.O., WITH BEAM OR HEADER BEARING FULLY ON COLUMN.
- WHERE FULL HEIGHT LSL STUDS ARE CALLED OUT, INSTALL 1.3E 1 1/2" x 3 1/2" LSL STUDS @ 16"oc.

1 Main Framing Plan
1/4" = 1'-0"

FRAMING PLAN LEGEND

- WALLS BELOW
- COLUMNS BELOW
- HANGER
- ABRUPT CHANGE IN SLAB/FRAMING ELEVATION
- INDICATES DETAIL X ON SHEET SX.XX
- FRAMING SPAN AND EXTENTS

FRAMING PLAN NOTES (TYPICAL UNLESS NOTED OTHERWISE)

- FLOOR SHEATHING SHALL BE 23/32" TONGUE AND GROOVE APA RATED SHEATHING (SPAN RATING 40/20). NAIL AT ALL FRAMED PANEL EDGES AND OVER SHEAR WALLS w/ 10d @ 6"oc AND 12"oc TO ALL INTERMEDIATE FRAMING
- ROOF SHEATHING SHALL BE 15/32" APA RATED SHEATHING (SPAN RATING 24/0). NAIL AT ALL FRAMED PANEL EDGES AND OVER SHEARWALLS w/ 8d @ 6"oc AND 12"oc TO ALL INTERMEDIATE FRAMING.
- 1SWX INDICATES SHEAR WALL PER SCHEDULE 12/S6.0.
- 2SWX INDICATES DOUBLE SIDED SHEAR WALL PER SCHEDULE 12/S6.0.
- ALL HEADERS SHALL BE (2)x8 U.N.O. REFER TO NOTE 5 FOR SUPPORT REQUIREMENTS.
- COLUMNS SHALL BE DOUBLE STUDS MINIMUM, U.N.O., WITH BEAM OR HEADER BEARING FULLY ON COLUMN.
- WHERE FULL HEIGHT LSL STUDS ARE CALLED OUT, INSTALL 1.3E 1 1/2" x 3 1/2" LSL STUDS @ 16"oc.

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Consultants:

Project:

NS Residence
project no. 2401

8265 SE 61st St
Mercer Island, WA 98040

Drawing Title:

Roof Framing Plan

Date: January 16, 2025

Issued For:

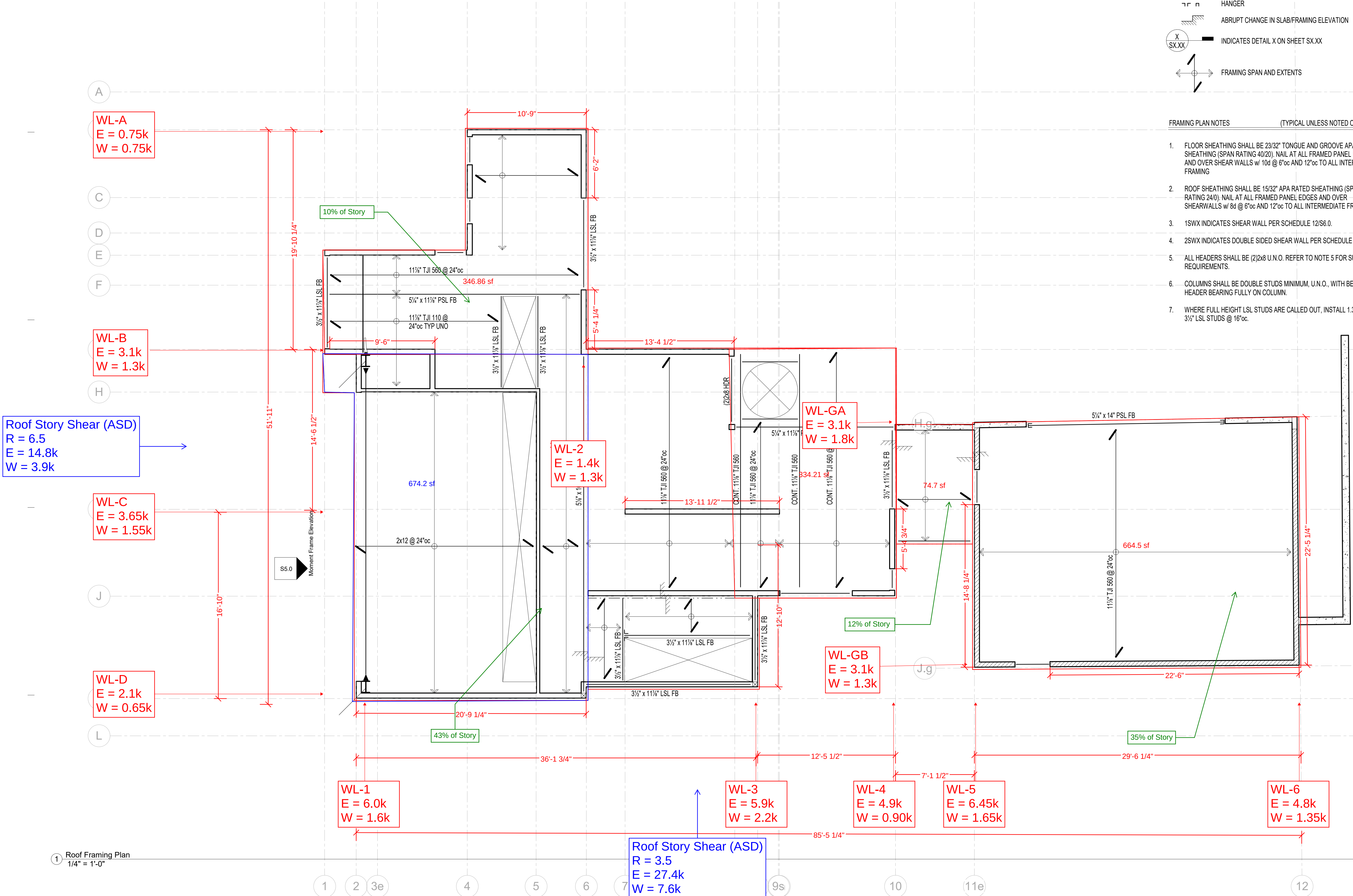
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Checked By:

Scale: As indicated

Sheet No.:

S2.3



WL-A

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	10.75	0.75	0.75	9
Upper Floor	36.83	2.4	2.05	8
Main Floor	23.5	3.6	3.35	8

Max H/W Ratio ² 3.5

ROOF

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
10.75	0.84	1.00	70	70	968	108	0.31	0.31
		Shear Wall	SW-1			Strap Tie	Strap Tie/Holdown Not Required	

UPPER FLOOR

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
20.25	0.40	1.00	65	56	1620	203	-0.03	-0.10
6.08	1.32	1.00	65	56	486	61	0.36	0.28
10.5	0.76	1.00	65	56	840	105	0.24	0.16
		Shear Wall	SW-1			Strap Tie	Strap Tie/Holdown Not Required	

MAIN FLOOR

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
17	0.47	1.00	153	143	1360	170	0.77	0.68
6.5	1.23	1.00	153	143	520	65	1.05	0.96
		Shear Wall	SW-1			Holdown	H DU2 w/ (2) 2x	

¹ Increase per 4.3.4.2 ANSI/AWC SDPWS-2015

² Per Table 4.3.4 ANSI/AWC SDPWS-2015

WL-B

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	22.83	3.1	1.3	9
Upper Floor	33.17	5.8	3.5	8
Main Floor	30.42	7.75	5.6	8

Max H/W Ratio ² 3.5

ROOF

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
9.5	0.95	1.00	136	57	855	95	0.94	0.23
13.33	0.68	1.00	136	57	1200	133	0.82	0.11
		Shear Wall	SW-1		Strap Tie		Strap Tie/Holdown Not Required	

UPPER FLOOR

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
19.67	0.41	1.00	175	106	1574	197	0.87	0.31
13.5	0.59	1.00	175	106	1080	360	0.97	0.41
		Shear Wall	SW-1		Strap Tie		Strap Tie/Holdown Not Required	

MAIN FLOOR

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
20.75	0.39	1.00	255	184	1660	208	1.48	0.91
9.67	0.83	1.00	255	184	774	97	1.78	1.21
		Shear Wall	SW-2		Holdown		HDU2 w/ (2) 2x	

¹ Increase per 4.3.4.2 ANSI/AWC SDPWS-2015

² Per Table 4.3.4 ANSI/AWC SDPWS-2015

WL-C

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	14	3.65	1.55	9
Upper Floor	8.75	6.1	3.55	8
Main Floor	8.75	7.85	5.45	8

Max H/W Ratio ² 3.5

ROOF

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
14	0.64	1.00	261	111	1260	140	1.93	0.58
		Shear Wall	SW-2			Strap Tie	MSTC40	

UPPER FLOOR

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
8.75	0.91	1.00	697	406	700	88	7.27	3.59
		Shear Wall	SW-5			Holdown	HDU11 w/ (4) 2x	

MAIN FLOOR

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
8.75	0.91	1.00	897	623	700	88	14.21	8.33
		Shear Wall	SW-6			Holdown	(2) HDU11 w/ (8) 2x	

¹ Increase per 4.3.4.2 ANSI/AWC SDPWS-2015

² Per Table 4.3.4 ANSI/AWC SDPWS-2015

WL-D

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	20.75	2.1	0.65	9
Upper Floor	4.5	3.55	1.8	8
Main Floor	17	4.6	2.9	8

Max H/W Ratio ² 3.5

ROOF

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
20.75	0.43	1.00	101	31	1868	208	0.29	-0.34
		Shear Wall	SW-1			Strap Tie	Strap Tie/Holdown Not Required	

UPPER FLOOR

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
4.5	1.78	1.00	789	400	360	45	6.19	3.08
		Shear Wall	SW-6			Strap Tie	MST72	

MAIN FLOOR

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
4	2.00	1.00	271	171	320	40	2.06	1.26
5.25	1.52	1.00	271	171	420	53	2.02	1.22
7.75	1.03	1.00	271	171	620	78	1.96	1.16
		Shear Wall	SW-2			Holdown	HDU2 w/ (2) 2x	

¹ Increase per 4.3.4.2 ANSI/AWC SDPWS-2015

² Per Table 4.3.4 ANSI/AWC SDPWS-2015

WL-GB

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	22.5	3.1	1.3	11

Max H/W Ratio ² 3.5

ROOF

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
22.5	0.49	1.00	138	58	2475	225	0.71	-0.17
		Shear Wall	SW-1			Holdown	Strap Tie/Holdown Not Required	

¹ Increase per 4.3.4.2 ANSI/AWC SDPWS-2015

² Per Table 4.3.4 ANSI/AWC SDPWS-2015

WL-2

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	11.5	1.4	1.3	9
Upper Floor	8.75	1.4	1.3	8

Max H/W Ratio ² 3.5

ROOF

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
6.17	1.46	1.00	122	113	555	62	0.91	0.83
5.33	1.69	1.00	122	113	480	53	0.94	0.86
		Shear Wall	SW-1		Strap Tie		Strap Tie/Holdown Not Required	

UPPER FLOOR

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
8.75	0.91	1.00	160	149	700	656	0.87	0.78
		Shear Wall	SW-1		Strap Tie		Strap Tie/Holdown Not Required	

¹ Increase per 4.3.4.2 ANSI/AWC SDPWS-2015

² Per Table 4.3.4 ANSI/AWC SDPWS-2015

WL-3

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	12.83	5.9	2.2	9
Upper Floor	29	14.15	5.2	8

Max H/W Ratio ² 3.5

ROOF

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
12.83	0.70	1.00	460	171	1155	128	3.75	1.16
		Shear Wall	SW-4			Strap Tie	MSTC66	

UPPER FLOOR

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
3.75	2.13	1.02	496	179	300	38	3.80	1.33
5.17	1.55	1.00	488	179	414	52	3.76	1.29
5.25	1.52	1.00	488	179	420	53	3.76	1.29
7.33	1.09	1.00	488	179	586	73	3.71	1.24
3.75	2.13	1.02	496	179	300	38	3.80	1.33
3.75	2.13	1.02	496	179	300	38	3.80	1.33
		Shear Wall	SW-4			Holdown	HDUS w/ (2) 2x	

¹ Increase per 4.3.4.2 ANSI/AWC SDPWS-2015

² Per Table 4.3.4 ANSI/AWC SDPWS-2015

WL-4

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	5.33	4.9	0.9	11

Max H/W Ratio ² 3.5

ROOF

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
5.33	2.06	1.01	927	169	586	53	9.92	1.67
		Shear Wall	SW-7			Holdown	HDU14 w/ (5) 2x	

¹ Increase per 4.3.4.2 ANSI/AWC SDPWS-2015

² Per Table 4.3.4 ANSI/AWC SDPWS-2015

WL-5

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	14.67	6.45	1.65	9.5

Max H/W Ratio ² 3.5

ROOF

Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
14.67	0.65	1.00	440	112	1394	147	3.71	0.61
		Shear Wall	SW-3			Holdown	HDU5 w/ (2) 2x	

¹ Increase per 4.3.4.2 ANSI/AWC SDPWS-2015

² Per Table 4.3.4 ANSI/AWC SDPWS-2015

WL-6

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	22.5	4.8	1.35	9.5

Max H/W Ratio ² 3.5

ROOF

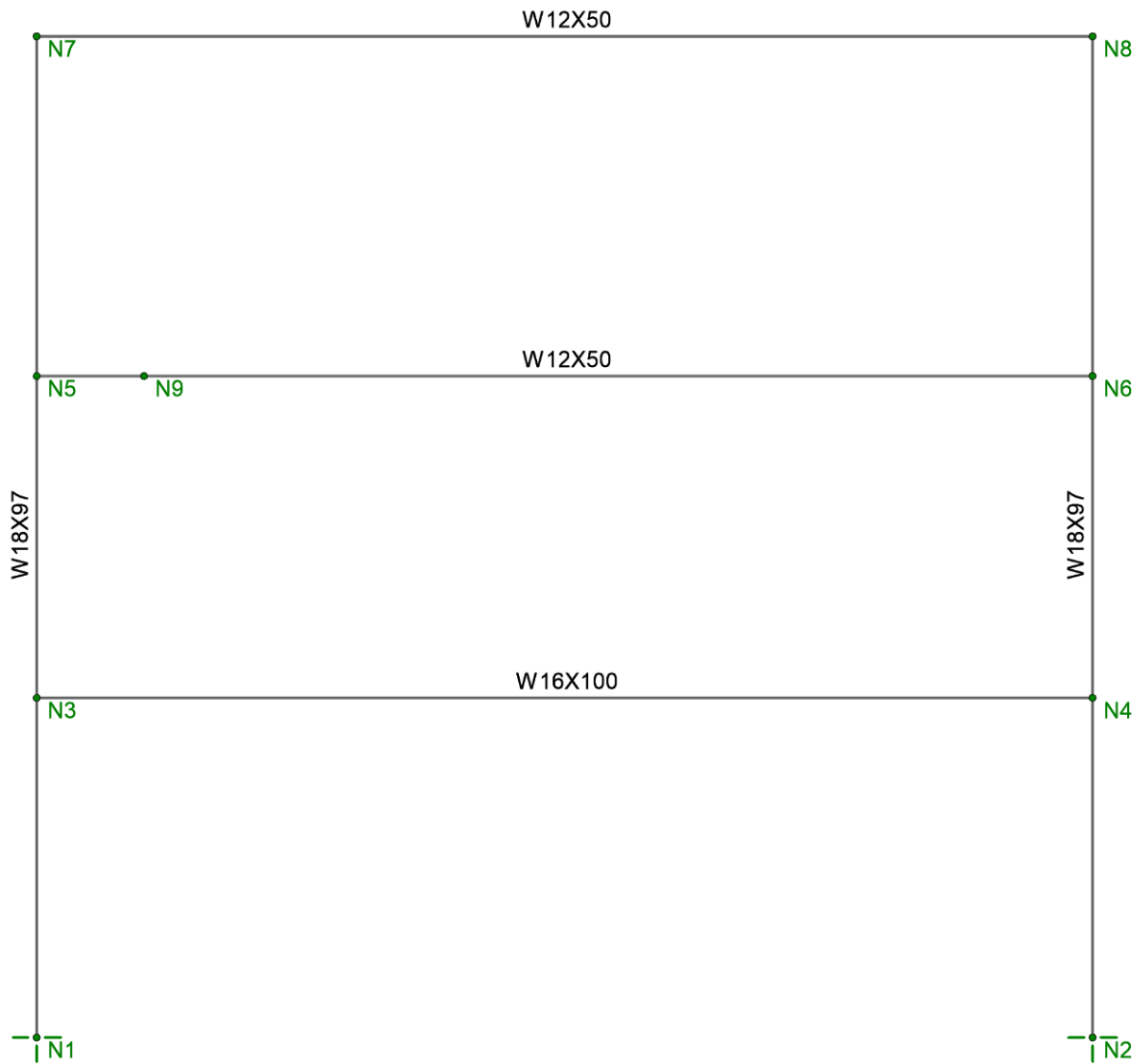
Length (ft)	H/W Ratio	Increase ¹	Force in Wall Elements		Dead Loads		Seismic Overturning (k)	Wind Overturning (k)
			Seismic Shear (plf)	Wind Shear (plf)	Wall (lb)	Floor (lb)		
22.5	0.42	1.00	213	60	2138	225	1.32	-0.14
		Shear Wall	SW-1			Holdown	HDU2 w/ (2) 2x	

¹ Increase per 4.3.4.2 ANSI/AWC SDPWS-2015

² Per Table 4.3.4 ANSI/AWC SDPWS-2015



2D Lock ON



Model Settings

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in ²)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes
Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3
Single	No
Multiple (Optimum)	Yes
Maximum	No

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes
Default Global Plane for z-axis	XZ
Plate Local Axis Orientation	Global

Hot Rolled Steel	AISC 15th (360-16): ASD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 15th (360-16): ASD
Cold Formed Steel	AISI S100-20: ASD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-18 / SDPWS-21 ASD
Temperature	< 100F
Concrete	ACI 318-19 (22)
Masonry	TMS 402-16: ASD
Aluminum	AA ADM1-20: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
List forces which were ignored for design in the Detail Report	Yes

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Code	ASCE 7-16
Risk Category	I or II
Drift Cat	Other

Model Settings (Continued)

Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes
S_s (g)	1
SD_1 (g)	1
SD_s (g)	1
T_1 (sec)	5
T Z (sec)	
T X (sec)	
C_z	0.02
C_x	0.02
$C_{Exp. Z}$	0.75
$C_{Exp. X}$	0.75
R Z	3.5
R X	3.5
$\Omega_0 Z$	3
$\Omega_0 X$	3
$C_0 Z$	3
$C_0 X$	3
ρZ	1
ρX	1

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	29.5	0	0	
3	N3	0	9.5	0	
4	N4	29.5	9.5	0	
5	N5	0	18.5	0	
6	N6	29.5	18.5	0	
7	N7	0	28	0	
8	N8	29.5	28	0	
9	N9	3	18.5	0	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]
1	N1	Reaction	Reaction	
2	N2	Reaction	Reaction	
3	ALL			Fixed

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e ⁻⁵ F ⁻¹]	Density [k/ft ³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B RECT	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A500 Gr.C RND	29000	11154	0.3	0.65	0.527	46	1.4	62	1.3
7	A500 Gr.C RECT	29000	11154	0.3	0.65	0.527	50	1.4	62	1.3
8	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
9	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
10	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
1	Columns	W18X97	Column	Wide Flange	A992	Typical	28.5	201	1750	5.86
2	Roof Beam	W12X50	Beam	Wide Flange	A992	Typical	14.6	56.3	391	1.71
3	Upper Floor Beam	W12X50	Beam	Wide Flange	A992	Typical	14.6	56.3	391	1.71
4	Main Floor Beam	W16X100	Beam	Wide Flange	A992	Typical	29.4	186	1490	7.73

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N7	Columns	Column	Wide Flange	A992	Typical
2	M2	N2	N8	Columns	Column	Wide Flange	A992	Typical
3	M3	N7	N8	Roof Beam	Beam	Wide Flange	A992	Typical
4	M4	N5	N6	Upper Floor Beam	Beam	Wide Flange	A992	Typical
5	M5	N3	N4	Main Floor Beam	Beam	Wide Flange	A992	Typical

Member Advanced Data

	Label	Col-Wall Vert Release	Physical	Deflection Ratio Options	Seismic DR
1	M1		Yes	** NA **	None
2	M2		Yes	** NA **	None

Member Advanced Data (Continued)

	Label	Col-Wall Vert Release	Physical	Deflection Ratio Options	Seismic DR
3	M3		Yes	Default	None
4	M4		Yes	Default	None
5	M5		Yes	Default	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	M1	Columns	28	Lbyy	N/A	N/A	Lateral
2	M2	Columns	28	Lbyy	N/A	N/A	Lateral
3	M3	Roof Beam	29.5	Lbyy	N/A	N/A	Lateral
4	M4	Upper Floor Beam	29.5	Lbyy	N/A	N/A	Lateral
5	M5	Main Floor Beam	29.5	Lbyy	N/A	N/A	Lateral

Node Loads and Enforced Displacements (BLC 1 : Dead)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s ² /ft, k*s ² *ft)]
1	N9	L	Y	-0.62

Node Loads and Enforced Displacements (BLC 2 : Live)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s ² /ft, k*s ² *ft)]
1	N9	L	Y	-0.55

Node Loads and Enforced Displacements (BLC 3 : Snow)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s ² /ft, k*s ² *ft)]
1	N9	L	Y	-0.4

Node Loads and Enforced Displacements (BLC 4 : Seismic)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s ² /ft, k*s ² *ft)]
1	N7	L	X	9.2
2	N5	L	X	12.6
3	N3	L	X	11.9

Member Distributed Loads (BLC 1 : Dead)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M3	Y	-0.175	-0.175	0	%100
2	M5	Y	-0.315	-0.315	0	%100

Member Distributed Loads (BLC 2 : Live)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M5	Y	-0.63	-0.63	0	%100
2	M4	Y	-0.1	-0.1	0	%100

Member Distributed Loads (BLC 3 : Snow)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M3	Y	-0.22	-0.22	0	%100

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1	Dead	DL	-1	1	1	2
2	Live	LL		1	1	2
3	Snow	SL		1		1
4	Seismic	EL		3		

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	IBC 21/ASCE ASD 1	Yes	Y	DL	1						
2	IBC 21/ASCE ASD 2	Yes	Y	DL	1	LL	1				
3	IBC 21/ASCE ASD 3 (b)	Yes	Y	DL	1	SL	1				
4	IBC 21/ASCE ASD 4 (b)	Yes	Y	DL	1	LL	0.75	SL	0.75		
5	IBC 21/ASCE ASD 8	Yes	Y	DL	1	EL	0.7				
6	IBC 21/ASCE ASD 9	Yes	Y	DL	1	EL	0.525	LL	0.75	SL	0.75
7	IBC 21/ASCE ASD 10	Yes	Y	DL	0.6	EL	0.7				
8	DRIFT		Y	EL	1						
9	Live Load		Y	LL	1						
10	Snow Load		Y	SL	1						

Node Reactions

	LC	Node Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N1	2.046	15.341	0	0	0	0
2	1	N2	-2.046	14.847	0	0	0	0
3	1	Totals:	0	30.188	0			
4	1	COG (ft):	X: 14.509	Y: 14.993	Z: 0			
5	2	N1	4.889	28.702	0	0	0	0
6	2	N2	-4.889	27.771	0	0	0	0
7	2	Totals:	0	56.473	0			
8	2	COG (ft):	X: 14.507	Y: 12.994	Z: 0			
9	3	N1	2.029	18.945	0	0	0	0
10	3	N2	-2.029	18.133	0	0	0	0
11	3	Totals:	0	37.078	0			
12	3	COG (ft):	X: 14.427	Y: 17.308	Z: 0			
13	4	N1	4.166	28.065	0	0	0	0
14	4	N2	-4.166	27.005	0	0	0	0
15	4	Totals:	0	55.069	0			
16	4	COG (ft):	X: 14.466	Y: 14.624	Z: 0			
17	5	N1	-9.843	0.918	0	0	0	0
18	5	N2	-13.747	29.271	0	0	0	0
19	5	Totals:	-23.59	30.188	0			
20	5	COG (ft):	X: 14.509	Y: 14.993	Z: 0			
21	6	N1	-4.731	17.189	0	0	0	0
22	6	N2	-12.961	37.881	0	0	0	0
23	6	Totals:	-17.693	55.069	0			
24	6	COG (ft):	X: 14.466	Y: 14.624	Z: 0			
25	7	N1	-10.662	-5.18	0	0	0	0
26	7	N2	-12.928	23.293	0	0	0	0
27	7	Totals:	-23.59	18.113	0			
28	7	COG (ft):	X: 14.509	Y: 14.993	Z: 0			

Node Displacements

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
1	1	N1	0	0	0	0	0	8.386e-5
2	1	N2	0	0	0	0	0	-9.635e-5
3	1	N3	0.001	-0.003	0	0	0	-2.436e-4
4	1	N4	0.001	-0.002	0	0	0	2.311e-4
5	1	N5	0.002	-0.004	0	0	0	3.065e-5
6	1	N6	0.001	-0.003	0	0	0	-6.247e-5
7	1	N7	0.004	-0.004	0	0	0	-1.983e-4
8	1	N8	0.003	-0.004	0	0	0	1.763e-4
9	1	N9	0.002	-0.007	0	0	0	-1.207e-4
10	2	N1	0	0	0	0	0	2.042e-4
11	2	N2	0	0	0	0	0	-2.28e-4
12	2	N3	0.001	-0.005	0	0	0	-5.782e-4
13	2	N4	0.002	-0.005	0	0	0	5.546e-4
14	2	N5	0.006	-0.006	0	0	0	2.78e-5
15	2	N6	0.001	-0.006	0	0	0	-8.803e-5
16	2	N7	0.008	-0.007	0	0	0	-1.888e-4
17	2	N8	0.006	-0.006	0	0	0	1.47e-4
18	2	N9	0.006	-0.016	0	0	0	-3.9e-4
19	3	N1	0	0	0	0	0	7.881e-5
20	3	N2	0	0	0	0	0	-9.943e-5
21	3	N3	0.001	-0.003	0	0	0	-2.459e-4
22	3	N4	0.001	-0.003	0	0	0	2.254e-4
23	3	N5	0.003	-0.005	0	0	0	4.714e-5
24	3	N6	0.004	-0.004	0	0	0	-9.955e-5
25	3	N7	0.008	-0.006	0	0	0	-3.992e-4
26	3	N8	0.004	-0.006	0	0	0	3.628e-4
27	3	N9	0.003	-0.008	0	0	0	-1.22e-4
28	4	N1	0	0	0	0	0	1.703e-4
29	4	N2	0	0	0	0	0	-1.974e-4
30	4	N3	0.001	-0.005	0	0	0	-4.963e-4
31	4	N4	0.002	-0.005	0	0	0	4.694e-4
32	4	N5	0.005	-0.006	0	0	0	4.089e-5
33	4	N6	0.003	-0.006	0	0	0	-1.095e-4
34	4	N7	0.009	-0.007	0	0	0	-3.418e-4
35	4	N8	0.006	-0.007	0	0	0	2.942e-4
36	4	N9	0.005	-0.015	0	0	0	-3.236e-4
37	5	N1	0	0	0	0	0	-4.907e-3
38	5	N2	0	0	0	0	0	-5.069e-3
39	5	N3	0.511	0	0	0	0	-3.331e-3
40	5	N4	0.509	-0.005	0	0	0	-2.835e-3
41	5	N5	0.869	0	0	0	0	-2.959e-3
42	5	N6	0.864	-0.007	0	0	0	-3.045e-3
43	5	N7	1.195	-0.001	0	0	0	-2.659e-3
44	5	N8	1.19	-0.008	0	0	0	-2.298e-3
45	5	N9	0.869	-0.079	0	0	0	-1.515e-3
46	6	N1	0	0	0	0	0	-3.597e-3
47	6	N2	0	0	0	0	0	-3.951e-3
48	6	N3	0.386	-0.003	0	0	0	-2.825e-3
49	6	N4	0.385	-0.006	0	0	0	-1.844e-3
50	6	N5	0.659	-0.004	0	0	0	-2.212e-3
51	6	N6	0.653	-0.008	0	0	0	-2.357e-3
52	6	N7	0.907	-0.005	0	0	0	-2.196e-3
53	6	N8	0.901	-0.01	0	0	0	-1.57e-3
54	6	N9	0.659	-0.07	0	0	0	-1.374e-3
55	7	N1	0	0	0	0	0	-4.925e-3

Node Displacements (Continued)

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
56	7	N2	0	0	0	0	0	-5.015e-3
57	7	N3	0.509	0.001	0	0	0	-3.225e-3
58	7	N4	0.507	-0.004	0	0	0	-2.919e-3
59	7	N5	0.866	0.001	0	0	0	-2.964e-3
60	7	N6	0.861	-0.005	0	0	0	-3.013e-3
61	7	N7	1.19	0.001	0	0	0	-2.574e-3
62	7	N8	1.185	-0.006	0	0	0	-2.363e-3
63	7	N9	0.865	-0.076	0	0	0	-1.463e-3

AISC 15TH (360-16): ASD Member Steel Code Checks

	LC	Member	Shape	UC MaxLoc[ft]	Shear UCLoc[ft]	Dir	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn		
1	1	M1	W18X97	0.063	9.333	0.013	18.375	y	267.608	853.293	137.974	526.447	1.855	H1-1b
2	1	M2	W18X97	0.062	9.333	0.013	18.375	y	267.608	853.293	137.974	526.447	1.845	H1-1b
3	1	M3	W12X50	0.101	29.5	0.037	29.5	y	67.528	437.126	53.144	179.391	2.127	H1-1b
4	1	M4	W12X50	0.035	0	0.015	0	y	67.528	437.126	53.144	179.391	2.946	H1-1b
5	1	M5	W16X100	0.082	29.5	0.04	29.5	y	223.094	880.24	136.976	494.012	1.818	H1-1b
6	2	M1	W18X97	0.139	9.333	0.034	18.375	y	267.608	853.293	137.974	526.447	1.971	H1-1b
7	2	M2	W18X97	0.137	9.333	0.034	18.375	y	267.608	853.293	137.974	526.447	1.959	H1-1b
8	2	M3	W12X50	0.102	29.5	0.037	29.5	y	67.528	437.126	53.144	179.391	2.163	H1-1b
9	2	M4	W12X50	0.111	0	0.037	0	y	67.528	437.126	53.144	179.391	2.685	H1-1b
10	2	M5	W16X100	0.197	29.5	0.098	29.5	y	223.094	880.24	136.976	494.012	1.83	H1-1b
11	3	M1	W18X97	0.071	0	0.018	28	y	267.608	853.293	137.974	526.447	2.225	H1-1b*
12	3	M2	W18X97	0.071	28	0.018	28	y	267.608	853.293	137.974	526.447	2.176	H1-1b
13	3	M3	W12X50	0.199	29.5	0.073	29.5	y	67.528	437.126	53.144	179.391	2.118	H1-1b
14	3	M4	W12X50	0.035	0	0.019	0	y	67.528	437.126	53.144	179.391	3	H1-1b
15	3	M5	W16X100	0.083	29.5	0.041	29.5	y	223.094	880.24	136.976	494.012	1.826	H1-1b
16	4	M1	W18X97	0.125	9.333	0.028	18.375	y	267.608	853.293	137.974	526.447	1.906	H1-1b
17	4	M2	W18X97	0.123	9.333	0.028	18.375	y	267.608	853.293	137.974	526.447	1.894	H1-1b
18	4	M3	W12X50	0.175	29.5	0.064	29.5	y	67.528	437.126	53.144	179.391	2.135	H1-1b
19	4	M4	W12X50	0.085	0	0.034	0	y	67.528	437.126	53.144	179.391	2.807	H1-1b
20	4	M5	W16X100	0.168	29.5	0.084	29.5	y	223.094	880.24	136.976	494.012	1.831	H1-1b
21	5	M1	W18X97	0.175	9.333	0.049	9.333	y	267.608	853.293	137.974	526.447	2.295	H1-1b
22	5	M2	W18X97	0.3	9.333	0.07	9.333	y	267.608	853.293	137.974	526.447	2.405	H1-1b
23	5	M3	W12X50	0.297	29.5	0.06	29.5	y	67.528	437.126	53.144	179.391	2.374	H1-1b
24	5	M4	W12X50	0.269	29.5	0.037	29.5	y	67.528	437.126	53.144	179.391	2.315	H1-1b
25	5	M5	W16X100	0.383	29.5	0.09	29.5	y	223.094	880.24	136.976	494.012	2.246	H1-1b
26	6	M1	W18X97	0.116	9.333	0.024	9.333	y	267.608	853.293	137.974	526.447	1.89	H1-1b
27	6	M2	W18X97	0.302	9.333	0.066	9.333	y	267.608	853.293	137.974	526.447	2.26	H1-1b
28	6	M3	W12X50	0.323	29.5	0.081	29.5	y	67.528	437.126	53.144	179.391	2.439	H1-1b
29	6	M4	W12X50	0.255	29.5	0.042	29.5	y	67.528	437.126	53.144	179.391	2.383	H1-1b
30	6	M5	W16X100	0.392	29.5	0.121	29.5	y	223.094	880.24	136.976	494.012	2.236	H1-1b
31	7	M1	W18X97	0.192	9.333	0.053	9.333	y	267.608	853.293	137.974	526.447	2.364	H1-1b
32	7	M2	W18X97	0.275	9.333	0.066	9.333	y	267.608	853.293	137.974	526.447	2.462	H1-1b
33	7	M3	W12X50	0.256	29.5	0.045	29.5	y	67.528	437.126	53.144	179.391	2.343	H1-1b
34	7	M4	W12X50	0.256	29.5	0.033	29.5	y	67.528	437.126	53.144	179.391	2.299	H1-1b
35	7	M5	W16X100	0.35	29.5	0.073	29.5	y	223.094	880.24	136.976	494.012	2.254	H1-1b

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	4.889	2	28.702	2	0	7	0	7	0	7	0	7
2		min	-10.662	7	-5.18	7	0	1	0	1	0	1	0	1
3	N2	max	-2.029	3	37.881	6	0	7	0	7	0	7	0	7
4		min	-13.747	5	14.847	1	0	1	0	1	0	1	0	1

Envelope Node Reactions (Continued)

Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
5	Totals:	max	0	4	56.473	2	0	7					
6		min	-23.59	7	18.113	7	0	1					

Envelope Node Displacements

Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	0	7	0	7	0	7	0	7	0	2.042e-4	2
2		min	0	2	0	2	0	1	0	1	0	-4.925e-3	7
3	N2	max	0	5	0	1	0	7	0	7	0	-9.635e-5	1
4		min	0	3	0	6	0	1	0	1	0	-5.069e-3	5
5	N3	max	0.511	5	0.001	7	0	7	0	7	0	-2.436e-4	1
6		min	0.001	1	-0.005	2	0	1	0	1	0	-3.331e-3	5
7	N4	max	0.509	5	-0.002	1	0	7	0	7	0	5.546e-4	2
8		min	0.001	1	-0.006	6	0	1	0	1	0	-2.919e-3	7
9	N5	max	0.869	5	0.001	7	0	7	0	7	0	4.714e-5	3
10		min	0.002	1	-0.006	4	0	1	0	1	0	-2.964e-3	7
11	N6	max	0.864	5	-0.003	1	0	7	0	7	0	-6.247e-5	1
12		min	0.001	2	-0.008	6	0	1	0	1	0	-3.045e-3	5
13	N7	max	1.195	5	0.001	7	0	7	0	7	0	-1.888e-4	2
14		min	0.004	1	-0.007	4	0	1	0	1	0	-2.659e-3	5
15	N8	max	1.19	5	-0.004	1	0	7	0	7	0	3.628e-4	3
16		min	0.003	1	-0.01	6	0	1	0	1	0	-2.363e-3	7
17	N9	max	0.869	5	-0.007	1	0	7	0	7	0	-1.207e-4	1
18		min	0.002	1	-0.079	5	0	1	0	1	0	-1.515e-3	5

Envelope AISC 15TH (360-16): ASD Member Steel Code Checks

Member	Shape	Code Check	Loc[ft]	LC	Shear	CheckLoc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn	
1	M1	W18X97	0.192	9.333	7	0.053	9.333	y	7	267.608	853.293	137.974	526.447	2.364	H1-1b
2	M2	W18X97	0.302	9.333	6	0.07	9.333	y	5	267.608	853.293	137.974	526.447	2.26	H1-1b
3	M3	W12X50	0.323	29.5	6	0.081	29.5	y	6	67.528	437.126	53.144	179.391	2.439	H1-1b
4	M4	W12X50	0.269	29.5	5	0.042	29.5	y	6	67.528	437.126	53.144	179.391	2.315	H1-1b
5	M5	W16X100	0.392	29.5	6	0.121	29.5	y	6	223.094	880.24	136.976	494.012	2.236	H1-1b

X-Direction Story Drift - Service

LC	Story (Elevation)	Loc (Z,X)	Story Drift[in]	Drift Ratio (%)	2nd/1st Ratio
1	1	N7 (28 ft)	0, 0	0.002	1.003
2	1	N5 (18.5 ft)	0, 0	0.002	1.003
3	1	N3 (9.5 ft)	0, 0	0.001	1
4	2	N7 (28 ft)	0, 0	0.001	1.015
5	2	N5 (18.5 ft)	0, 0	0.005	1.004
6	2	N3 (9.5 ft)	0, 0	0.001	1
7	3	N7 (28 ft)	0, 0	0.005	1.003
8	3	N5 (18.5 ft)	0, 0	0.002	1.008
9	3	N3 (9.5 ft)	0, 0	0.001	1
10	4	N7 (28 ft)	0, 0	0.004	1.006
11	4	N5 (18.5 ft)	0, 0	0.004	1.005
12	4	N3 (9.5 ft)	0, 0	0.001	1
13	5	N7 (28 ft)	0, 0	0.978	1.006
14	5	N5 (18.5 ft)	0, 0	1.075	1.006
15	5	N3 (9.5 ft)	0, 0	1.532	1.008
16	6	N7 (28 ft)	0, 0	0.743	1.011
17	6	N5 (18.5 ft)	0, 0	0.819	1.011
18	6	N3 (9.5 ft)	0, 0	1.159	1.014

X-Direction Story Drift - Service (Continued)

	LC	Story (Elevation)	Loc (Z,X)	Story Drift[in]	Drift Ratio (%)	2nd/1st Ratio
19	7	N7 (28 ft)	0, 0	0.973	0.854	1.004
20	7	N5 (18.5 ft)	0, 0	1.07	0.991	1.004
21	7	N3 (9.5 ft)	0, 0	1.527	1.339	1.005

Ordinary Moment Frame: Beam/Column Connection

Project:	Nestler-Spare
Date:	3/13/2025
Frame Location:	Roof & Upper Floor

Member Sizes

Beam	W12X50
Column	W18X97

Frame Parameters

Length of Beam	28 ft - Clear span
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Geometric Properties

	Beam	Column
Depth	12.2	18.6 in
Width	8.08	11.1 in
Area	14.6	28.5 in ²
Flange Thickness	0.64	0.87 in
Web Thickness	0.37	0.535 in
k	1.14	1.27 in
k1	0.94	1.13 in
Z	72	72 in ³
Workable gage	5.5	5.5 in

Variables

Shear Tab Plate Thickness	3/8 in
Bolt Diameter	3/4 in
Num. of Bolts in Shear Tab	3
Shear Tab Weld	1/4
Shear Tab Required Shear	25.9 k - SDM Eq. E1-1
Shear Tab Capacity	29.4 k - Table 10-10a
Beam One Side/Two Sides	One Side
Continuity Plate Thickness	0.375 in
Cotinuity Plate Weld to Col. Web	5/16

Design Summary

Design per AISC SDM Section E1.6b(c)

Beam/Column Width Check	OK
Shear Tab Capacity	88%
Cont. Plate Size	OK
Cont. Plate Weld	OK

Shear Tab Design

Dimension Check

Beam Width	8.08 in
Column Width	11.1 in
Column > Beam?	OK

Check Plate Size & Max Bolts

Maximum Plate Depth	9.92 in - T
Maximum Num. of Bolts	3

Shear Tab Required Shear

$2(1.1R_y M_p)/L_{cf}$	25.9 k - SDM Eq. E1-1
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Continuity Plate Design

Continuity Plate Minimum Thickness

$t_{min} = t_{lp} * 0.50$ (1 sided)	0.32	Prov. E3.6f.2(b)(2) 1-sided
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For 2 sided connection, multiply t_{min} by 1.5

Use CJP weld to column flanges

Design continuity plate weld to column web for the lesser of the following per E3.6f.2(c):

- (1) Sum of available strengths in tension of the contact areas of the continuity plates to column flanges that have attached beam flanges
- (2) Available shear strength of the contact area of the plate with the column web or extended doubler plate
- (3) The available shear strength of the column web when the continuity plate is welded to the column web, or the available shear strength of the doubler plate when the continuity plate is welded to an extended doubler plate

Option (1) - Tensile Strength of Contact Area

Length of contact to column flange	4.4	<i>in</i>
R_n/Ω	99.4	<i>k - Eq. J4-1</i>

Option (2) - Shear Strength of Contact Area

Length of contact to column web	12.56	<i>in</i>
R_n/Ω	94.2	<i>k - Eq. J4-3</i>

Option (3) - Column Web Shear Strength

Does shape meet h/t_w limit?	Yes	<i>G2.1(a)</i>
V_n/Ω	199.0	<i>k - Eq G2-2</i>

Controlling Option	2
Required Weld Strength	94.2 <i>k</i>
Required Weld Size - D	5 <i>sixteenths</i>

If weld size > 1/2", use CJP groove weld instead

Ordinary Moment Frame: Beam/Column Connection

Project:	Nestler-Spare
Date:	3/13/2025
Frame Location:	Main Floor

Member Sizes

Beam	W16X100
Column	W18X97

Frame Parameters

Length of Beam	28 ft - Clear span
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Geometric Properties

	Beam	Column
Depth	17	18.6 in
Width	10.4	11.1 in
Area	29.4	28.5 in ²
Flange Thickness	0.985	0.87 in
Web Thickness	0.585	0.535 in
k	1.39	1.27 in
k1	1.13	1.13 in
Z	198	198 in ³
Workable gage	5.5	5.5 in

Variables

Shear Tab Plate Thickness	5/8 in
Bolt Diameter	1 1/8 in
Num. of Bolts in Shear Tab	4
Shear Tab Weld	7/16
Shear Tab Required Shear	71.3 k - SDM Eq. E1-1
Shear Tab Capacity	84.3 k - Table 10-10a
Beam One Side/Two Sides	One Side
Continuity Plate Thickness	0.5 in
Cotinuity Plate Weld to Col. Web	3/8

Design Summary

Design per AISC SDM Section E1.6b(c)

Beam/Column Width Check	OK
Shear Tab Capacity	85%
Cont. Plate Size	OK
Cont. Plate Weld	OK

Shear Tab Design

Dimension Check

Beam Width	10.4 in
Column Width	11.1 in
Column > Beam?	OK

Check Plate Size & Max Bolts

Maximum Plate Depth	14.22 in - T
Maximum Num. of Bolts	4

Shear Tab Required Shear

$2(1.1R_yM_p)/L_{cf}$	71.3 k - SDM Eq. E1-1
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Continuity Plate Design

Continuity Plate Minimum Thickness

$t_{min} = t_{lp} * 0.50$ (1 sided)	0.4925
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Prov. E3.6f.2(b)(2) 1-sided
For 2 sided connection, multiply t_{min} by 1.5

Use CJP weld to column flanges

Design continuity plate weld to column web for the lesser of the following per E3.6f.2(c):

- (1) Sum of available strengths in tension of the contact areas of the continuity plates to column flanges that have attached beam flanges
- (2) Available shear strength of the contact area of the plate with the column web or extended doubler plate
- (3) The available shear strength of the column web when the continuity plate is welded to the column web, or the available shear strength of the doubler plate when the continuity plate is welded to an extended doubler plate

Option (1) - Tensile Strength of Contact Area

Length of contact to column flange	4.4	<i>in</i>
R_n/Ω	132.5	<i>k - Eq. J4-1</i>

Option (2) - Shear Strength of Contact Area

Length of contact to column web	12.56	<i>in</i>
R_n/Ω	125.6	<i>k - Eq. J4-3</i>

Option (3) - Column Web Shear Strength

Does shape meet h/t_w limit?	Yes	<i>G2.1(a)</i>
V_n/Ω	199.0	<i>k - Eq G2-2</i>

Controlling Option	2
Required Weld Strength	125.6 <i>k</i>
Required Weld Size - D	6 <i>sixteenths</i>

If weld size > 1/2", use CJP groove weld instead



Anchor Designer™
Software
Version 3.2.2309.2

Company:		Date:	2/22/2023
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Project:			
Address:			
Phone:			
E-mail:			

1. Project information

Customer company:
Customer contact name:
Customer e-mail:
Comment:

Project description:
Location:
Fastening description:

2. Input Data & Anchor Parameters

General

Design method: ACI 318-19
Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place
Material: AB
Diameter (inch): 1.000
Effective Embedment depth, h_{ef} (inch): 18.000
Anchor category: -
Anchor ductility: Yes
 h_{min} (inch): 20.63
 C_{min} (inch): 6.00
 S_{min} (inch): 6.00

Base Material

Concrete: Normal-weight
Concrete thickness, h (inch): 24.00
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: Yes

Base Plate

Length x Width x Thickness (inch): 26.00 x 18.00 x 0.50
Yield stress: 36000 psi

Profile type/size: W18X97

Recommended Anchor

Anchor Name: PAB Pre-Assembled Anchor Bolt - PAB8 (1"Ø)





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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]: 6640

V_{uax} [lb]: 17100

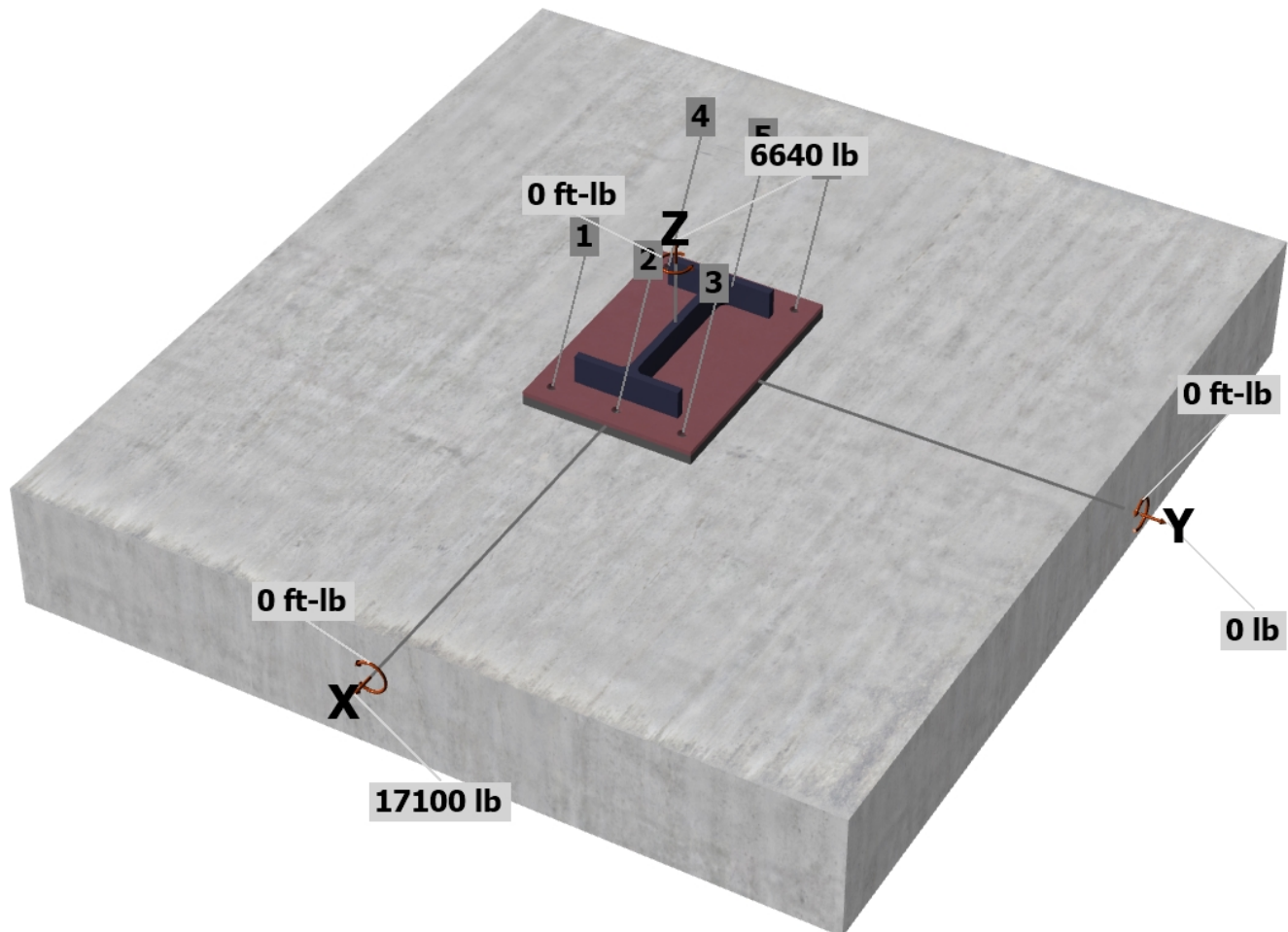
V_{uay} [lb]: 0

M_{ux} [ft-lb]: 0

M_{uy} [ft-lb]: 0

M_{uz} [ft-lb]: 0

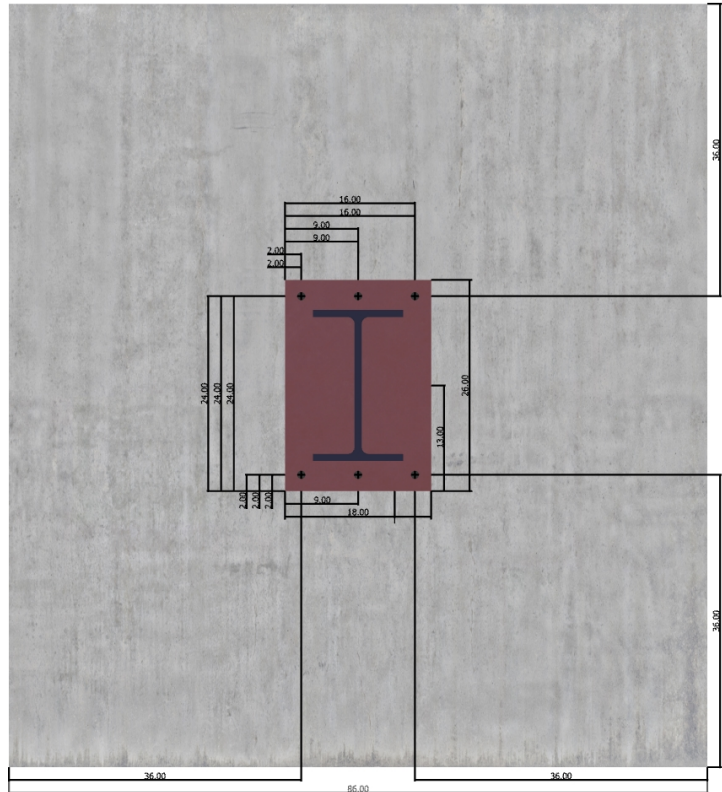
<Figure 1>





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<Figure 2>





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3. Resulting Anchor Forces

Anchor	Tension load, N_{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	1106.7	2850.0	0.0	2850.0
2	1106.7	2850.0	0.0	2850.0
3	1106.7	2850.0	0.0	2850.0
4	1106.7	2850.0	0.0	2850.0
5	1106.7	2850.0	0.0	2850.0
6	1106.7	2850.0	0.0	2850.0
Sum	6640.0	17100.0	0.0	17100.0

Maximum concrete compression strain (%): 0.00

Maximum concrete compression stress (psi): 0

Resultant tension force (lb): 6640

Resultant compression force (lb): 0

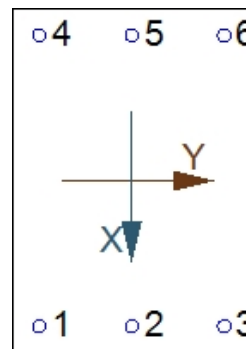
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00

Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00

Eccentricity of resultant shear forces in x-axis, e'_{Vx} (inch): 0.00

Eccentricity of resultant shear forces in y-axis, e'_{Vy} (inch): 0.00

<Figure 3>



4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
35150	0.75	26363

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$$N_b = 16\lambda_a \sqrt{f'_c} h_{ef}^{5/3} \text{ (Eq. 17.6.2.2.1)}$$

λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
1.00	2500	18.000	98903

$$\phi N_{cbg} = \phi (A_{Nc} / A_{Nco}) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b \text{ (Sec. 17.5.1.2 & Eq. 17.6.2.1a)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$c_{a,min}$ (in)	$\psi_{ec,N}$	$\psi_{ed,N}$	$\psi_{c,N}$	$\psi_{cp,N}$	N_b (lb)	ϕ	ϕN_{cbg} (lb)
5571.56	2916.00	36.00	1.000	1.000	1.00	1.000	98903	0.70	132281

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	5.15	2500	0.70	72156



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8. Steel Strength of Anchor in Shear (Sec. 17.7.1)

V_{sa} (lb)	ϕ_{grout}	ϕ	$\phi_{grout}\phi V_{sa}$ (lb)
21090	0.8	0.65	10967

9. Concrete Breakout Strength of Anchor in Shear (Sec. 17.7.2)

Shear perpendicular to edge in x-direction:

$$V_{bx} = \min[7(l_e/d_a)^{0.2}\sqrt{d_a\lambda_a}\sqrt{f'_c}c_{a1}^{1.5}; 9\lambda_a\sqrt{f'_c}c_{a1}^{1.5}] \text{ (Eq. 17.7.2.2.1a \& Eq. 17.7.2.2.1b)}$$

l_e (in)	d_a (in)	λ_a	f'_c (psi)	c_{a1} (in)	V_{bx} (lb)
8.00	1.000	1.00	2500	24.00	52909

$$\phi V_{cbgx} = \phi (A_{Vc} / A_{Vco}) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} V_{bx} \text{ (Sec. 17.5.1.2 \& Eq. 17.7.2.1b)}$$

A_{Vc} (in ²)	A_{Vco} (in ²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{bx} (lb)	ϕ	ϕV_{cbgx} (lb)
2064.00	2592.00	1.000	1.000	1.000	1.225	52909	0.70	36120

Shear parallel to edge in y-direction:

$$V_{bx} = \min[7(l_e/d_a)^{0.2}\sqrt{d_a\lambda_a}\sqrt{f'_c}c_{a1}^{1.5}; 9\lambda_a\sqrt{f'_c}c_{a1}^{1.5}] \text{ (Eq. 17.7.2.2.1a \& Eq. 17.7.2.2.1b)}$$

l_e (in)	d_a (in)	λ_a	f'_c (psi)	c_{a1} (in)	V_{bx} (lb)
8.00	1.000	1.00	2500	24.00	52909

$$\phi V_{cbgy} = \phi (2)(A_{Vc} / A_{Vco}) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} V_{bx} \text{ (Sec. 17.5.1.2, 17.7.2.1(c) \& Eq. 17.7.2.1b)}$$

A_{Vc} (in ²)	A_{Vco} (in ²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{bx} (lb)	ϕ	ϕV_{cbgy} (lb)
2256.00	2592.00	1.000	1.000	1.000	1.225	52909	0.70	78960

10. Concrete Pryout Strength of Anchor in Shear (Sec. 17.7.3)

$$\phi V_{cp} = \phi k_{cp} N_{cbg} = \phi k_{cp} (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.5.1.2 \& Eq. 17.7.3.1b)}$$

k_{cp}	A_{Nc} (in ²)	A_{Nco} (in ²)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕV_{cp} (lb)
2.0	5571.56	2916.00	1.000	1.000	1.000	1.000	98903	0.70	264563

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	1107	26363	0.04	Pass	
Concrete breakout	6640	132281	0.05	Pass (Governs)	
Pullout	1107	72156	0.02	Pass	
Shear	Factored Load, V_{ua} (lb)	Design Strength, ϕV_n (lb)	Ratio	Status	
Steel	2850	10967	0.26	Pass	
T Concrete breakout x+	17100	36120	0.47	Pass (Governs)	
 Concrete breakout y+	5700	78960	0.07	Pass (Governs)	
Pryout	17100	264563	0.06	Pass	
Interaction check	$N_{ua}/\phi N_n$	$V_{ua}/\phi V_n$	Combined Ratio	Permissible	Status
Sec. 17.8.2	0.00	0.47	47.3%	1.0	Pass

PAB8 (1"Ø) with hef = 18.000 inch meets the selected design criteria.

Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

Simpson Strong-Tie Company Inc. 5956 W. Las Positas Boulevard Pleasanton, CA 94588 Phone: 925.560.9000 Fax: 925.847.3871 www.strongtie.com



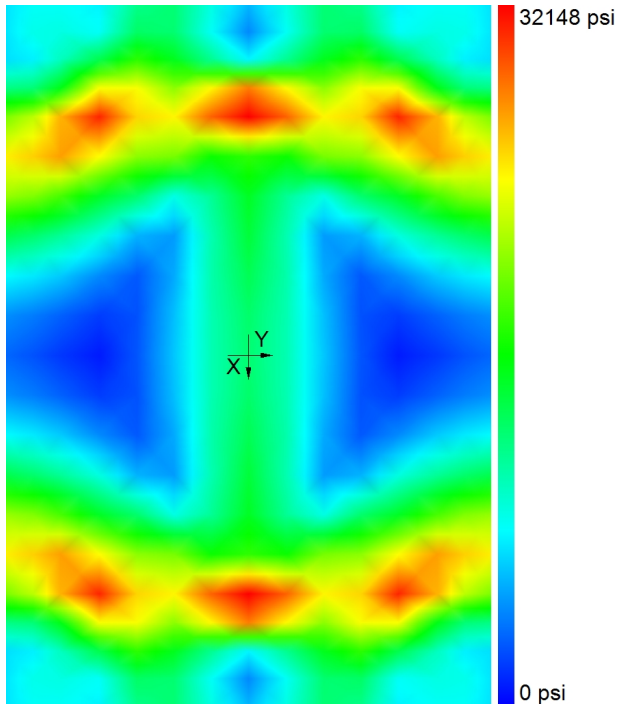
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Base Plate Thickness

Required base plate thickness: 0.244 inch

Steel	36000 psi
Maximum stress	32148 psi
Calculated plate thickness	0.244 inch

Stress distribution



For ACI and CSA design methods, maximum base plate stress is limited to 0.9 times yield stress.
For ETAG design method, maximum base plate stress is limited to yield stress divide by 1.5.
Plate stress is derived using Von Mises theory.

12. Warnings

- Designer must exercise own judgement to determine if this design is suitable.

Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: Nestler-Spare (2025).ec6

LIC# : KW-06015393, Build:20.24.10.30

BYKONEN CARTER QUINN

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: South Moment Frame Footing

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019

Load Combinations Used : ASCE 7-16

General Information

Material Properties

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

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.20 : 1
Min. Sliding Safety Factor	=	1.20 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	Yes

Soil Design Values

Allowable Soil Bearing	=	2.50 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	350.0 pcf
Soil/Concrete Friction Coeff.	=	0.450

Increases based on footing Depth

Footing base depth below soil surface	=	2.667 ft
Allow press. increase per foot of depth when footing base is below	=	ksf ft

Increases based on footing plan dimension

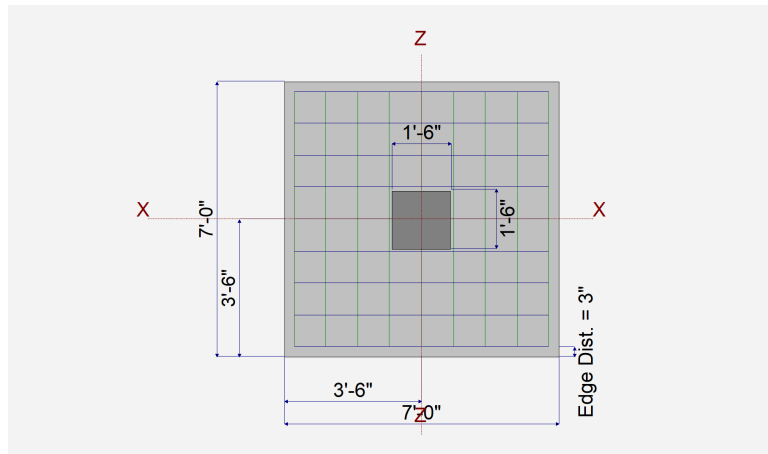
Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf ft
---	---	--------

Dimensions

Width parallel to X-X Axis	=	7.0 ft
Length parallel to Z-Z Axis	=	7.0 ft
Footing Thickness	=	24.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	18.0 in
pz : parallel to Z-Z Axis	=	18.0 in
Height	=	18.0 in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in



Reinforcing

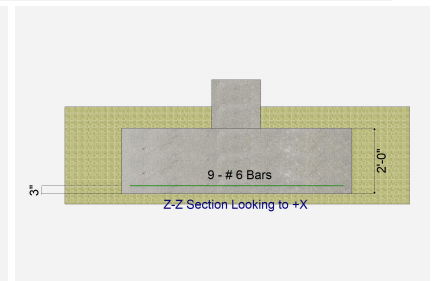
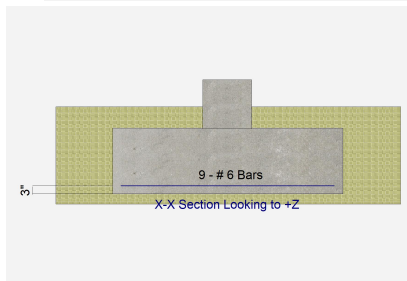
Bars parallel to X-X Axis	=	
Number of Bars	=	9.0
Reinforcing Bar Size	=	# 6

Bars parallel to Z-Z Axis	=	
Number of Bars	=	9.0
Reinforcing Bar Size	=	# 6

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation

	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a



Applied Loads

	D	Lr	L	S	W	E	H
P : Column Load	=	15.40		13.40	3.60	20.50	k
OB : Overburden	=						ksf
M-xx	=						k-ft
M-zz	=						k-ft
V-x	=					17.10	k
V-z	=						k

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Project Descr:

General Footing

Project File: Nestler-Spare (2025).ec6

LIC# : KW-06015393, Build:20.24.10.30

BYKONEN CARTER QUINN

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: South Moment Frame Footing

DESIGN SUMMARY

Design N.G.

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
FAIL	Ecc>L/2	Soil Bearing	1.708 ksf	2.50 ksf	+0.60D-0.70E about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	1.699	Overturning - Z-Z	69.090 k-ft	117.353 k-ft	+D-0.70E
PASS	1.403	Sliding - X-X	11.970 k	16.799 k	+D-0.70E
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	2.337	Uplift	14.350 k	33.529 k	+D-0.70E
PASS	0.1407	Z Flexure (+X)	7.286 k-ft/ft	51.766 k-ft/ft	+1.395D+L+0.20S+E
PASS	0.08112	Z Flexure (-X)	4.199 k-ft/ft	51.766 k-ft/ft	+1.395D+L+0.20S-E
PASS	0.08431	X Flexure (+Z)	4.364 k-ft/ft	51.766 k-ft/ft	+1.395D+L+0.20S+E
PASS	0.08431	X Flexure (-Z)	4.364 k-ft/ft	51.766 k-ft/ft	+1.395D+L+0.20S+E
PASS	0.1065	1-way Shear (+X)	7.990 psi	75.0 psi	+1.395D+L+0.20S+E
PASS	0.06455	1-way Shear (-X)	4.841 psi	75.0 psi	+1.395D+L+0.20S-E
PASS	0.05985	1-way Shear (+Z)	4.489 psi	75.0 psi	+1.395D+L+0.20S+E
PASS	0.05985	1-way Shear (-Z)	4.489 psi	75.0 psi	+1.395D+L+0.20S+E
PASS	0.09074	2-way Punching	13.611 psi	150.0 psi	+1.395D+L+0.20S+E



Top reinforcing mat required (see 'Bending' tab).

Hand check required for anchor pullout.

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc (in)	Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
				Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.6843	0.6843	n/a	n/a	0.274
X-X, +D+L	2.50	n/a	0.0	0.9577	0.9577	n/a	n/a	0.383
X-X, +D+S	2.50	n/a	0.0	0.7577	0.7577	n/a	n/a	0.303
X-X, +D+0.750L	2.50	n/a	0.0	0.8894	0.8894	n/a	n/a	0.356
X-X, +D+0.750L+0.750S	2.50	n/a	0.0	0.9445	0.9445	n/a	n/a	0.378
X-X, +0.60D	2.50	n/a	0.0	0.4106	0.4106	n/a	n/a	0.164
X-X, +D+0.70E	2.50	n/a	0.0	0.9771	0.9771	n/a	n/a	0.391
X-X, +D-0.70E	2.50	n/a	0.0	0.3914	0.3914	n/a	n/a	0.157
X-X, +D+0.750L+0.750S+0.5250E	2.50	n/a	0.0	1.164	1.164	n/a	n/a	0.466
X-X, +D+0.750L+0.750S-0.5250E	2.50	n/a	0.0	0.7248	0.7248	n/a	n/a	0.290
X-X, +0.60D+0.70E	2.50	n/a	0.0	0.7034	0.7034	n/a	n/a	0.281
X-X, +0.60D-0.70E	2.50	n/a	0.0	0.1177	0.1177	n/a	n/a	0.047
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.6843	0.6843	0.274
Z-Z, +D+L	2.50	0.0	n/a	n/a	n/a	0.9577	0.9577	0.383
Z-Z, +D+S	2.50	0.0	n/a	n/a	n/a	0.7577	0.7577	0.303
Z-Z, +D+0.750L	2.50	0.0	n/a	n/a	n/a	0.8894	0.8894	0.356
Z-Z, +D+0.750L+0.750S	2.50	0.0	n/a	n/a	n/a	0.9445	0.9445	0.378
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.4106	0.4106	0.164
Z-Z, +D+0.70E	2.50	10.50	n/a	n/a	n/a	0.2516	1.703	0.681
Z-Z, +D-0.70E	2.50	-26.212	n/a	n/a	n/a	1.376	0.0	0.550
Z-Z, +D+0.750L+0.750S+0.5250E	2.50	6.610	n/a	n/a	n/a	0.620	1.708	0.683
Z-Z, +D+0.750L+0.750S-0.5250E	2.50	-10.616	n/a	n/a	n/a	1.269	0.1807	0.508
Z-Z, +0.60D+0.70E	2.50	14.586	n/a	n/a	n/a	0.0	1.430	0.572
Z-Z, +0.60D-0.70E	2.50	> L/2	n/a	0.0	0.0	0.0	0.0	0.000

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
X-X, D Only	None	0.0 k-ft	Infinity	OK
X-X, +D+L	None	0.0 k-ft	Infinity	OK
X-X, +D+S	None	0.0 k-ft	Infinity	OK
X-X, +D+0.750L	None	0.0 k-ft	Infinity	OK
X-X, +D+0.750L+0.750S	None	0.0 k-ft	Infinity	OK
X-X, +0.60D	None	0.0 k-ft	Infinity	OK
X-X, +D+0.70E	None	0.0 k-ft	Infinity	OK
X-X, +D-0.70E	None	0.0 k-ft	Infinity	OK

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General Footing

Project File: Nestler-Spare (2025).ec6

LIC# : KW-06015393, Build:20.24.10.30

BYKONEN CARTER QUINN

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DESCRIPTION: South Moment Frame Footing

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
X-X, +D+0.750L+0.750S+0.5250E	None	0.0 k-ft	Infinity	OK
X-X, +D+0.750L+0.750S-0.5250E	None	0.0 k-ft	Infinity	OK
Z-Z, D Only	None	0.0 k-ft	Infinity	OK
Z-Z, +D+L	None	0.0 k-ft	Infinity	OK
Z-Z, +D+S	None	0.0 k-ft	Infinity	OK
Z-Z, +D+0.750L	None	0.0 k-ft	Infinity	OK
Z-Z, +D+0.750L+0.750S	None	0.0 k-ft	Infinity	OK
Z-Z, +0.60D	None	0.0 k-ft	Infinity	OK
Z-Z, +D+0.70E	31.421 k-ft	155.022 k-ft	4.934	OK
Z-Z, +D-0.70E	69.090 k-ft	117.353 k-ft	1.699	OK
Z-Z, +D+0.750L+0.750S+0.5250E	23.566 k-ft	190.230 k-ft	8.072	OK
Z-Z, +D+0.750L+0.750S-0.5250E	51.818 k-ft	161.978 k-ft	3.126	OK

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
X-X, D Only	0.0 k	23.257 k	No Sliding	OK
X-X, +D+L	0.0 k	29.287 k	No Sliding	OK
X-X, +D+S	0.0 k	24.877 k	No Sliding	OK
X-X, +D+0.750L	0.0 k	27.779 k	No Sliding	OK
X-X, +D+0.750L+0.750S	0.0 k	28.994 k	No Sliding	OK
X-X, +0.60D	0.0 k	17.221 k	No Sliding	OK
X-X, +D+0.70E	11.970 k	29.714 k	2.482	OK
X-X, +D-0.70E	-11.970 k	16.799 k	1.403	OK
X-X, +D+0.750L+0.750S+0.5250E	8.978 k	33.837 k	3.769	OK
X-X, +D+0.750L+0.750S-0.5250E	-8.978 k	24.151 k	2.690	OK
Z-Z, D Only	0.0 k	23.257 k	No Sliding	OK
Z-Z, +D+L	0.0 k	29.287 k	No Sliding	OK
Z-Z, +D+S	0.0 k	24.877 k	No Sliding	OK
Z-Z, +D+0.750L	0.0 k	27.779 k	No Sliding	OK
Z-Z, +D-0.70E	0.0 k	16.799 k	No Sliding	OK
Z-Z, +D+0.750L+0.750S+0.5250E	0.0 k	33.837 k	No Sliding	OK
Z-Z, +D+0.750L+0.750S-0.5250E	0.0 k	24.151 k	No Sliding	OK
Z-Z, +D+0.750L+0.750S	0.0 k	28.994 k	No Sliding	OK
Z-Z, +0.60D	0.0 k	17.221 k	No Sliding	OK
Z-Z, +D+0.70E	0.0 k	29.714 k	No Sliding	OK

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	1.699	+Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.40D	1.699	-Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D+1.60L	3.110	+Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D+1.60L	3.110	-Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D+1.60L+0.50S	3.249	+Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D+1.60L+0.50S	3.249	-Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D+L	2.490	+Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D+L	2.490	-Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D	1.456	+Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D	1.456	-Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D+L+1.60S	2.934	+Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D+L+1.60S	2.934	-Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D+1.60S	1.90	+Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D+1.60S	1.90	-Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D+L+0.50S	2.629	+Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.20D+L+0.50S	2.629	-Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +0.90D	1.092	+Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +0.90D	1.092	-Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.395D+L+0.20S+E	4.364	+Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.395D+L+0.20S+E	4.364	-Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.395D+L+0.20S-E	1.201	+Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +1.395D+L+0.20S-E	1.201	-Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK

Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: Nestler-Spare (2025).ec6

LIC#: KW-06015393, Build:20.24.10.30

BYKONEN CARTER QUINN

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: South Moment Frame Footing

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.7048D+E	2.437	+Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +0.7048D+E	2.437	-Z	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +0.7048D-E	0.7267	+Z	Top	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
X-X, +0.7048D-E	0.7267	-Z	Top	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.40D	1.699	-X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.40D	1.699	+X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D+1.60L	3.110	-X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D+1.60L	3.110	+X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D+1.60L+0.50S	3.249	-X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D+1.60L+0.50S	3.249	+X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D+L	2.490	-X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D+L	2.490	+X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D	1.456	-X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D	1.456	+X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D+L+1.60S	2.934	-X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D+L+1.60S	2.934	+X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D+1.60S	1.90	-X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D+1.60S	1.90	+X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D+L+0.50S	2.629	-X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.20D+L+0.50S	2.629	+X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +0.90D	1.092	-X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +0.90D	1.092	+X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.395D+L+0.20S+E	1.443	-X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.395D+L+0.20S+E	7.286	+X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.395D+L+0.20S-E	4.199	-X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +1.395D+L+0.20S-E	1.608	+X	Top	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +0.7048D+E	0.4408	-X	Top	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +0.7048D+E	5.388	+X	Bottom	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +0.7048D-E	0.9683	-X	Top	0.5184	ACI 7.6.1.1	0.5657	51.766	OK
Z-Z, +0.7048D-E	0.9683	+X	Top	0.5184	ACI 7.6.1.1	0.5657	51.766	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	1.75 psi	1.75 psi	1.75 psi	75.00 psi	0.02	OK
+1.20D+1.60L	3.20 psi	3.20 psi	3.20 psi	75.00 psi	0.04	OK
+1.20D+1.60L+0.50S	3.34 psi	3.34 psi	3.34 psi	75.00 psi	0.04	OK
+1.20D+L	2.56 psi	2.56 psi	2.56 psi	75.00 psi	0.03	OK
+1.20D	1.50 psi	1.50 psi	1.50 psi	75.00 psi	0.02	OK
+1.20D+L+1.60S	3.02 psi	3.02 psi	3.02 psi	75.00 psi	0.04	OK
+1.20D+1.60S	1.96 psi	1.96 psi	1.96 psi	75.00 psi	0.03	OK
+1.20D+L+0.50S	2.70 psi	2.70 psi	2.70 psi	75.00 psi	0.04	OK
+0.90D	1.12 psi	1.12 psi	1.12 psi	75.00 psi	0.01	OK
+1.395D+L+0.20S+E	0.99 psi	7.99 psi	7.99 psi	75.00 psi	0.11	OK
+1.395D+L+0.20S-E	4.84 psi	1.97 psi	4.84 psi	75.00 psi	0.06	OK
+0.7048D+E	0.89 psi	6.05 psi	6.05 psi	75.00 psi	0.08	OK
+0.7048D-E	1.00 psi	1.00 psi	1.00 psi	75.00 psi	0.01	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	1.75 psi	1.75 psi	1.75 psi	75.00 psi	0.02	OK
+1.20D+1.60L	3.20 psi	3.20 psi	3.20 psi	75.00 psi	0.04	OK
+1.20D+1.60L+0.50S	3.34 psi	3.34 psi	3.34 psi	75.00 psi	0.04	OK
+1.20D+L	2.56 psi	2.56 psi	2.56 psi	75.00 psi	0.03	OK
+1.20D	1.50 psi	1.50 psi	1.50 psi	75.00 psi	0.02	OK
+1.20D+L+1.60S	3.02 psi	3.02 psi	3.02 psi	75.00 psi	0.04	OK
+1.20D+1.60S	1.96 psi	1.96 psi	1.96 psi	75.00 psi	0.03	OK
+1.20D+L+0.50S	2.70 psi	2.70 psi	2.70 psi	75.00 psi	0.04	OK
+0.90D	1.12 psi	1.12 psi	1.12 psi	75.00 psi	0.01	OK
+1.395D+L+0.20S+E	4.49 psi	4.49 psi	7.99 psi	75.00 psi	0.11	OK
+1.395D+L+0.20S-E	1.24 psi	1.24 psi	4.84 psi	75.00 psi	0.06	OK
+0.7048D+E	2.51 psi	2.51 psi	6.05 psi	75.00 psi	0.08	OK
+0.7048D-E	0.75 psi	0.75 psi	1.00 psi	75.00 psi	0.01	OK

Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: Nestler-Spare (2025).ec6

LIC# : KW-06015393, Build:20.24.10.30 BYKONEN CARTER QUINN (c) ENERCALC, LLC 1982-2025

DESCRIPTION: South Moment Frame Footing

Two-Way "Punching" Shear				All units k
Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	5.30 psi	150.00 psi	0.03532	OK
+1.20D+1.60L	9.70 psi	150.00 psi	0.06467	OK
+1.20D+1.60L+0.50S	10.13 psi	150.00 psi	0.06756	OK
+1.20D+L	7.77 psi	150.00 psi	0.05177	OK
+1.20D	4.54 psi	150.00 psi	0.03027	OK
+1.20D+L+1.60S	9.15 psi	150.00 psi	0.06101	OK
+1.20D+1.60S	5.93 psi	150.00 psi	0.03952	OK
+1.20D+L+0.50S	8.20 psi	150.00 psi	0.05466	OK
+0.90D	3.41 psi	150.00 psi	0.02271	OK
+1.395D+L+0.20S+E	13.61 psi	150.00 psi	0.09074	OK
+1.395D+L+0.20S-E	3.81 psi	150.00 psi	0.02538	OK
+0.7048D+E	7.62 psi	150.00 psi	0.05082	OK
+0.7048D-E	3.02 psi	150.00 psi	0.02013	OK