CQN

CARTER QUINN NORLIN

STRUCTURAL
ENGINEERING

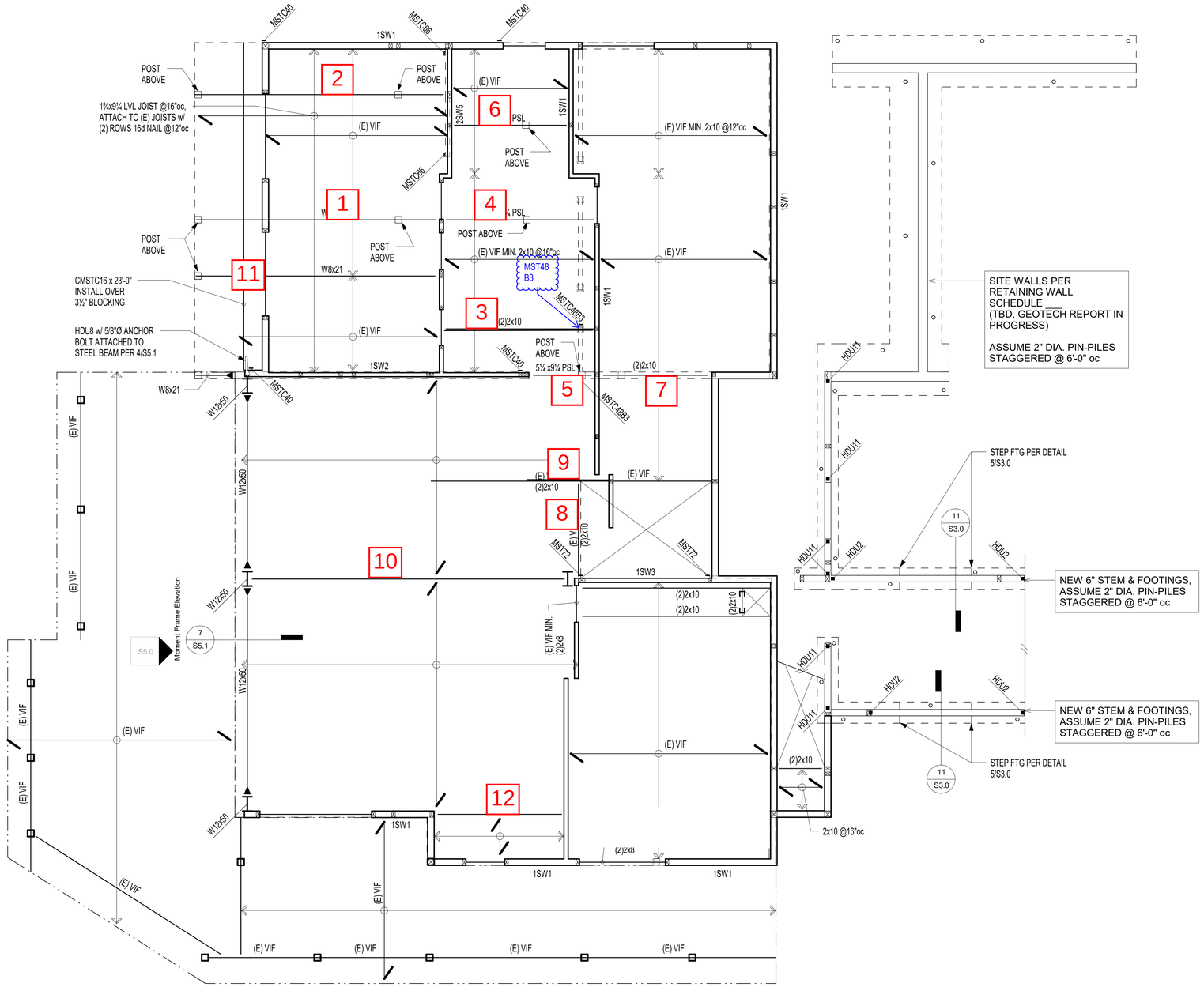
STRUCTURAL CALCULATIONS

Nestler Spare Residence
8265 SE 61st Street
Mercer Island, WA 98040

Ectypos Architecture
4212 W Mercer Way,
Mercer Island, WA 98040

March 13, 2024

2033 Sixth Avenue #995 Seattle, WA 98121 206-264-7784 www.CQN-SE.com



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

PRELIMINARY
NOT FOR CONSTRUCTION

ECTYPOS ARCHITECTURE
4212 W. Mercer Way
Mercer Island, WA
98040
t. (206) 232-9147
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CQN CARTER QUINN NORLIN STRUCTURAL ENGINEERING

NESTLER-SPARE RESIDENCE

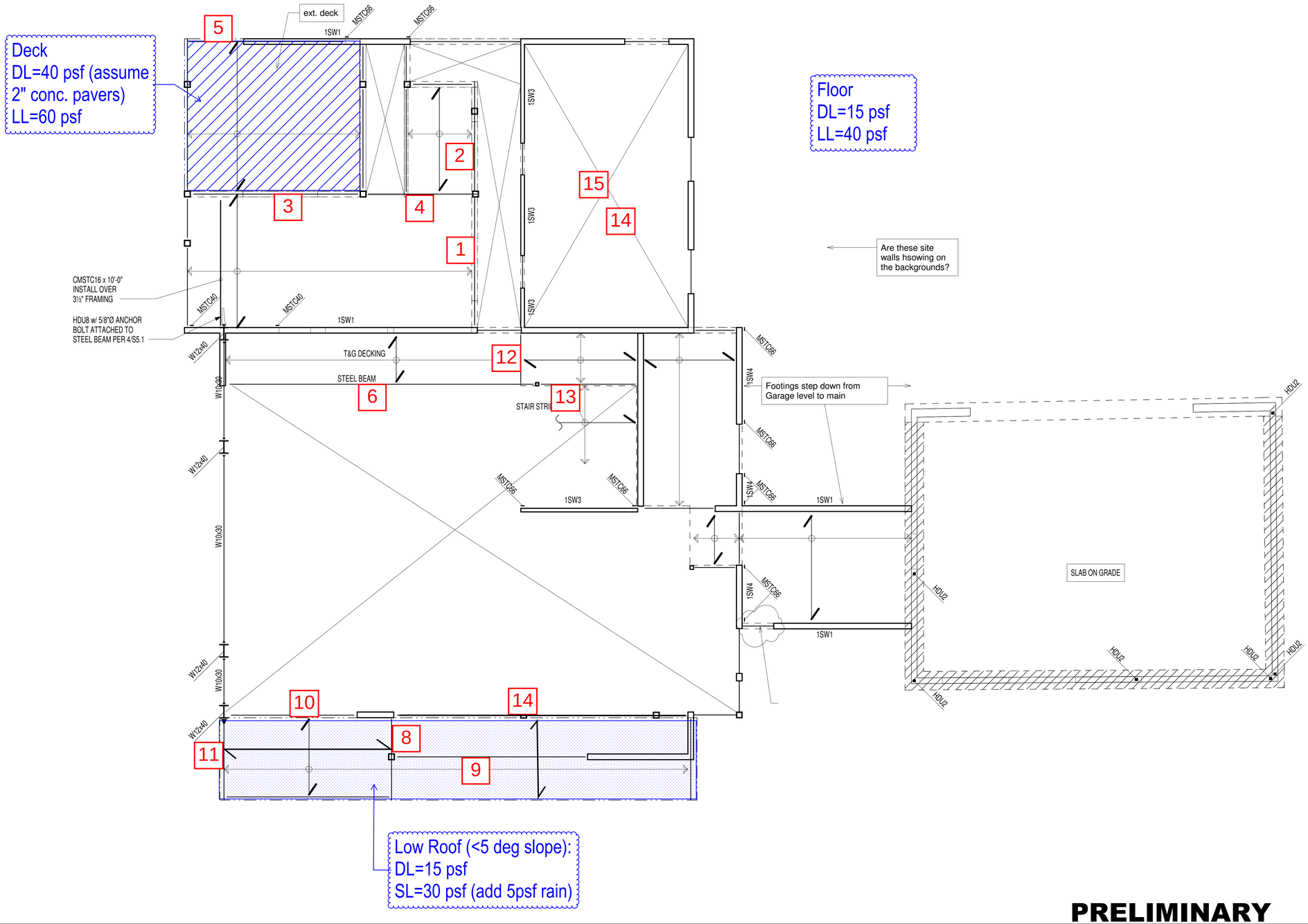
Remodel/Addition
8265 SE 61ST ST
Mercer Island, WA 98040

Date:

Scale:

Sheet: Main Floor Framing Plan

S2.1



1 Upper Floor Framing Plan
1/4" = 1'-0"

PRELIMINARY

NOT FOR CONSTRUCTION

ECTYPOS
ARCHITECTURE

4212 W. Mercer Way
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CQN CARTER QUINN NORLIN
STRUCTURAL ENGINEERING

NESTLER-SPARE RESIDENCE

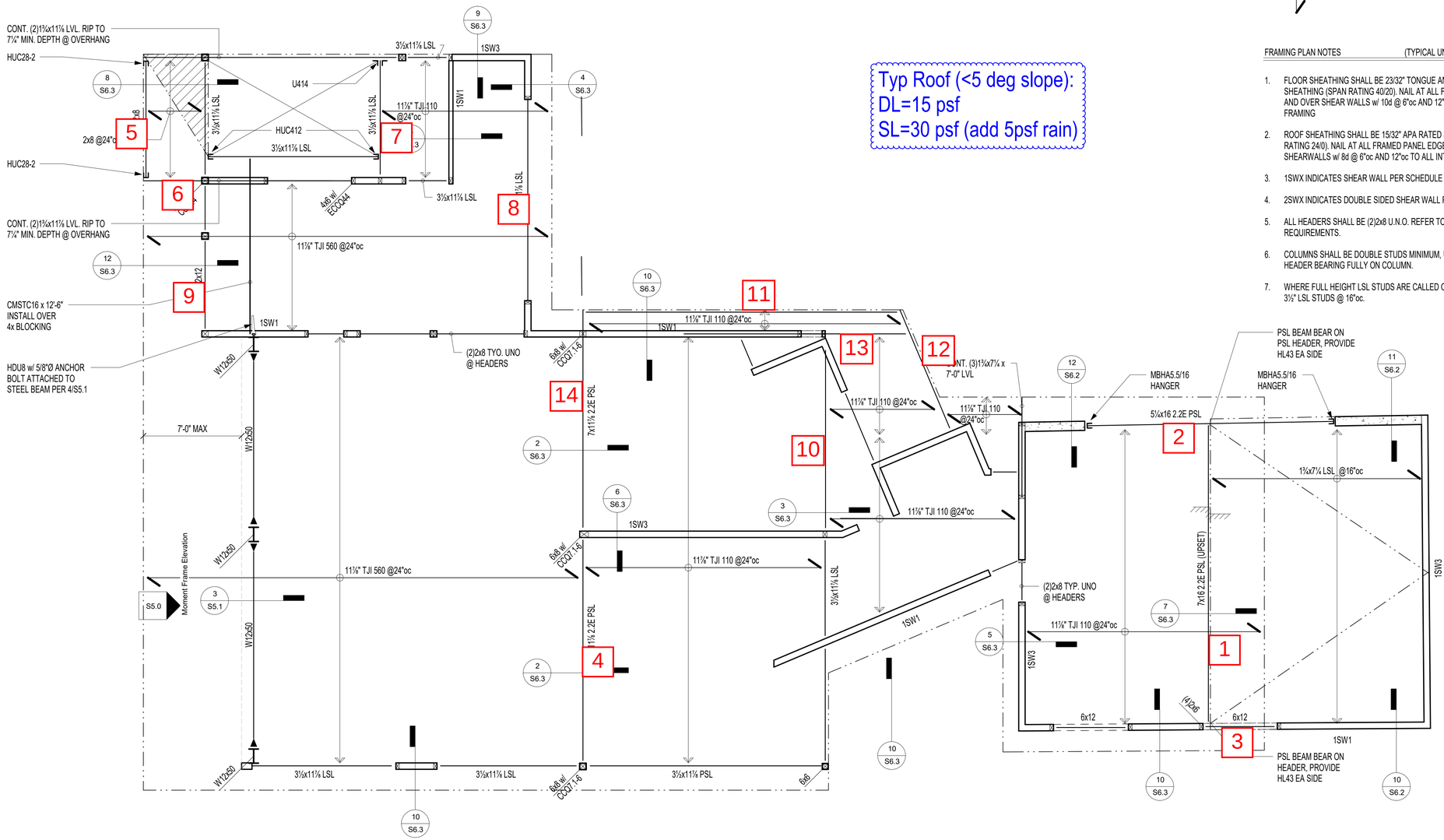
Remodel/Addition
8265 SE 61ST ST
Mercer Island, WA 98040

Date:

Scale:

Sheet: UPPER FLOOR FRAMING PLAN

S2.2



Typ Roof (<5 deg slope):
DL=15 psf
SL=30 psf (add 5psf rain)

FRAMING PLAN LEGEND

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

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 24/0). 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)2x8 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 1⅛" x 3½" LSL STUDS @ 16"oc.

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

ECTYPOS ARCHITECTURE
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NICHOLAS V.H. CARTER — STATE OF WASHINGTON — 21770 — STRUCTURAL — PROFESSIONAL ENGINEER

CQN CARTER QUINN NORLIN STRUCTURAL ENGINEERING

NESTLER-SPARE RESIDENCE

Remodel/Addition
8265 SE 61ST ST
Mercer Island, WA 98040

Date:

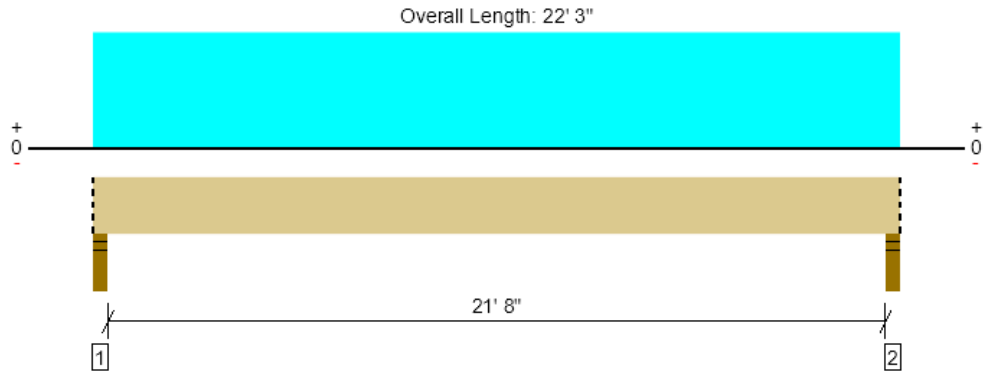
Scale:

Sheet: Roof Framing Plan

S2.3

Roof, 1/ Garage Flush Beam

1 piece(s) 7" x 16" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	10152 @ 2"	15313 (3.50")	Passed (66%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	8669 @ 1' 7 1/2"	24901	Passed (35%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	54789 @ 11' 1 1/2"	80396	Passed (68%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.611 @ 11' 1 1/2"	1.096	Passed (L/431)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.952 @ 11' 1 1/2"	1.461	Passed (L/276)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	2.32"	3643	6508	10152	Blocking
2 - Stud wall - DF	3.50"	3.50"	2.32"	3643	6508	10152	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	22' 3" o/c	
Bottom Edge (Lu)	22' 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 22' 3"	N/A	35.0	--	
1 - Uniform (PSF)	0 to 22' 3" (Back)	19' 6"	15.0	30.0	Roof, low slope

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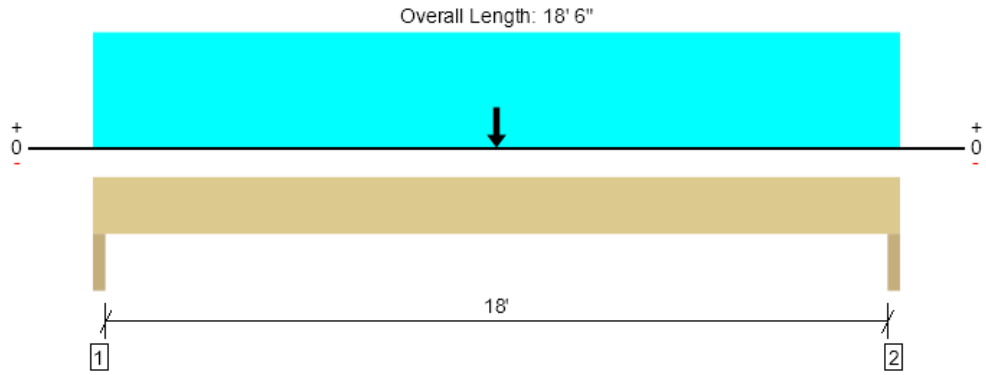
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Roof, 2/ Garage Header @ FB

1 piece(s) 5 1/4" x 16" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6567 @ 1 1/2"	9844 (3.00")	Passed (67%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	6312 @ 1' 7"	18676	Passed (34%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	53027 @ 9' 3"	60297	Passed (88%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.460 @ 9' 3"	0.608	Passed (L/476)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.732 @ 9' 3"	0.913	Passed (L/299)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - HF	3.00"	3.00"	2.00"	2481	4087	6567	None
2 - Trimmer - HF	3.00"	3.00"	2.00"	2481	4087	6567	None

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	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 18' 6"	N/A	26.3	--	
1 - Uniform (PSF)	0 to 18' 6"	3'	15.0	30.0	Snow
2 - Point (lb)	9' 3"	N/A	3643	6508	Linked from: 1/ Garage Flush Beam, Support 1

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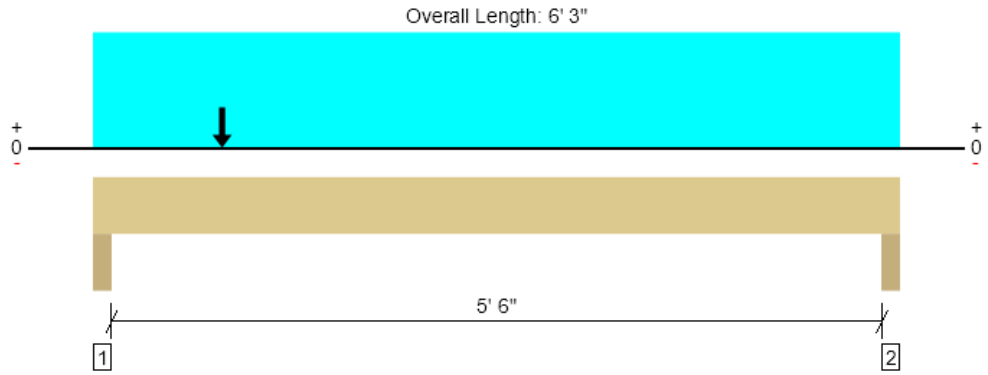
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof, 3/ South Header @ FB
1 piece(s) 6 x 12 DF No.1



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	9299 @ 3"	15469 (4.50")	Passed (60%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	6027 @ 1' 4"	8244	Passed (73%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6903 @ 1'	15684	Passed (44%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.018 @ 2' 9 11/16"	0.192	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.028 @ 2' 9 3/4"	0.287	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - HF	4.50"	4.50"	2.71"	3359	5940	9299	None
2 - Trimmer - HF	4.50"	4.50"	1.50"	666	1130	1796	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 3"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 6' 3"	3'	15.0	30.0	Snow
2 - Point (lb)	1'	N/A	3643	6508	Linked from: 1/ Garage Flush Beam, Support 1

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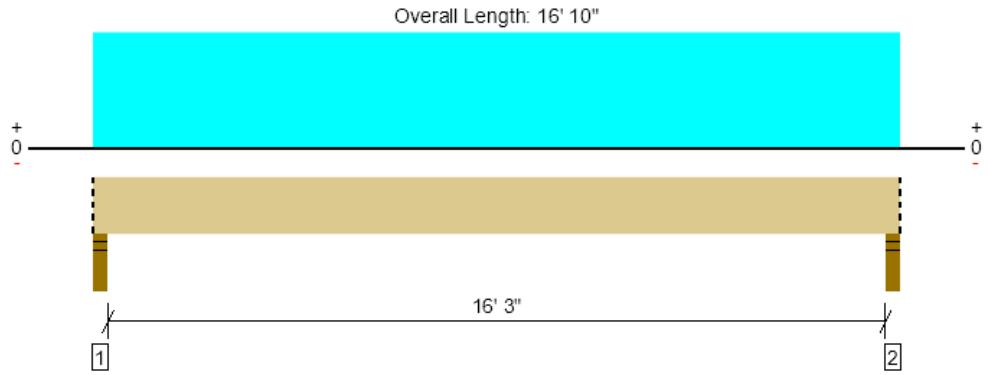
Weyerhaeuser

Roof, 4/ Flush Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	8172 @ 2"	15313 (3.50")	Passed (53%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	6928 @ 1' 3 3/8"	18481	Passed (37%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	33044 @ 8' 5"	45776	Passed (72%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.516 @ 8' 5"	0.550	Passed (L/384)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.795 @ 8' 5"	0.825	Passed (L/249)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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.
- Member should be side-loaded from both sides of the member or braced to prevent rotation.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.87"	2870	5303	8172	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.87"	2870	5303	8172	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' 10" o/c	
Bottom Edge (Lu)	16' 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 16' 10"	N/A	26.0	--	
1 - Uniform (PSF)	0 to 16' 10" (Front)	21'	15.0	30.0	Roof, low slope

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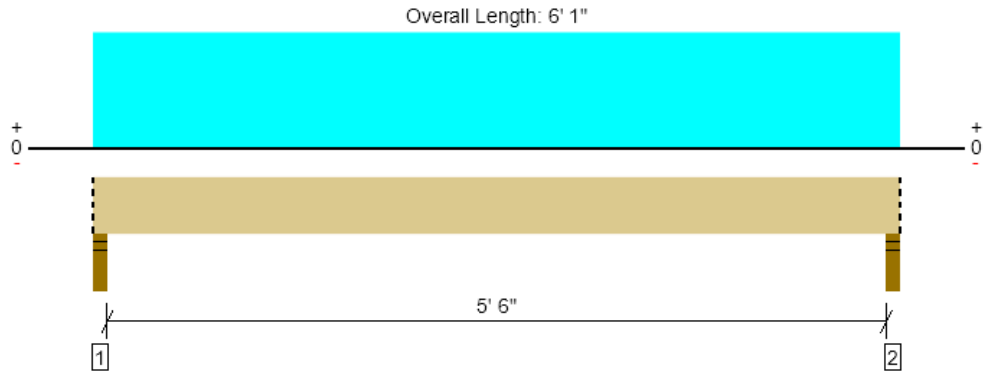
ForteWEB Software Operator	Job Notes
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	

Weyerhaeuser

Roof, 5/ Flush Beam
2 piece(s) 2 x 8 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	359 @ 2"	4253 (3.50")	Passed (8%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	253 @ 10 3/4"	2501	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	488 @ 3' 1/2"	2569	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.015 @ 3' 1/2"	0.192	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.023 @ 3' 1/2"	0.287	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.50"	131	228	359	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	131	228	359	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 1" o/c	
Bottom Edge (Lu)	6' 1" 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' 1"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 6' 1" (Front)	2' 6"	15.0	30.0	Roof

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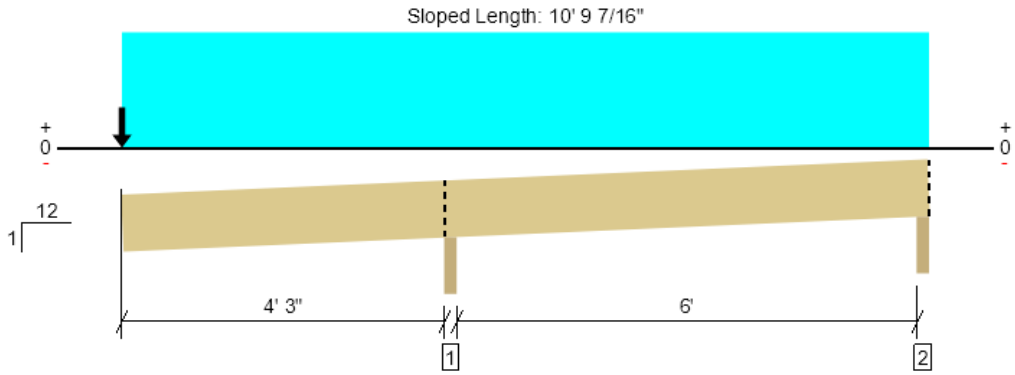
Weyerhaeuser

Roof, 6/ Cantilever

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



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

Member Length : 10' 10 1/16"

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1491 @ 4' 4 1/2"	4267 (3.00")	Passed (35%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	715 @ 3' 7 3/4"	5544	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-2504 @ 4' 4 1/2"	8182	Passed (31%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.180 @ 0	0.293	Passed (2L/584)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.280 @ 0	0.439	Passed (2L/376)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 1/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	3.00"	3.00"	1.50"	562	929	1491	Blocking
2 - Beveled Plate - HF	3.00"	3.00"	1.50"	-27	69/-154	42/-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)	10' 9" o/c	
Bottom Edge (Lu)	10' 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 10' 9"	N/A	7.4	--	
1 - Uniform (PSF)	0 to 10' 9"	2'	15.0	30.0	Default Load
2 - Point (lb)	0	N/A	131	228	Linked from: 5/ Flush Beam, Support 1

Member Notes

(converted from: Floor Flush Beam)

Weyerhaeuser Notes

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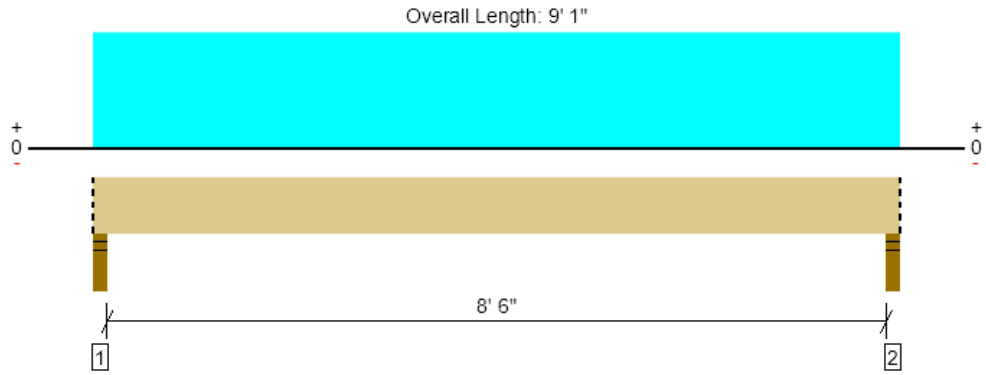
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof, 7/ Flush Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1898 @ 2"	7656 (3.50")	Passed (25%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1363 @ 1' 3 3/8"	9878	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4000 @ 4' 6 1/2"	18346	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.056 @ 4' 6 1/2"	0.292	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.087 @ 4' 6 1/2"	0.438	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.50"	672	1226	1898	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	672	1226	1898	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' 1" o/c	
Bottom Edge (Lu)	9' 1" 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' 1"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 9' 1" (Front)	9'	15.0	30.0	Roof

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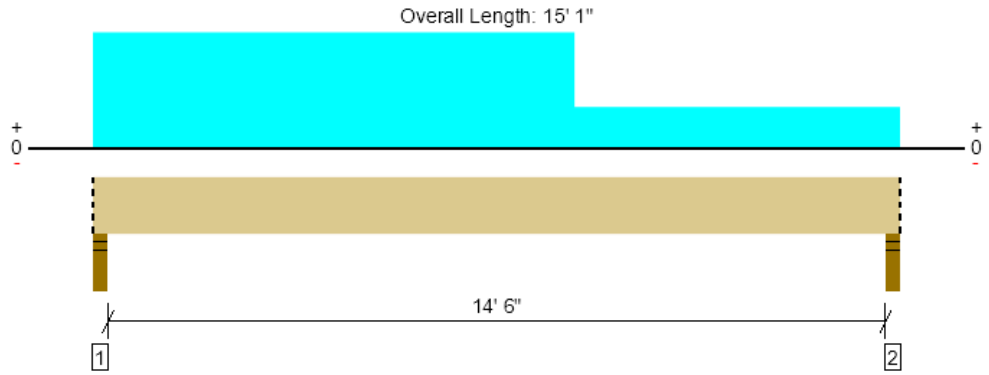
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	

Weyerhaeuser

Roof, 8/ Flush Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4212 @ 2"	7656 (3.50")	Passed (55%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3417 @ 1' 3 3/8"	9878	Passed (35%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	13604 @ 6' 9 7/16"	18346	Passed (74%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.474 @ 7' 3 15/16"	0.492	Passed (L/373)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.731 @ 7' 4"	0.738	Passed (L/242)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.93"	1469	2743	4212	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	982	1769	2751	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)	15' 1" o/c	
Bottom Edge (Lu)	15' 1" 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 15' 1"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 9' (Front)	13' 6"	15.0	30.0	Roof
2 - Uniform (PSF)	9' to 15' 1" (Front)	4' 9"	15.0	30.0	Roof

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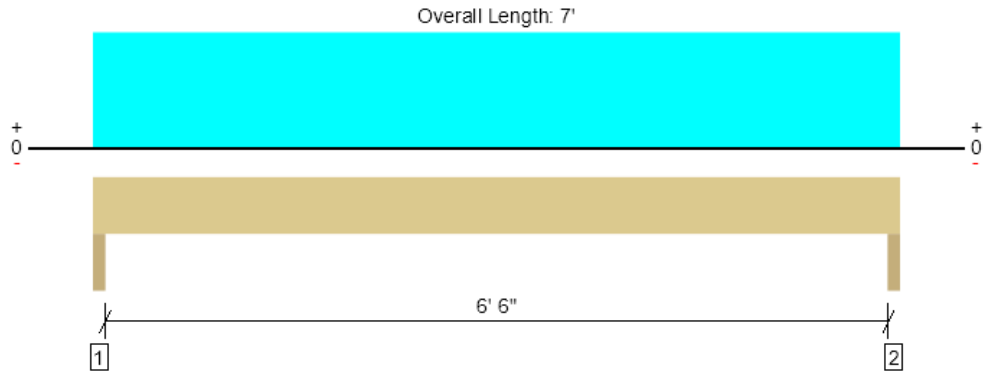
Roof, 9/ Header
2 piece(s) 2 x 12 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2550 @ 1 1/2"	3645 (3.00")	Passed (70%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1685 @ 1' 2 1/4"	3881	Passed (43%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4149 @ 3' 6"	5155	Passed (80%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.048 @ 3' 6"	0.169	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.074 @ 3' 6"	0.338	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- 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.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - HF	3.00"	3.00"	2.10"	870	1680	2550	None
2 - Trimmer - HF	3.00"	3.00"	2.10"	870	1680	2550	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 7'	N/A	8.6	--	
1 - Uniform (PSF)	0 to 7'	16'	15.0	30.0	Snow

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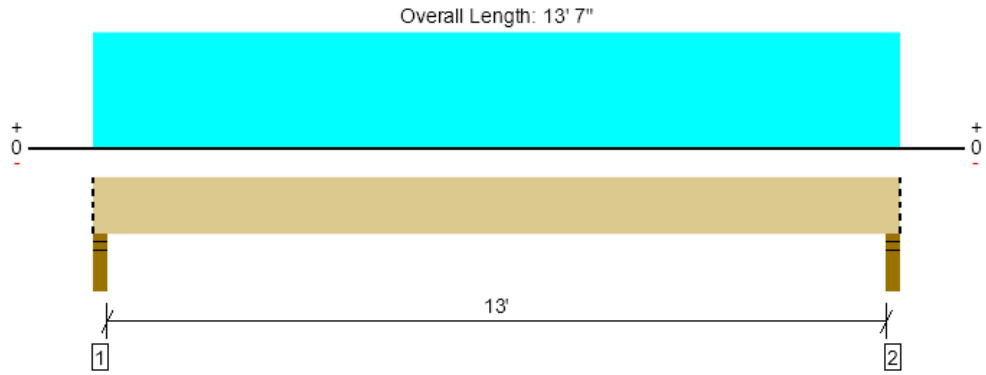
Weyerhaeuser

Roof, Beam 10

1 piece(s) 3 1/2" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4902 @ 2"	7656 (3.50")	Passed (64%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3977 @ 1' 3 3/8"	9241	Passed (43%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	15838 @ 6' 9 1/2"	22888	Passed (69%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.364 @ 6' 9 1/2"	0.442	Passed (L/437)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.556 @ 6' 9 1/2"	0.663	Passed (L/286)	--	1.0 D + 1.0 S (All Spans)

Member Length : 13' 7"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	2.24"	1693	3209	4902	Blocking
2 - Stud wall - DF	3.50"	3.50"	2.24"	1693	3209	4902	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' 7" o/c	
Bottom Edge (Lu)	13' 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 13' 7"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 13' 7" (Front)	15' 9"	15.0	30.0	Roof, low slope

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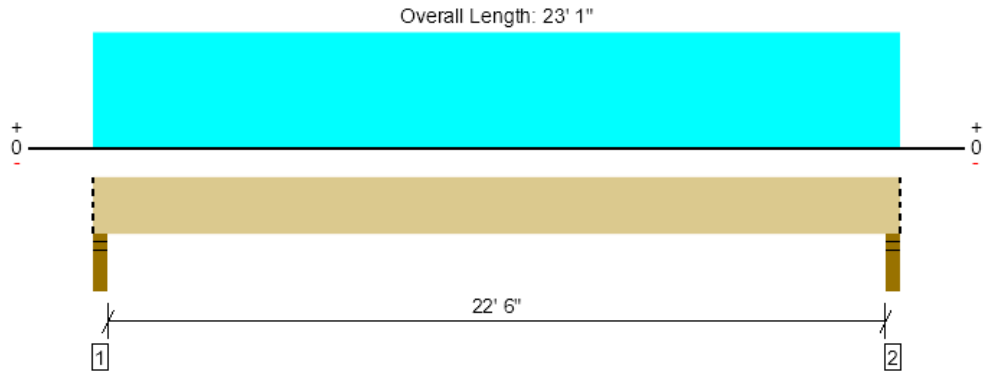
Roof, Beam 11

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



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	539 @ 2"	7656 (3.50")	Passed (7%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	480 @ 1' 3 3/8"	9878	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3024 @ 11' 6 1/2"	18346	Passed (16%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.184 @ 11' 6 1/2"	0.758	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.383 @ 11' 6 1/2"	1.138	Passed (L/713)	--	1.0 D + 1.0 S (All Spans)

Member Length : 23' 1"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.50"	280	260	539	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	280	260	539	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	23' 1" o/c	
Bottom Edge (Lu)	23' 1" 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' 1"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 23' 1" (Front)	9"	15.0	30.0	Roof, low slope

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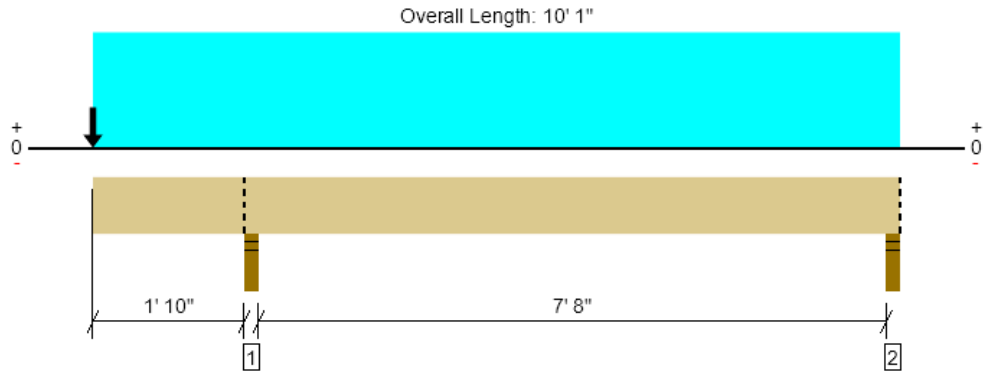
Roof, Beam 12

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



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2010 @ 1' 11 3/4"	7656 (3.50")	Passed (26%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	798 @ 3' 1 3/8"	9878	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1491 @ 1' 11 3/4"	18346	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.016 @ 6' 15/16"	0.265	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.013 @ 0	0.200	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 10' 1"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (0.2").
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.50"	848	1161	2010	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	243	509	752	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' 1" o/c	
Bottom Edge (Lu)	10' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 10' 1"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 10' 1" (Front)	4' 6"	15.0	30.0	Roof, low slope
2 - Point (lb)	0 (Front)	N/A	280	260	Linked from: Beam 11, Support 2

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ForteWEB Software Operator	Job Notes
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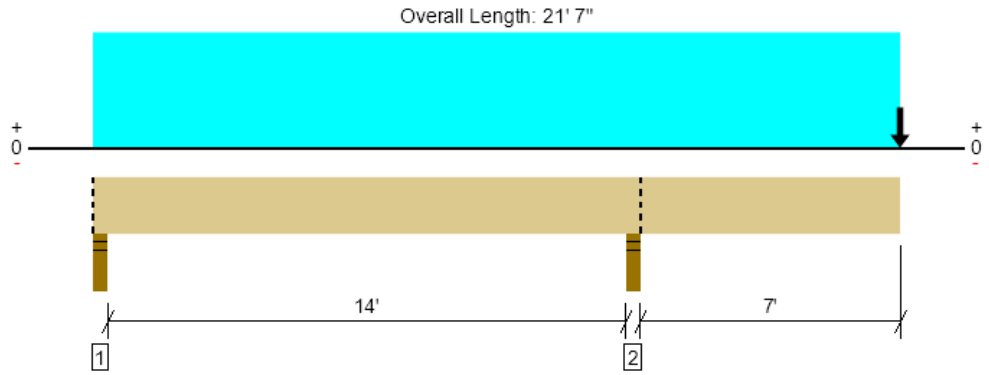
Weyerhaeuser

Roof, Beam 13

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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4397 @ 14' 5 1/4"	15313 (3.50")	Passed (29%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2526 @ 15' 6 7/8"	18481	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-16552 @ 14' 5 1/4"	45776	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.414 @ 21' 7"	0.476	Passed (2L/414)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.711 @ 21' 7"	0.715	Passed (2L/242)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 21' 7"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- -678 lbs uplift at support located at 2". Strapping or other restraint may be required.
- Member should be side-loaded from both sides of the member or braced to prevent rotation.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.50"	-171	-507	-678	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	2012	2385	4397	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)	21' 7" o/c	
Bottom Edge (Lu)	21' 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 21' 7"	N/A	26.0	--	
1 - Uniform (PSF)	0 to 21' 7" (Front)	1' 4"	15.0	30.0	Roof, low slope
2 - Point (lb)	21' 7" (Front)	N/A	848	1161	Linked from: Beam 12, Support 1

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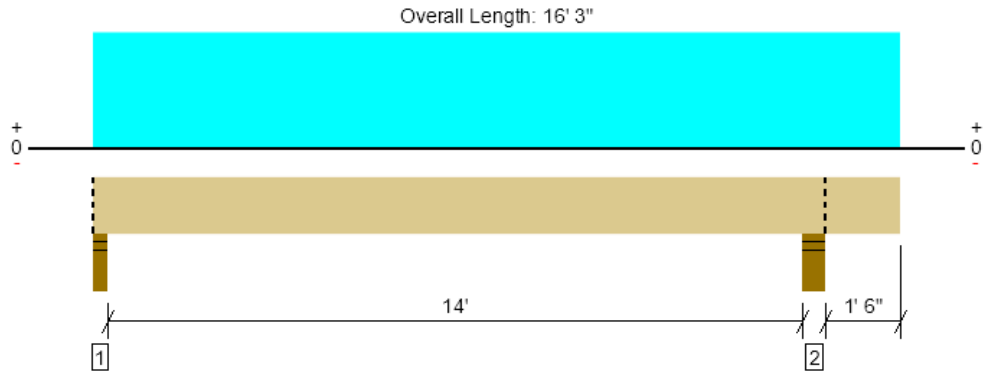
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof, Beam 14

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	7062 @ 2"	15313 (3.50")	Passed (46%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	5887 @ 13' 3 5/8"	18481	Passed (32%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	24520 @ 7' 3 1/4"	45776	Passed (54%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.296 @ 7' 3 15/16"	0.478	Passed (L/583)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.453 @ 7' 3 13/16"	0.718	Passed (L/380)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 16' 3"
System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Member should be side-loaded from both sides of the member or braced to prevent rotation.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.61"	2469	4594	7062	Blocking
2 - Stud wall - DF	5.50"	5.50"	2.00"	3072	5677	8749	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' 3" o/c	
Bottom Edge (Lu)	16' 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 16' 3"	N/A	26.0	--	
1 - Uniform (PSF)	0 to 16' 3" (Front)	21'	15.0	30.0	Roof, low slope

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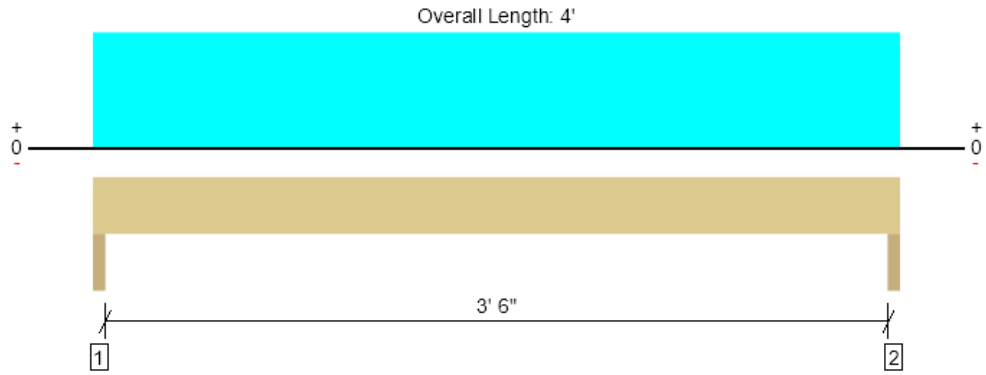
ForteWEB Software Operator	Job Notes
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	

Weyerhaeuser

Roof, Ext Header, typ
2 piece(s) 2 x 8 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1451 @ 1 1/2"	3645 (3.00")	Passed (40%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	831 @ 10 1/4"	2501	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1275 @ 2'	2569	Passed (50%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.017 @ 2'	0.094	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.026 @ 2'	0.188	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- 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.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - HF	3.00"	3.00"	1.50"	491	960	1451	None
2 - Trimmer - HF	3.00"	3.00"	1.50"	491	960	1451	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 4'	N/A	5.5	--	
1 - Uniform (PSF)	0 to 4'	16'	15.0	30.0	Snow

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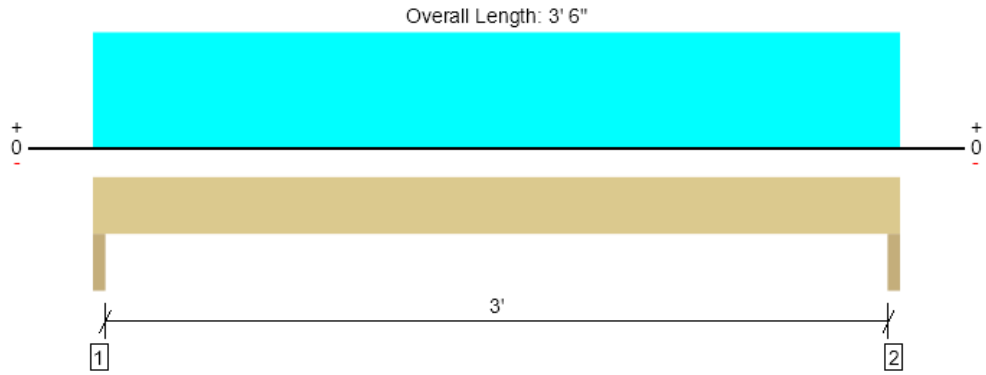
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof, Int Header, typ
2 piece(s) 2 x 8 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	718 @ 1 1/2"	3645 (3.00")	Passed (20%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	368 @ 10 1/4"	2501	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	542 @ 1' 9"	2569	Passed (21%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.005 @ 1' 9"	0.081	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.008 @ 1' 9"	0.162	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- 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.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - HF	3.00"	3.00"	1.50"	246	473	718	None
2 - Trimmer - HF	3.00"	3.00"	1.50"	246	473	718	None

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	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 6"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 3' 6"	9'	15.0	30.0	Snow

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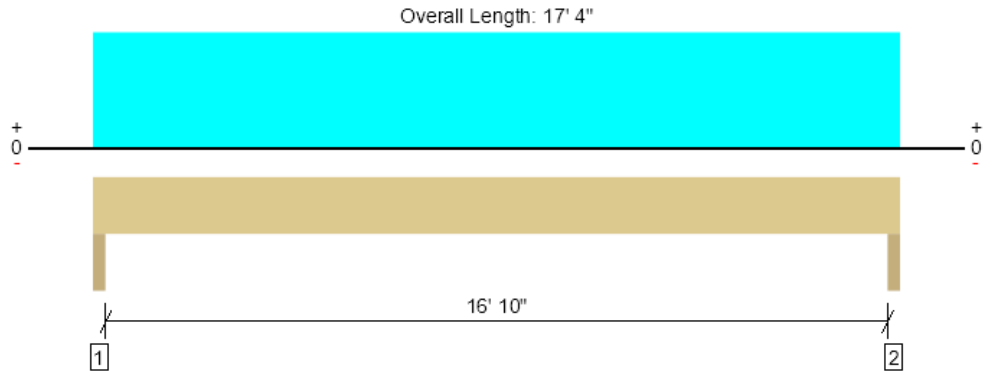
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof, Ext Header, Out of plane, 16'-10" span
1 piece(s) 3 1/2" x 11 7/8" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1282 @ 1 1/2"	6563 (3.00")	Passed (20%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1099 @ 1' 2 7/8"	9241	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5398 @ 8' 8"	22888	Passed (24%)	1.15	1.0 D + 1.0 S (All Spans)
Vert Live Load Defl. (in)	0.186 @ 8' 8"	0.569	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Vert Total Load Defl. (in)	0.305 @ 8' 8"	0.854	Passed (L/672)	--	1.0 D + 1.0 S (All Spans)
Lat Member Reaction (lbs)	916 @ 17' 2 1/2"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	871 @ 6 1/2"	9310	Passed (9%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	3912 @ mid-span	9822	Passed (40%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	1.703 @ mid-span	1.708	Passed (L/120)	--	1.0 D + 0.6 W
Bi-Axial Bending	0.53	1.00	Passed (53%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 S

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Lateral deflection criteria: Wind (L/120)
- Initial eccentricity applied as per ESR-1387.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - HF	3.00"	3.00"	1.50"	502	780	1282	None
2 - Trimmer - HF	3.00"	3.00"	1.50"	502	780	1282	None

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

•Maximum allowable bracing intervals based on applied load.

Lateral Connections: Simpson Strong-Tie						
Supports	Plate Size	Plate Material	Connector	Type/Model	Quantity	Nailing
Left	2X	Hem Fir	Angle Connectors	A23	2	(8) - 10d x 1 1/2"
Right	2X	Hem Fir	Angle Connectors	A23	2	(8) - 10d x 1 1/2"

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 17' 4"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 17' 4"	3'	15.0	30.0	Snow

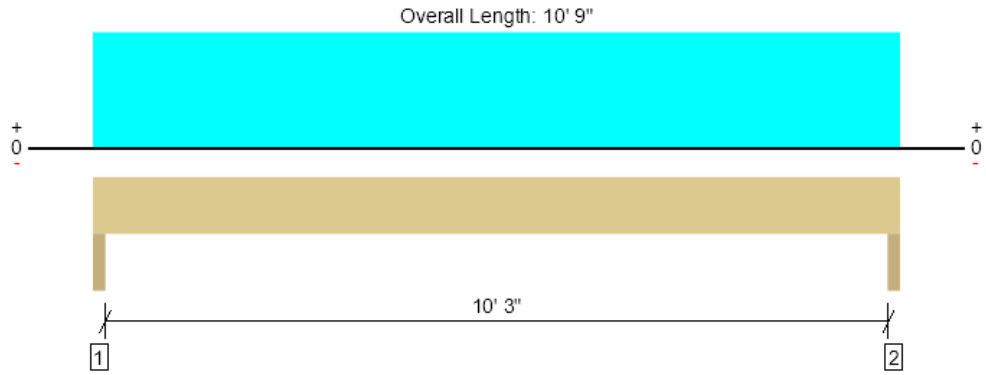
Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	8'	22.3	

• ASCE/SEI 7 Sec. 30.4: Exposure Category (B), Mean Roof Height (33'), Topographic Factor (1.0), Wind Directionality Factor (0.85), Basic Wind Speed (115), Risk Category(II), Effective Wind Area determined using full member span and trib. width.
• IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

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

Weyerhaeuser

Roof, Ext Header, Out of plane, 10'-3" span
1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	795 @ 1 1/2"	7613 (3.00")	Passed (10%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	612 @ 1' 2 7/8"	9878	Passed (6%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2040 @ 5' 4 1/2"	18346	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Vert Live Load Defl. (in)	0.037 @ 5' 4 1/2"	0.350	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Vert Total Load Defl. (in)	0.061 @ 5' 4 1/2"	0.525	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Lat Member Reaction (lbs)	582 @ 10' 7 1/2"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	536 @ 6 1/2"	6650	Passed (8%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	1528 @ mid-span	8453	Passed (18%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	0.327 @ mid-span	1.050	Passed (L/386)	--	1.0 D + 0.6 W
Bi-Axial Bending	0.22	1.00	Passed (22%)	1.60	1.0 D + 0.6 W

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Lateral deflection criteria: Wind (L/120)

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - HF	3.00"	3.00"	1.50"	312	484	795	None
2 - Trimmer - HF	3.00"	3.00"	1.50"	312	484	795	None

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

•Maximum allowable bracing intervals based on applied load.

Lateral Connections						
Supports	Plate Size	Plate Material	Connector	Type/Model	Quantity	Nailing
Left	2X	Hem Fir	Nails	10d (0.128" x 3") (End)	7	
Right	2X	Hem Fir	Nails	10d (0.128" x 3") (End)	7	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 10' 9"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 10' 9"	3'	15.0	30.0	Snow

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	8'	23.1	

• ASCE/SEI 7 Sec. 30.4: Exposure Category (B), Mean Roof Height (33'), Topographic Factor (1.0), Wind Directionality Factor (0.85), Basic Wind Speed (115), Risk Category(II), Effective Wind Area determined using full member span and trib. width.
• IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

ForteWEB Software Operator	Job Notes
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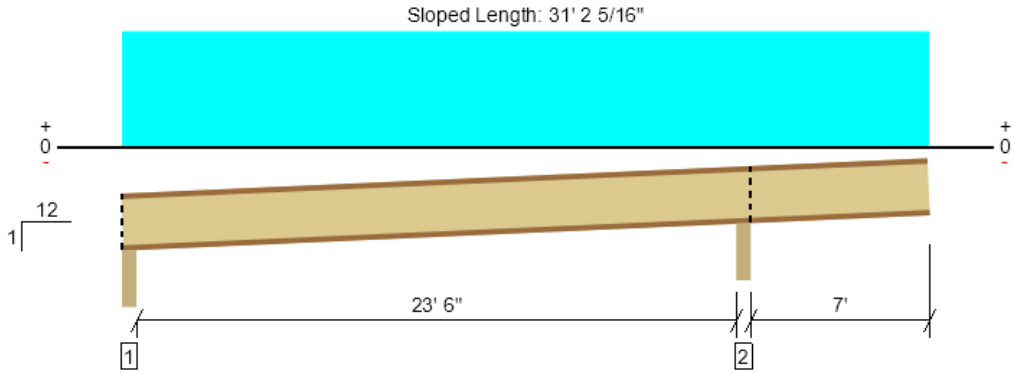
Roof Joists, Roof: Joist 23.5' span
1 piece(s) 11 7/8" TJI® 560 @ 24" OC



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

Member Length : 31' 3 5/16"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 1/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1810 @ 23' 11 1/4"	3462 (3.50")	Passed (52%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1103 @ 23' 9 1/2"	2358	Passed (47%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5598 @ 11' 4 1/4"	10925	Passed (51%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.669 @ 11' 10 9/16"	0.794	Passed (L/427)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.968 @ 11' 9 11/16"	1.191	Passed (L/295)	--	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).
- Upward deflection on right cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on right cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	3.50"	3.50"	1.75"	331	692	1023	Blocking
2 - Beveled Plate - HF	3.50"	3.50"	3.50"	605	1205	1810	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' 5" 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 31' 1"	24"	15.0	30.0	Default Load

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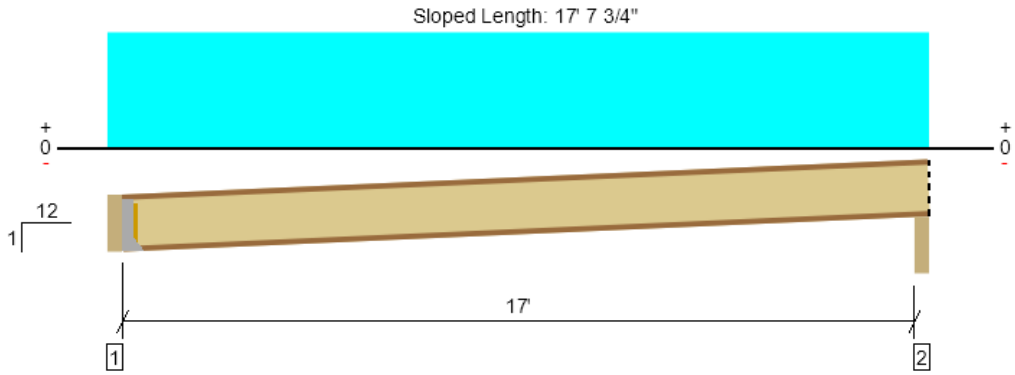
Weyerhaeuser

Roof Joists, Roof: Joist 17' span
1 piece(s) 11 7/8" TJI® 110 @ 24" OC



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

Member Length : 17' 5 3/16"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 1/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	770 @ 3 1/2"	1047 (1.75")	Passed (74%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	770 @ 3 1/2"	1794	Passed (43%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3287 @ 8' 10"	3634	Passed (90%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.473 @ 8' 10"	0.571	Passed (L/435)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.710 @ 8' 10"	0.857	Passed (L/290)	--	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.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 11 7/8" HF beam	3.50"	Hanger[1]	1.75" / - [2]	266	530	796	See note [1]
2 - Beveled Plate - HF	3.50"	3.50"	1.75"	263	525	788	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' o/c	
Bottom Edge (Lu)	17' 4" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

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

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

Vertical Load	Location	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 17' 7"	24"	15.0	30.0	Default Load

Weyerhaeuser Notes

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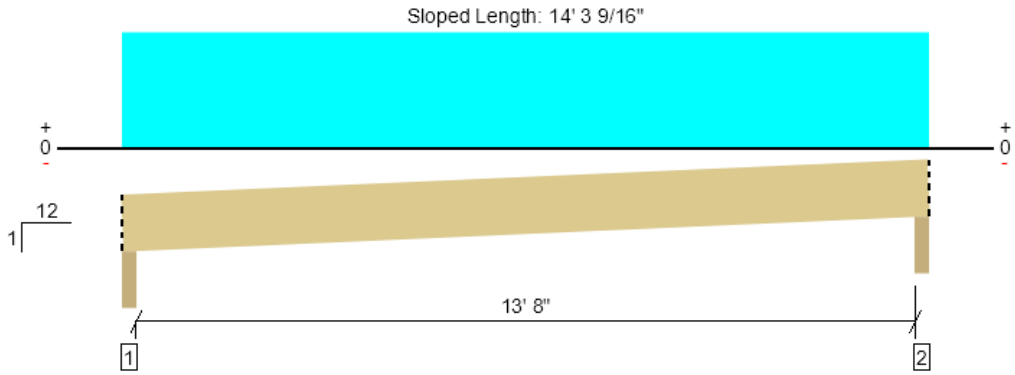
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof Joists, Roof: Joist over entry garden
1 piece(s) 2 x 8 HF No.2 @ 12" OC



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

Member Length : 14' 4 3/16"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 1/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	321 @ 2 1/2"	2126 (3.50")	Passed (15%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	281 @ 10 3/4"	1251	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1078 @ 7' 1 1/2"	1477	Passed (73%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.402 @ 7' 1 1/2"	0.463	Passed (L/414)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.604 @ 7' 1 1/2"	0.694	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.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - SPF	3.50"	3.50"	1.50"	107	214	321	Blocking
2 - Beveled Plate - SPF	3.50"	3.50"	1.50"	107	214	321	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' 11" o/c	
Bottom Edge (Lu)	14' 4" 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 14' 3"	12"	15.0	30.0	Default Load

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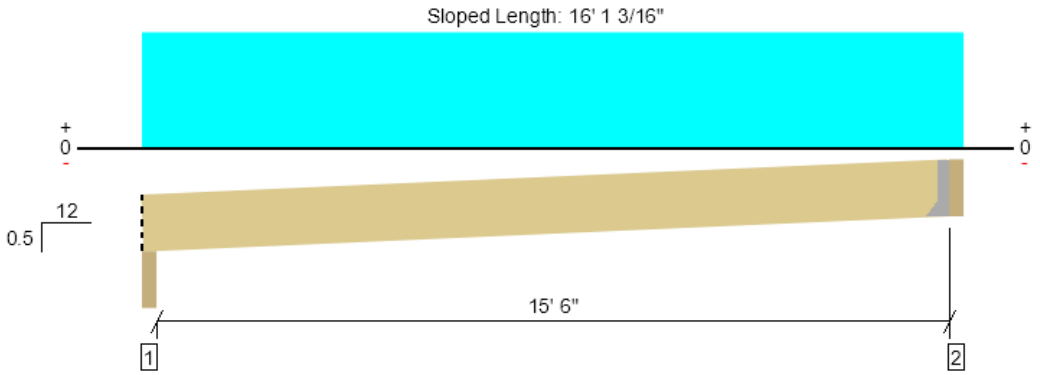
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Roof Joists, Garage roof joist

1 piece(s) 1 3/4" x 7 1/4" 1.55E TimberStrand® LSL @ 16" OC



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

Member Length : 15' 9 15/16"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.5/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	468 @ 15' 9 1/2"	2363 (1.50")	Passed (20%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	431 @ 15' 2 1/4"	3015	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1822 @ 8'	3721	Passed (49%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.631 @ 8'	0.780	Passed (L/296)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.947 @ 8'	1.040	Passed (L/198)	--	1.0 D + 1.0 S (All Spans)

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - SPF	3.50"	3.50"	1.50"	160	320	480	Blocking
2 - Hanger on 7 1/4" PSL beam	3.50"	Hanger[1]	1.50"	162	323	485	See note [1]

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 1" o/c	
Bottom Edge (Lu)	15' 10" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	HU1.81/5X SLD2	2.50"	N/A	12-10dx1.5	4-10dx1.5	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 16' 1"	16"	15.0	30.0	Default Load

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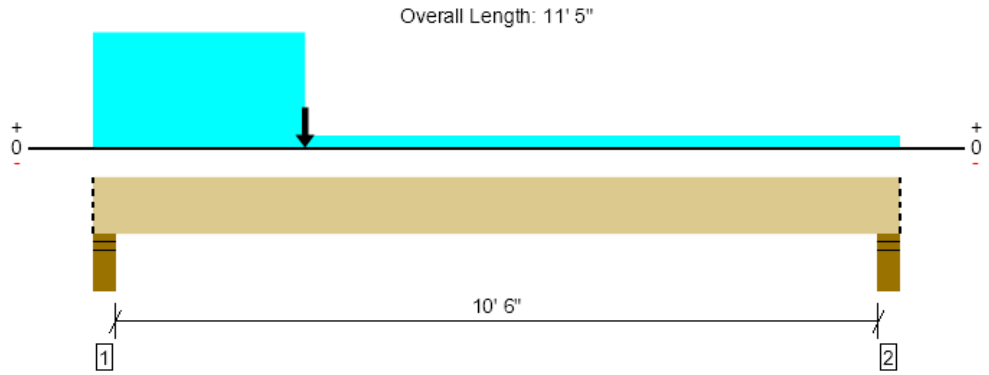
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper Floor, 1/ Flush Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4977 @ 4"	7796 (5.50")	Passed (64%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4050 @ 1' 5 3/8"	9878	Passed (41%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	10426 @ 3'	18346	Passed (57%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.153 @ 5' 1 3/16"	0.269	Passed (L/842)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.249 @ 5' 1 11/16"	0.538	Passed (L/519)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - HF	5.50"	5.50"	3.51"	1833	304	3144	4977	Blocking
2 - Stud wall - HF	5.50"	5.50"	1.50"	620	304	814	1459	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 11' 5" (Front)	1' 4"	15.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 3' (Top)	13' 6"	15.0	-	30.0	
3 - Point (lb)	3' (Top)	N/A	1469	-	2743	Linked from: 8/ Flush Beam, Support 1

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ForteWEB Software Operator	Job Notes
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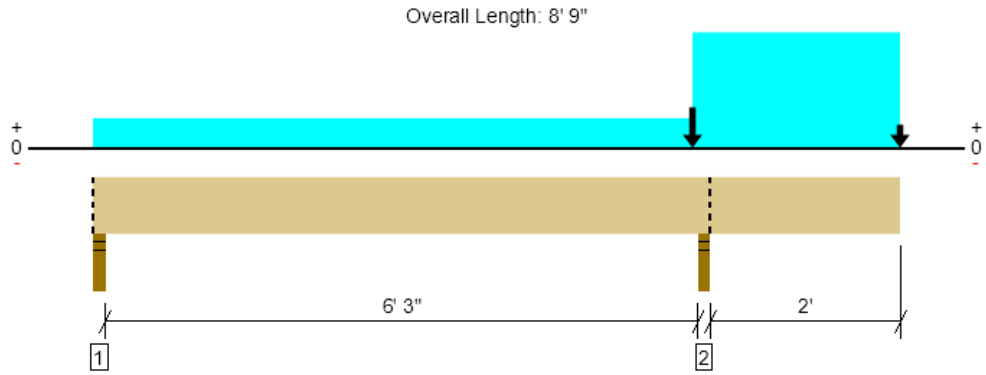
Weyerhaeuser

Upper Floor, 2/ Flush Cantilever

1 piece(s) 3 1/2" x 11 7/8" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3936 @ 6' 7 1/2"	4253 (3.00")	Passed (93%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	847 @ 7' 8 7/8"	8035	Passed (11%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-1818 @ 6' 7 1/2"	19902	Passed (9%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.016 @ 8' 9"	0.200	Passed (2L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.023 @ 8' 9"	0.213	Passed (2L/999+)	--	1.0 D + 1.0 L (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	14	180/-182	-49	194/-168	Blocking
2 - Stud wall - HF	3.00"	3.00"	2.78"	1605	969	2139	3936	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	13.0	--	--	
1 - Uniform (PSF)	0 to 8' 9" (Front)	1' 4"	15.0	40.0	-	Default Load
2 - Uniform (PSF)	6' 6" to 8' 9" (Top)	4' 9"	15.0	-	30.0	Roof
3 - Point (lb)	8' 9" (Front)	N/A	188	500	-	
4 - Point (lb)	6' 6" (Top)	N/A	982	-	1769	Linked from: 8/ Flush Beam, Support 2

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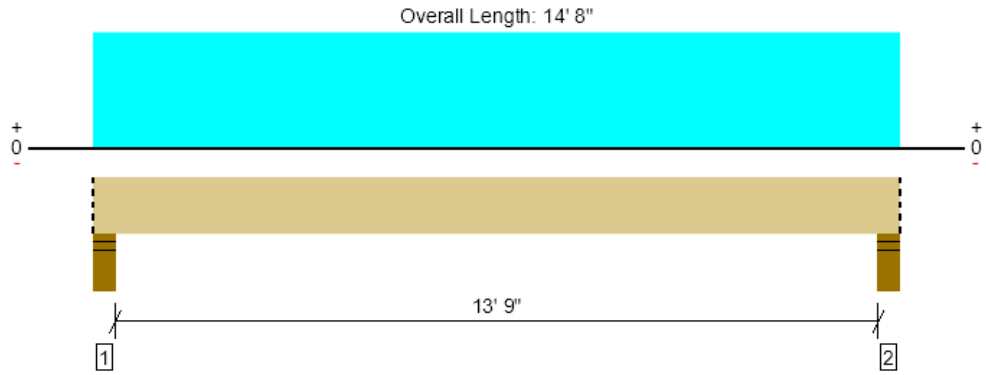
ForteWEB Software Operator	Job Notes
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	

Weyerhaeuser

Upper Floor, 3/ Flush Beam

1 piece(s) 7" x 11 7/8" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	7029 @ 4"	15593 (5.50")	Passed (45%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	5641 @ 1' 5 3/8"	16071	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	23484 @ 7' 4"	39805	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.276 @ 7' 4"	0.350	Passed (L/608)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.457 @ 7' 4"	0.700	Passed (L/368)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- 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.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - HF	5.50"	5.50"	2.48"	2776	4253	440	7029	Blocking
2 - Stud wall - HF	5.50"	5.50"	2.48"	2776	4253	440	7029	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 8" o/c	
Bottom Edge (Lu)	14' 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 14' 8"	N/A	26.0	--	--	
1 - Uniform (PSF)	0 to 14' 8" (Front)	5' 6"	15.0	40.0	-	Floor
2 - Uniform (PSF)	0 to 14' 8" (Front)	2'	15.0	-	30.0	Snow
3 - Uniform (PSF)	0 to 14' 8" (Front)	6'	40.0	60.0	-	Deck

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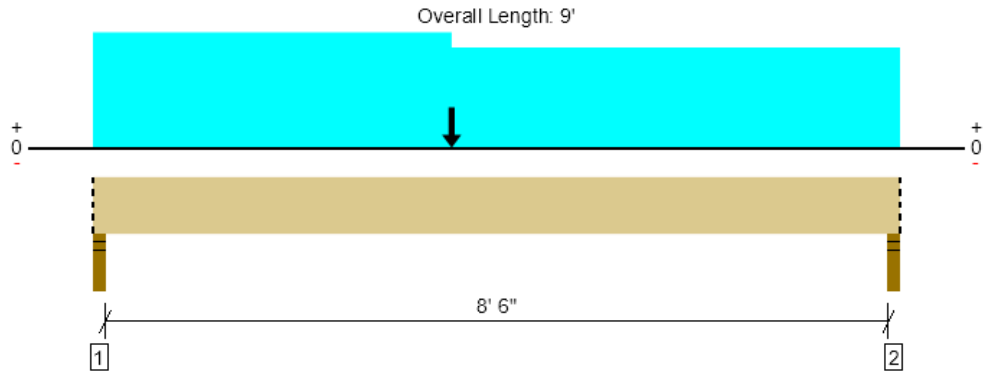
ForteWEB Software Operator	Job Notes
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	

Weyerhaeuser

Upper Floor, 4/ Flush Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2992 @ 1 1/2"	4253 (3.00")	Passed (70%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2191 @ 1' 2 7/8"	8590	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	6436 @ 4' 1 1/8"	15953	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.102 @ 4' 5 11/16"	0.219	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.138 @ 4' 5 11/16"	0.438	Passed (L/761)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	2.11"	806	2185	393	2992	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.95"	755	2008	312	2762	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)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9'	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 9' (Front)	10'	15.0	40.0	-	Floor
2 - Uniform (PSF)	0 to 4' (Front)	1' 6"	15.0	40.0	-	Floor/ Stair
3 - Point (lb)	4' (Top)	N/A	4	353	705	

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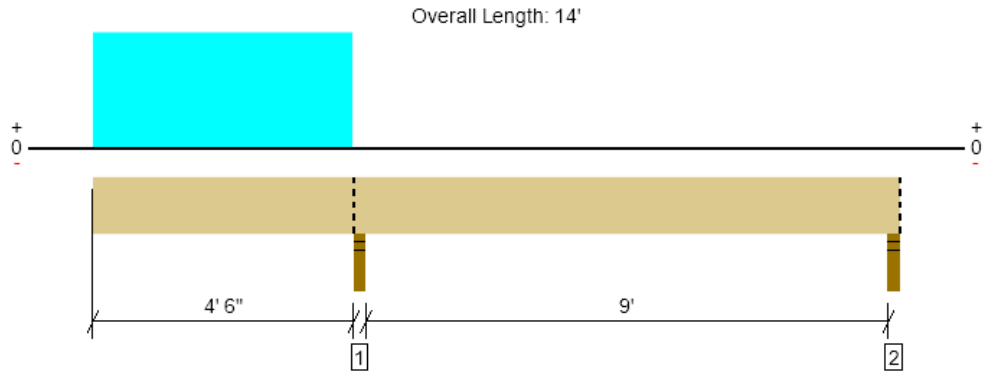
ForteWEB Software Operator	Job Notes
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	

Weyerhaeuser

Upper Floor, 5/ Flush Cantilever

1 piece(s) 3 1/2" x 11 7/8" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2001 @ 4' 7 1/2"	4253 (3.00")	Passed (47%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1204 @ 3' 6 1/8"	8035	Passed (15%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-3666 @ 4' 7 1/2"	19902	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.096 @ 0	0.231	Passed (2L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.134 @ 0	0.463	Passed (2L/830)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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.
- -335 lbs uplift at support located at 13' 10 1/2". 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	3.00"	3.00"	1.50"	644	1357	2001	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	-57	-277	-335	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' o/c	
Bottom Edge (Lu)	14' 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 14'	N/A	13.0	--	
1 - Uniform (PSF)	0 to 4' 6" (Front)	6'	15.0	40.0	Default Load

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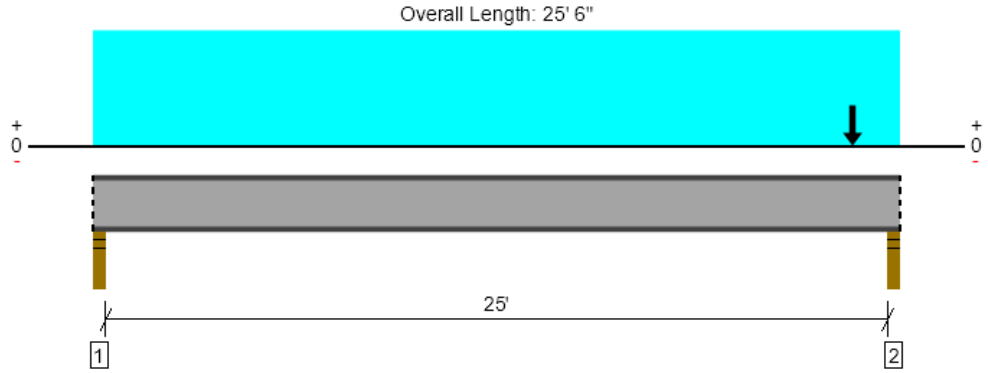
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper Floor, 6/ Catwalk beam

1 piece(s) W8X18 (A992) ASTM Steel



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2067 @ 25' 4 1/2"	6379 (3.00")	Passed (32%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2032 @ 25' 3"	37444	Passed (5%)	--	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	11487 @ 12' 10 1/4"	11917	Passed (96%)	--	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.469 @ 12' 9 7/16"	0.631	Passed (L/646)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.737 @ 12' 9 3/8"	1.263	Passed (L/411)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Applicable calculations are based on ANSI/AISC 360-16.
- A lateral-torsional buckling factor (Cb) of 1.0 has been assumed.

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"	664	1158	1822	Blocking
2 - Stud wall - HF	3.00"	3.00"	3.00"	731	1337	2067	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 25' 6"	N/A	18.0	--	
1 - Uniform (PSF)	0 to 25' 6"	2' 3"	15.0	40.0	Default Load
2 - Point (lb)	24'	N/A	75	200	Stringer beam

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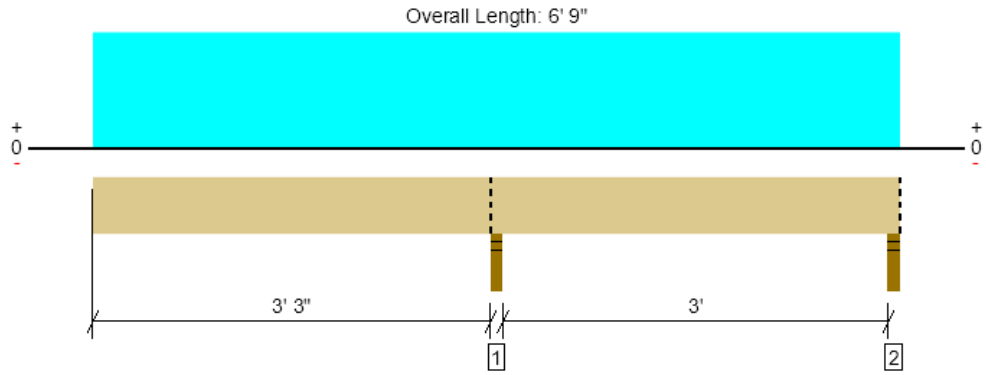
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper Floor, 8/ Low Roof Cantilever
2 piece(s) 1 3/4" x 7 1/4" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	658 @ 3' 4 1/2"	4253 (3.00")	Passed (15%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	258 @ 4' 1 1/4"	5544	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-555 @ 3' 4 1/2"	8182	Passed (7%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.018 @ 0	0.225	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.028 @ 0	0.338	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	253	405	658	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	-	52/-53	52/-53	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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 9"	N/A	7.4	--	
1 - Uniform (PSF)	0 to 6' 9" (Front)	2'	15.0	30.0	Default Load

Member Notes

(converted from: Floor Flush Beam)

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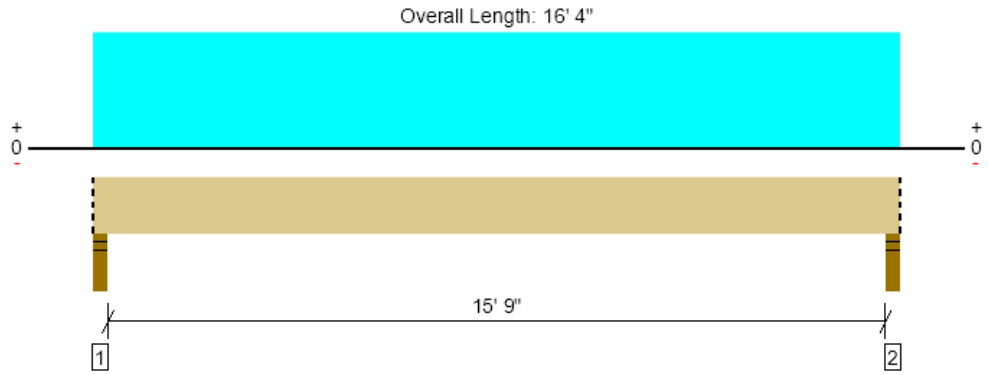
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper Floor, 9/ Header, low roof
3 piece(s) 2 x 12 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1850 @ 2"	6379 (3.50")	Passed (29%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1572 @ 1' 2 3/4"	5822	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	7250 @ 8' 2"	7732	Passed (94%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.303 @ 8' 2"	0.533	Passed (L/634)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.481 @ 8' 2"	0.800	Passed (L/399)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.50"	687	1164	1850	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	687	1164	1850	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' 11" o/c	
Bottom Edge (Lu)	16' 4" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 16' 4"	N/A	12.8	--	
1 - Uniform (PSF)	0 to 16' 4" (Front)	4' 9"	15.0	30.0	Roof

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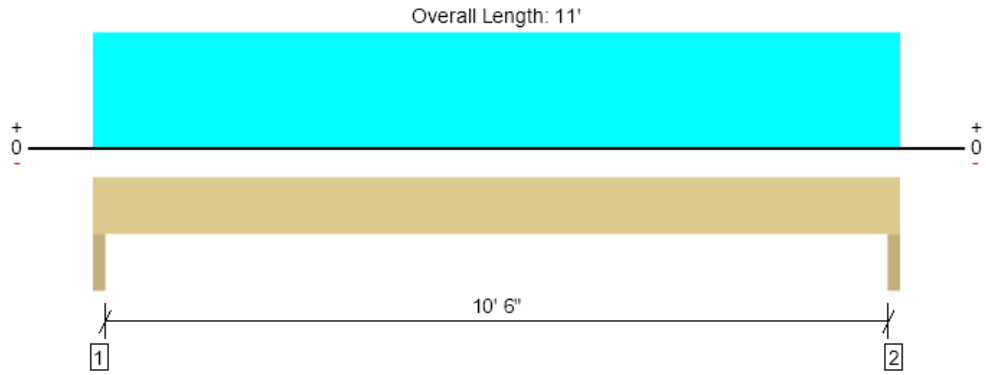
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper Floor, 10/ Header, low roof

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1680 @ 1 1/2"	7613 (3.00")	Passed (22%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1302 @ 1' 2 7/8"	9878	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4413 @ 5' 6"	18346	Passed (24%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.087 @ 5' 6"	0.358	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.137 @ 5' 6"	0.538	Passed (L/941)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - HF	3.00"	3.00"	1.50"	608	1073	1680	None
2 - Trimmer - HF	3.00"	3.00"	1.50"	608	1073	1680	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 11'	N/A	13.0	--	
1 - Uniform (PSF)	0 to 11'	6' 6"	15.0	30.0	Snow

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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	

Weyerhaeuser

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Nestler Spare.ec6

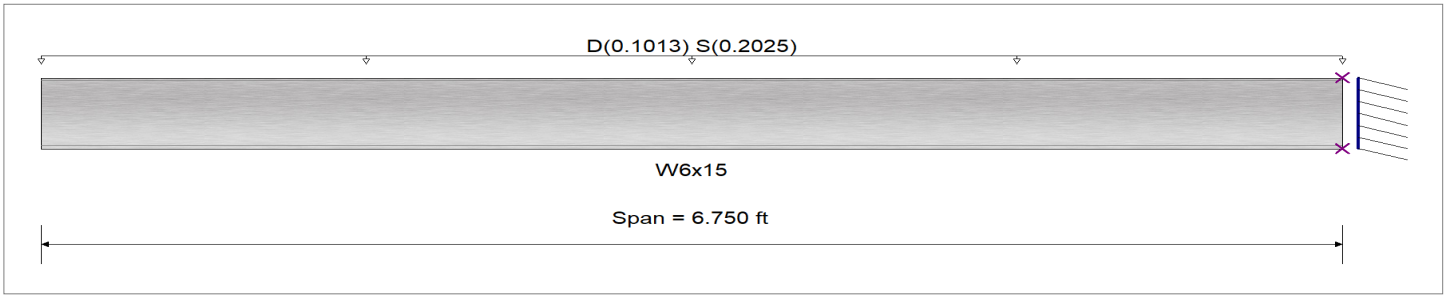
DESCRIPTION: Upper - 11/ Steel fixed end

CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : IBC 2021

Material Properties

Analysis Method :	Allowable Strength Design	Fy : Steel Yield :	50.0 ksi
Beam Bracing :	Completely Unbraced	E: Modulus :	29,000.0 ksi
Bending Axis :	Major Axis Bending		



Applied Loads

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

Beam self weight calculated and added to loading
Uniform Load : D = 0.0150, S = 0.030 ksf, Tributary Width = 6.750 ft, (Low roof)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	**0.286** : 1	Maximum Shear Stress Ratio =	**0.078** : 1
Section used for this span	**W6x15**	Section used for this span	**W6x15**
Ma : Applied	7.262 k-ft	Va : Applied	2.152 k
Mn / Omega : Allowable	25.365 k-ft	Vn/Omega : Allowable	27.554 k
Load Combination	+D+S	Load Combination	+D+S
		Location of maximum on span	6.750 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.108 in	Ratio =	1,502	>=360	Span: 1 : S Only
Max Upward Transient Deflection	0 in	Ratio =	0	<360	n/a
Max Downward Total Deflection	0.170 in	Ratio =	955	>=180	Span: 1 : +D+S
Max Upward Total Deflection	0 in	Ratio =	0	<180	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	VnxVnx/Omega
D Only												
Dsgn. L = 6.75 ft	1	0.104	0.028		-2.65	2.65	42.36	25.37	1.00	1.00	0.78	41.33 27.55
+D+S												
Dsgn. L = 6.75 ft	1	0.286	0.078		-7.26	7.26	42.36	25.37	1.00	1.00	2.15	41.33 27.55
+D+0.750S												
Dsgn. L = 6.75 ft	1	0.241	0.066		-6.11	6.11	42.36	25.37	1.00	1.00	1.81	41.33 27.55
+0.60D												
Dsgn. L = 6.75 ft	1	0.063	0.017		-1.59	1.59	42.36	25.37	1.00	1.00	0.47	41.33 27.55

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.1697	0.000		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions		2.152
Max Upward from Load Combinations		2.152
Max Upward from Load Cases		1.367
D Only		0.785
+D+S		2.152
+D+0.750S		1.810
+0.60D		0.471

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Nestler Spare.ec6

DESCRIPTION: Upper - 11/ Steel fixed end

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
S Only		1.367

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Nestler Spare.ec6

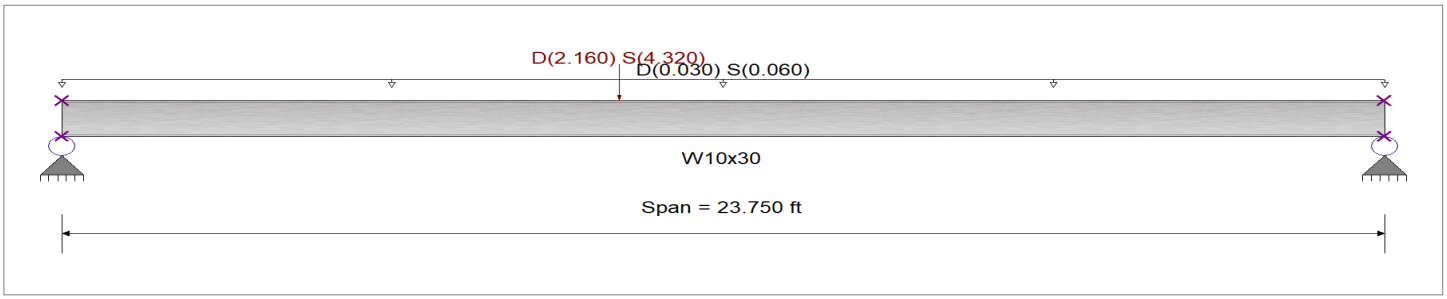
DESCRIPTION: Upper - 14

CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : IBC 2021

Material Properties

Analysis Method :	Allowable Strength Design	Fy : Steel Yield :	50.0 ksi
Beam Bracing :	Completely Unbraced	E: Modulus :	29,000.0 ksi
Bending Axis :	Major Axis Bending		



Applied Loads

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

Beam self weight calculated and added to loading
Uniform Load : D = 0.0150, S = 0.030 ksf, Tributary Width = 2.0 ft, (Low roof)

Point Load : D = 2.160, S = 4.320 k @ 10.0 ft, (Roof post)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.984 : 1	Maximum Shear Stress Ratio =	0.082 : 1
Section used for this span	W10x30	Section used for this span	W10x30
Ma : Applied	45.666 k-ft	Va : Applied	5.177 k
Mn / Omega : Allowable	46.394 k-ft	Vn/Omega : Allowable	63.0 k
Load Combination	+D+S	Load Combination	+D+S
		Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.497 in	Ratio =	572	>=480.	Span: 1 : S Only
Max Upward Transient Deflection	0 in	Ratio =	0	<480.0	n/a
Max Downward Total Deflection	0.791 in	Ratio =	360	>=240.	Span: 1 : +D+S
Max Upward Total Deflection	0 in	Ratio =	0	<240.0	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
D Only													
Dsgn. L = 23.75 ft	1	0.363	0.031	16.60		16.60	76.31	45.69	1.30	1.00	1.96	94.50	63.00
+D+S													
Dsgn. L = 23.75 ft	1	0.984	0.082	45.67		45.67	77.48	46.39	1.32	1.00	5.18	94.50	63.00
+D+0.750S													
Dsgn. L = 23.75 ft	1	0.829	0.069	38.40		38.40	77.36	46.32	1.32	1.00	4.37	94.50	63.00
+0.60D													
Dsgn. L = 23.75 ft	1	0.218	0.019	9.96		9.96	76.31	45.69	1.30	1.00	1.18	94.50	63.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.7908	11.468		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	5.177	4.153
Max Upward from Load Combinations	5.177	4.153
Max Upward from Load Cases	3.214	2.531
D Only	1.963	1.622
+D+S	5.177	4.153

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Nestler Spare.ec6

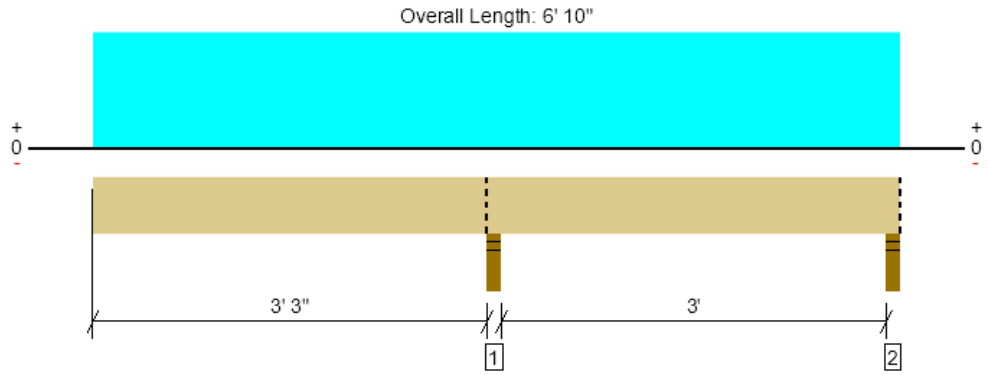
DESCRIPTION: Upper - 14

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
+D+0.750S	4.373	3.521
+0.60D	1.178	0.973
S Only	3.214	2.531

Upper Floor, South Low roof joist, cantilever
1 piece(s) 2 x 6 HF No.2 @ 24" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	612 @ 3' 4 3/4"	2127 (3.50")	Passed (29%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	252 @ 4'	949	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-519 @ 3' 4 3/4"	921	Passed (56%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.135 @ 0	0.340	Passed (2L/602)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.199 @ 0	0.453	Passed (2L/410)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.25/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - SPF	3.50"	3.50"	1.50"	204	408	612	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	1	56/-52	57/-51	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' 10" o/c	
Bottom Edge (Lu)	6' 10" 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 6' 10"	24"	15.0	30.0	Default Load

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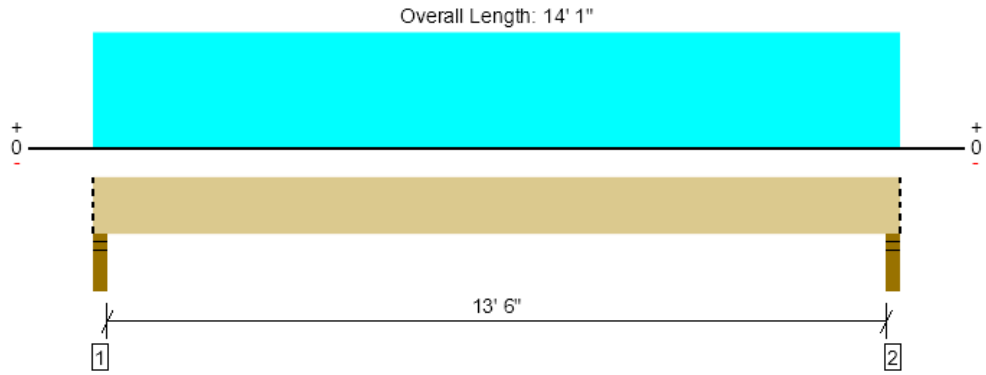
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper Floor, South Low roof joist, 13.5' span
2 piece(s) 2 x 6 HF No.2 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	423 @ 2 1/2"	4253 (3.50")	Passed (10%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	378 @ 9"	1898	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1401 @ 7' 1/2"	1842	Passed (76%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.581 @ 7' 1/2"	0.683	Passed (L/282)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.871 @ 7' 1/2"	0.911	Passed (L/188)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.25/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - SPF	3.50"	3.50"	1.50"	141	282	423	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	141	282	423	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 11" o/c	
Bottom Edge (Lu)	14' 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 14' 1"	16"	15.0	30.0	Default Load

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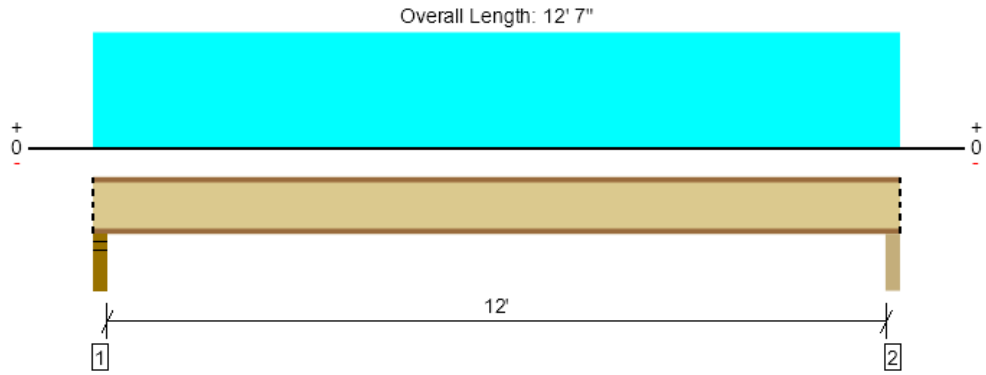
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	839 @ 2 1/2"	1375 (3.50")	Passed (61%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	800 @ 3 1/2"	1560	Passed (51%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2467 @ 6' 3 1/2"	3160	Passed (78%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.144 @ 6' 3 1/2"	0.304	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.240 @ 6' 3 1/2"	0.608	Passed (L/608)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	53	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
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
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.75"	336	503	839	Blocking
2 - Beam - HF	3.50"	3.50"	1.75"	336	503	839	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)	12' 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 12' 7"	16"	40.0	60.0	Default Load

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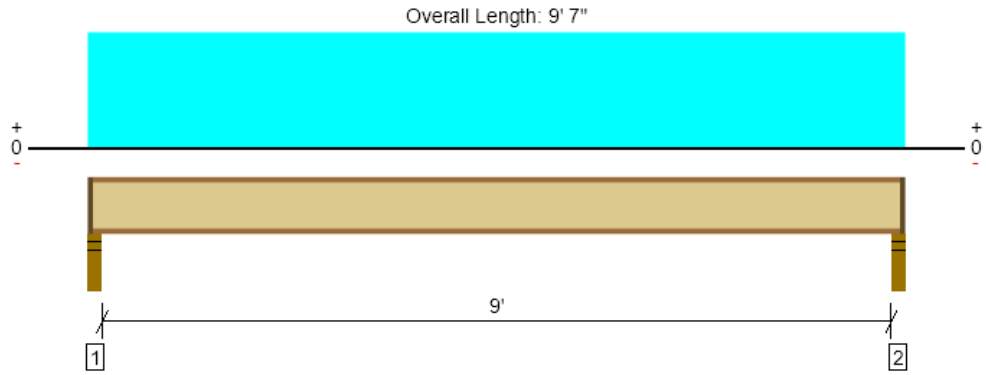
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper Floor, Floor w/ conc. slab
1 piece(s) 11 7/8" TJI® 110 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	578 @ 2 1/2"	1041 (2.25")	Passed (56%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	555 @ 3 1/2"	1560	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1295 @ 4' 9 1/2"	3160	Passed (41%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.035 @ 4' 9 1/2"	0.229	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.082 @ 4' 9 1/2"	0.458	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	64	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
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
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	3.50"	2.25"	1.75"	335	256	591	1 1/4" Rim Board
2 - Stud wall - HF	3.50"	2.25"	1.75"	335	256	591	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' o/c	
Bottom Edge (Lu)	9' 5" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 9' 7"	16"	15.0	40.0	Default Load
2 - Uniform (PSF)	0 to 9' 7"	16"	37.5	-	Concrete Slab

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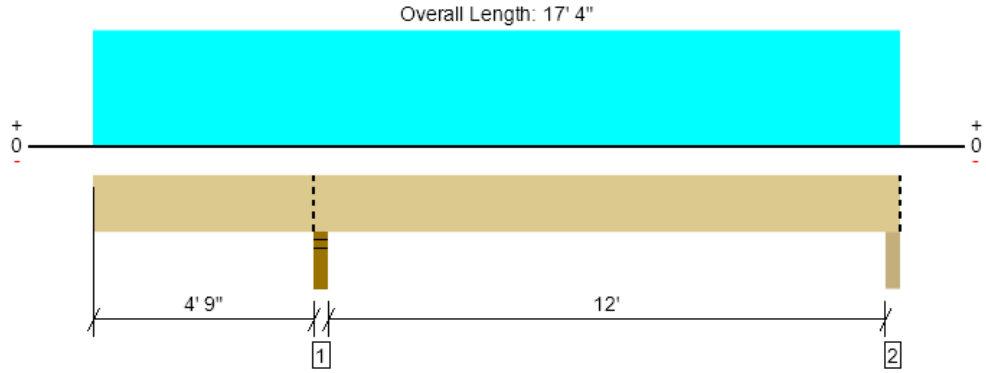
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Floor, Cantilever Joist

1 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	879 @ 4' 10 3/4"	2481 (3.50")	Passed (35%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	453 @ 5' 9 3/4"	3076	Passed (15%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1254 @ 11' 3 5/16"	5826	Passed (22%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.114 @ 0	0.245	Passed (2L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.136 @ 11' 1 1/4"	0.611	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	51	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
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	3.50"	3.50"	1.50"	240	639	879	Blocking
2 - Beam - HF	3.50"	3.50"	1.50"	107	337/-52	444	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)	17' 4" o/c	
Bottom Edge (Lu)	17' 4" 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 17' 4"	16"	15.0	40.0	Default Load

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

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Nestler Spare.ec6

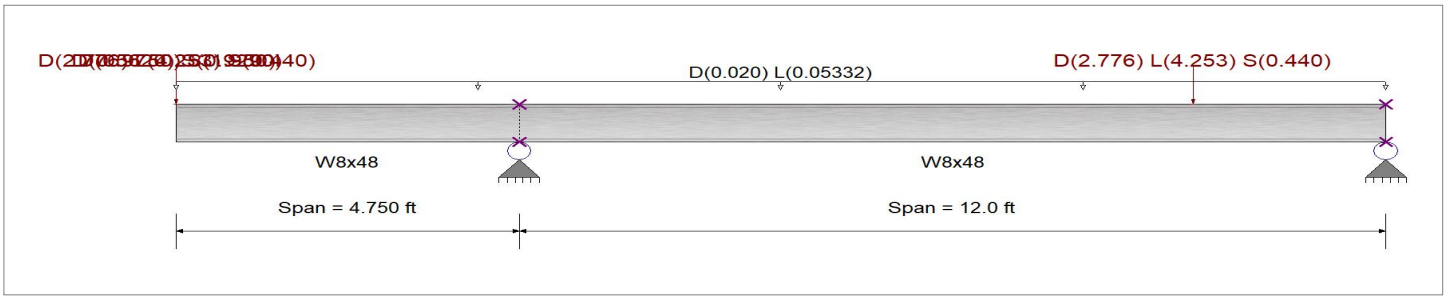
DESCRIPTION: Main - 1/ Steel Cantilever

CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : IBC 2021

Material Properties

Analysis Method :	Allowable Strength Design	Fy : Steel Yield :	50.0 ksi
Beam Bracing :	Completely Unbraced	E: Modulus :	29,000.0 ksi
Bending Axis :	Major Axis Bending		



Applied Loads

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

Beam self weight calculated and added to loading
Loads on all spans...
Uniform Load on ALL spans : D = 0.0150, L = 0.040 ksf, Tributary Width = 1.333 ft

Load(s) for Span Number 1
Point Load : D = 0.5620, S = 0.9290 k @ 0.0 ft, (post above - roof beam 6)

Point Load : D = 2.776, L = 4.253, S = 0.440 k @ 0.0 ft, (post above - upper beam 3)

Point Load : D = 0.9750, S = 1.950 k @ 0.0 ft, (post above - roof headers)

Load(s) for Span Number 2
Point Load : D = 2.776, L = 4.253, S = 0.440 k @ 9.333 ft, (post above - upper beam 3)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.398 : 1	Maximum Shear Stress Ratio =	0.154 : 1
Section used for this span	W8x48	Section used for this span	W8x48
Ma : Applied	48.680 k-ft	Va : Applied	10.505 k
Mn / Omega : Allowable	122.255 k-ft	Vn/Omega : Allowable	68.0 k
Load Combination	+D+0.750L+0.750S+H, LL Comb Run (LL)	Load Combination	+D+0.750L+0.750S+H, LL Comb Run (LL)
		Location of maximum on span	4.750 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.178 in	Ratio =	638	>=480.	Span: 2 : L Only, LL Comb Run (L*)
Max Upward Transient Deflection	-0.063 in	Ratio =	2,290	>=480.	Span: 2 : L Only, LL Comb Run (L*)
Max Downward Total Deflection	0.386 in	Ratio =	295	>=240.	Span: 2 : +D+0.750L+0.750S+H, LL Comb Run (L*)
Max Upward Total Deflection	-0.121 in	Ratio =	1194	>=240.	Span: 2 : +D+0.750L+0.750S+H, LL Comb Run (L*)

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
+D+H													
Dsgn. L = 4.75 ft	1	0.174	0.068		-21.25	21.25	204.17	122.26	1.00	1.00	4.64	102.00	68.00
Dsgn. L = 12.00 ft	2	0.174	0.041	1.86	-21.25	21.25	204.17	122.26	2.23	1.00	2.80	102.00	68.00
+D+L+H, LL Comb Run (*L)													
Dsgn. L = 4.75 ft	1	0.174	0.068		-21.25	21.25	204.17	122.26	1.00	1.00	4.64	102.00	68.00
Dsgn. L = 12.00 ft	2	0.174	0.065	11.30	-21.25	21.25	204.17	122.26	2.27	1.00	4.42	102.00	68.00
+D+L+H, LL Comb Run (L*)													
Dsgn. L = 4.75 ft	1	0.344	0.134		-42.06	42.06	204.17	122.26	1.00	1.00	9.14	102.00	68.00
Dsgn. L = 12.00 ft	2	0.344	0.067		-42.06	42.06	204.17	122.26	1.96	1.00	4.53	102.00	68.00

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Nestler Spare.ec6

DESCRIPTION: Main - 1/ Steel Cantilever

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
+D+L+H, LL Comb Run (LL)													
Dsgn. L = 4.75 ft	1	0.344	0.134		-42.06	42.06	204.17	122.26	1.00	1.00	9.14	102.00	68.00
Dsgn. L = 12.00 ft	2	0.344	0.085	6.68	-42.06	42.06	204.17	122.26	2.24	1.00	5.79	102.00	68.00
+D+Lr+H, LL Comb Run (*L)													
Dsgn. L = 4.75 ft	1	0.174	0.068		-21.25	21.25	204.17	122.26	1.00	1.00	4.64	102.00	68.00
Dsgn. L = 12.00 ft	2	0.174	0.041	1.86	-21.25	21.25	204.17	122.26	2.23	1.00	2.80	102.00	68.00
+D+Lr+H, LL Comb Run (L*)													
Dsgn. L = 4.75 ft	1	0.174	0.068		-21.25	21.25	204.17	122.26	1.00	1.00	4.64	102.00	68.00
Dsgn. L = 12.00 ft	2	0.174	0.041	1.86	-21.25	21.25	204.17	122.26	2.23	1.00	2.80	102.00	68.00
+D+Lr+H, LL Comb Run (LL)													
Dsgn. L = 4.75 ft	1	0.174	0.068		-21.25	21.25	204.17	122.26	1.00	1.00	4.64	102.00	68.00
Dsgn. L = 12.00 ft	2	0.174	0.041	1.86	-21.25	21.25	204.17	122.26	2.23	1.00	2.80	102.00	68.00
+D+S+H													
Dsgn. L = 4.75 ft	1	0.303	0.117		-37.02	37.02	204.17	122.26	1.00	1.00	7.95	102.00	68.00
Dsgn. L = 12.00 ft	2	0.303	0.062		-37.02	37.02	204.17	122.26	2.06	1.00	4.21	102.00	68.00
+D+0.750Lr+0.750L+H, LL Comb													
Dsgn. L = 4.75 ft	1	0.174	0.068		-21.25	21.25	204.17	122.26	1.00	1.00	4.64	102.00	68.00
Dsgn. L = 12.00 ft	2	0.174	0.055	8.94	-21.25	21.25	204.17	122.26	2.38	1.00	3.74	102.00	68.00
+D+0.750Lr+0.750L+H, LL Comb													
Dsgn. L = 4.75 ft	1	0.301	0.118		-36.86	36.86	204.17	122.26	1.00	1.00	8.02	102.00	68.00
Dsgn. L = 12.00 ft	2	0.301	0.060		-36.86	36.86	204.17	122.26	2.01	1.00	4.10	102.00	68.00
+D+0.750Lr+0.750L+H, LL Comb													
Dsgn. L = 4.75 ft	1	0.301	0.118		-36.86	36.86	204.17	122.26	1.00	1.00	8.02	102.00	68.00
Dsgn. L = 12.00 ft	2	0.301	0.074	5.48	-36.86	36.86	204.17	122.26	2.24	1.00	5.05	102.00	68.00
+D+0.750L+0.750S+H, LL Comb													
Dsgn. L = 4.75 ft	1	0.271	0.105		-33.08	33.08	204.17	122.26	1.00	1.00	7.13	102.00	68.00
Dsgn. L = 12.00 ft	2	0.271	0.071	6.98	-33.08	33.08	204.17	122.26	2.27	1.00	4.80	102.00	68.00
+D+0.750L+0.750S+H, LL Comb													
Dsgn. L = 4.75 ft	1	0.398	0.154		-48.68	48.68	204.17	122.26	1.00	1.00	10.50	102.00	68.00
Dsgn. L = 12.00 ft	2	0.398	0.076		-48.68	48.68	204.17	122.26	1.94	1.00	5.15	102.00	68.00
+D+0.750L+0.750S+H, LL Comb													
Dsgn. L = 4.75 ft	1	0.398	0.154		-48.68	48.68	204.17	122.26	1.00	1.00	10.50	102.00	68.00
Dsgn. L = 12.00 ft	2	0.398	0.090	3.55	-48.68	48.68	204.17	122.26	2.21	1.00	6.10	102.00	68.00
+D+0.60W+H													
Dsgn. L = 4.75 ft	1	0.174	0.068		-21.25	21.25	204.17	122.26	1.00	1.00	4.64	102.00	68.00
Dsgn. L = 12.00 ft	2	0.174	0.041	1.86	-21.25	21.25	204.17	122.26	2.23	1.00	2.80	102.00	68.00
+D+0.70E+H													
Dsgn. L = 4.75 ft	1	0.174	0.068		-21.25	21.25	204.17	122.26	1.00	1.00	4.64	102.00	68.00
Dsgn. L = 12.00 ft	2	0.174	0.041	1.86	-21.25	21.25	204.17	122.26	2.23	1.00	2.80	102.00	68.00
+D+0.750Lr+0.750L+0.450W+H, I													
Dsgn. L = 4.75 ft	1	0.174	0.068		-21.25	21.25	204.17	122.26	1.00	1.00	4.64	102.00	68.00
Dsgn. L = 12.00 ft	2	0.174	0.055	8.94	-21.25	21.25	204.17	122.26	2.38	1.00	3.74	102.00	68.00
+D+0.750Lr+0.750L+0.450W+H, I													
Dsgn. L = 4.75 ft	1	0.301	0.118		-36.86	36.86	204.17	122.26	1.00	1.00	8.02	102.00	68.00
Dsgn. L = 12.00 ft	2	0.301	0.060		-36.86	36.86	204.17	122.26	2.01	1.00	4.10	102.00	68.00
+D+0.750Lr+0.750L+0.450W+H, I													
Dsgn. L = 4.75 ft	1	0.301	0.118		-36.86	36.86	204.17	122.26	1.00	1.00	8.02	102.00	68.00
Dsgn. L = 12.00 ft	2	0.301	0.074	5.48	-36.86	36.86	204.17	122.26	2.24	1.00	5.05	102.00	68.00
+D+0.750L+0.750S+0.450W+H, L													
Dsgn. L = 4.75 ft	1	0.271	0.105		-33.08	33.08	204.17	122.26	1.00	1.00	7.13	102.00	68.00
Dsgn. L = 12.00 ft	2	0.271	0.071	6.98	-33.08	33.08	204.17	122.26	2.27	1.00	4.80	102.00	68.00
+D+0.750L+0.750S+0.450W+H, L													
Dsgn. L = 4.75 ft	1	0.398	0.154		-48.68	48.68	204.17	122.26	1.00	1.00	10.50	102.00	68.00
Dsgn. L = 12.00 ft	2	0.398	0.076		-48.68	48.68	204.17	122.26	1.94	1.00	5.15	102.00	68.00
+D+0.750L+0.750S+0.450W+H, L													
Dsgn. L = 4.75 ft	1	0.398	0.154		-48.68	48.68	204.17	122.26	1.00	1.00	10.50	102.00	68.00
Dsgn. L = 12.00 ft	2	0.398	0.090	3.55	-48.68	48.68	204.17	122.26	2.21	1.00	6.10	102.00	68.00
+D+0.750L+0.750S+0.5250E+H, I													
Dsgn. L = 4.75 ft	1	0.271	0.105		-33.08	33.08	204.17	122.26	1.00	1.00	7.13	102.00	68.00
Dsgn. L = 12.00 ft	2	0.271	0.071	6.98	-33.08	33.08	204.17	122.26	2.27	1.00	4.80	102.00	68.00
+D+0.750L+0.750S+0.5250E+H, I													
Dsgn. L = 4.75 ft	1	0.398	0.154		-48.68	48.68	204.17	122.26	1.00	1.00	10.50	102.00	68.00
Dsgn. L = 12.00 ft	2	0.398	0.076		-48.68	48.68	204.17	122.26	1.94	1.00	5.15	102.00	68.00

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Nestler Spare.ec6

LIC# : KW-06015393, Build:20.23.08.30 BYKONEN CARTER QUINN

DESCRIPTION: Main - 1/ Steel Cantilever

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
+D+0.750L+0.750S+0.5250E+H,													
Dsgn. L = 4.75 ft	1	0.398	0.154		-48.68	48.68	204.17	122.26	1.00	1.00	10.50	102.00	68.00
Dsgn. L = 12.00 ft	2	0.398	0.090	3.55	-48.68	48.68	204.17	122.26	2.21	1.00	6.10	102.00	68.00
+0.60D+0.60W+0.60H													
Dsgn. L = 4.75 ft	1	0.104	0.041		-12.75	12.75	204.17	122.26	1.00	1.00	2.78	102.00	68.00
Dsgn. L = 12.00 ft	2	0.104	0.025	1.12	-12.75	12.75	204.17	122.26	2.23	1.00	1.68	102.00	68.00
+0.60D+0.70E+0.60H													
Dsgn. L = 4.75 ft	1	0.104	0.041		-12.75	12.75	204.17	122.26	1.00	1.00	2.78	102.00	68.00
Dsgn. L = 12.00 ft	2	0.104	0.025	1.12	-12.75	12.75	204.17	122.26	2.23	1.00	1.68	102.00	68.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.3859	0.000		0.0000	0.000
	2	0.0000	0.000	+D+0.750L+0.750S+0.5250E+H	-0.1206	4.752

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions		16.609	4.424
Max Upward from Load Combinations		16.609	4.424
Max Upward from Load Cases		7.505	3.628
Max Downward from all Load Conditions (Resis			-1.734
Max Downward from Load Combinations (Resis			-1.233
Max Downward from Load Cases (Resisting Up			-1.734
+D+H		7.432	0.796
+D+L+H, LL Comb Run (*L)		8.697	4.424
+D+L+H, LL Comb Run (L*)		13.672	-0.938
+D+L+H, LL Comb Run (LL)		14.937	2.690
+D+Lr+H, LL Comb Run (*L)		7.432	0.796
+D+Lr+H, LL Comb Run (L*)		7.432	0.796
+D+Lr+H, LL Comb Run (LL)		7.432	0.796
+D+S+H		12.163	-0.176
+D+0.750Lr+0.750L+H, LL Comb Run (*L)		8.381	3.517
+D+0.750Lr+0.750L+H, LL Comb Run (L*)		12.112	-0.504
+D+0.750Lr+0.750L+H, LL Comb Run (LL)		13.061	2.216
+D+0.750L+0.750S+H, LL Comb Run (*L)		11.929	2.788
+D+0.750L+0.750S+H, LL Comb Run (L*)		15.660	-1.233
+D+0.750L+0.750S+H, LL Comb Run (LL)		16.609	1.488
+D+0.60W+H		7.432	0.796
+D+0.70E+H		7.432	0.796
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		8.381	3.517
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		12.112	-0.504
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		13.061	2.216
+D+0.750L+0.750S+0.450W+H, LL Comb Run		11.929	2.788
+D+0.750L+0.750S+0.450W+H, LL Comb Run		15.660	-1.233
+D+0.750L+0.750S+0.450W+H, LL Comb Run		16.609	1.488
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		11.929	2.788
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		15.660	-1.233
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		16.609	1.488
+0.60D+0.60W+0.60H		4.459	0.478
+0.60D+0.70E+0.60H		4.459	0.478
D Only		7.432	0.796
L Only, LL Comb Run (*L)		1.265	3.628
L Only, LL Comb Run (L*)		6.240	-1.734
L Only, LL Comb Run (LL)		7.505	1.894
S Only		4.731	-0.972
H Only			

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Nestler Spare.ec6

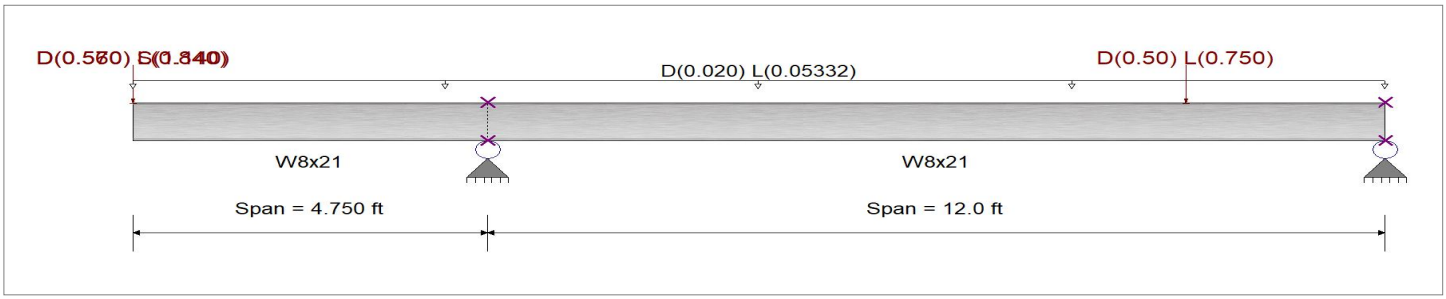
DESCRIPTION: Main - 2/ Steel Cantilever

CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : IBC 2021

Material Properties

Analysis Method :	Allowable Strength Design	Fy : Steel Yield :	50.0 ksi
Beam Bracing :	Completely Unbraced	E: Modulus :	29,000.0 ksi
Bending Axis :	Major Axis Bending		



Applied Loads

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

Beam self weight calculated and added to loading
Loads on all spans...
Uniform Load on ALL spans : D = 0.0150, L = 0.040 ksf, Tributary Width = 1.333 ft

Load(s) for Span Number 1
Point Load : D = 0.570, S = 1.140 k @ 0.0 ft, (post above, roof)

Point Load : D = 0.560, L = 0.840 k @ 0.0 ft, (post above - deck)

Load(s) for Span Number 2
Point Load : D = 0.50, L = 0.750 k @ 9.333 ft, (post above - deck)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.265 : 1	Maximum Shear Stress Ratio =	0.072 : 1
Section used for this span	W8x21	Section used for this span	W8x21
Ma : Applied	13.335 k-ft	Va : Applied	3.0 k
Mn / Omega : Allowable	50.343 k-ft	Vn/Omega : Allowable	41.40 k
Load Combination	+D+0.750L+0.750S	Load Combination	+D+0.750L+0.750S
		Location of maximum on span	4.750 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.114 in	Ratio =	1,002	>=480.	Span: 2 : S Only
Max Upward Transient Deflection	-0.040 in	Ratio =	3,600	>=480.	Span: 2 : S Only
Max Downward Total Deflection	0.237 in	Ratio =	482	>=240.	Span: 2 : +D+0.750L+0.750S
Max Upward Total Deflection	-0.066 in	Ratio =	2168	>=240.	Span: 2 : +D+S

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
D Only													
Dsgn. L = 4.75 ft	1	0.116	0.032		-5.83	5.83	84.07	50.34	1.00	1.00	1.32	62.10	41.40
Dsgn. L = 12.00 ft	2	0.115	0.020	0.25	-5.83	5.83	85.00	50.90	2.32	1.00	0.84	62.10	41.40
+D+L													
Dsgn. L = 4.75 ft	1	0.207	0.058		-10.42	10.42	84.07	50.34	1.00	1.00	2.42	62.10	41.40
Dsgn. L = 12.00 ft	2	0.205	0.041	1.44	-10.42	10.42	85.00	50.90	2.41	1.00	1.71	62.10	41.40
+D+S													
Dsgn. L = 4.75 ft	1	0.223	0.060		-11.24	11.24	84.07	50.34	1.00	1.00	2.46	62.10	41.40
Dsgn. L = 12.00 ft	2	0.221	0.031		-11.24	11.24	85.00	50.90	1.97	1.00	1.29	62.10	41.40
+D+0.750L													
Dsgn. L = 4.75 ft	1	0.184	0.052		-9.27	9.27	84.07	50.34	1.00	1.00	2.14	62.10	41.40

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Nestler Spare.ec6

DESCRIPTION: Main - 2/ Steel Cantilever

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
Dsgn. L = 12.00 ft +D+0.750L+0.750S	2	0.182	0.036	1.14	-9.27	9.27	85.00	50.90	2.39	1.00	1.49	62.10	41.40
Dsgn. L = 4.75 ft	1	0.265	0.072		-13.33	13.33	84.07	50.34	1.00	1.00	3.00	62.10	41.40
Dsgn. L = 12.00 ft +0.60D	2	0.262	0.044	0.25	-13.33	13.33	85.00	50.90	2.26	1.00	1.83	62.10	41.40
Dsgn. L = 4.75 ft	1	0.069	0.019		-3.50	3.50	84.07	50.34	1.00	1.00	0.79	62.10	41.40
Dsgn. L = 12.00 ft	2	0.069	0.012	0.15	-3.50	3.50	85.00	50.90	2.32	1.00	0.51	62.10	41.40

Overall Maximum Deflections

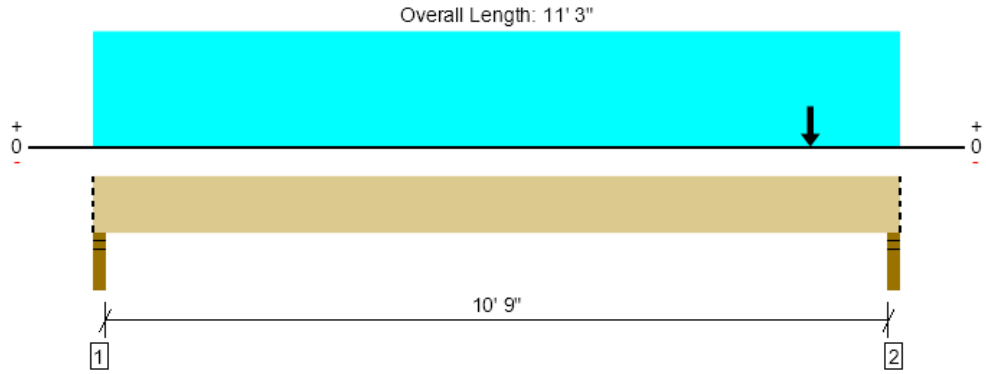
Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S	1	0.2366	0.000		0.0000	0.000
	2	0.0000	0.000	+D+S	-0.0664	4.752

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions		4.833	0.670
Max Upward from Load Combinations		4.833	0.670
Max Upward from Load Cases		2.168	0.521
Max Downward from all Load Conditions (Resis			-0.451
Max Downward from Load Combinations (Resi			-0.302
Max Downward from Load Cases (Resisting Up			-0.451
D Only		2.168	0.149
+D+L		4.130	0.670
+D+S		3.759	-0.302
+D+0.750L		3.640	0.539
+D+0.750L+0.750S		4.833	0.201
+0.60D		1.301	0.089
L Only		1.963	0.521
S Only		1.591	-0.451

Main Floor, 3/ Flush Beam @ MST
2 piece(s) 2 x 10 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1717 @ 11' 1 1/2"	3645 (3.00")	Passed (47%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1649 @ 10' 2 3/4"	4440	Passed (37%)	1.60	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	1328 @ 5' 10 1/2"	3333	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.068 @ 5' 7 9/16"	0.275	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.114 @ 5' 8 3/8"	0.550	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- 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.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	172	300	40	196/-196	530/-34	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	327	300	350	1719/-1719	1717/-1007	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)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 11' 3"	N/A	7.0	--	--	--	
1 - Uniform (PSF)	0 to 11' 3" (Front)	1' 4"	15.0	40.0	-	-	Default Load
2 - Point (lb)	10' (Top)	N/A	195	-	390	-	Roof header post
3 - Point (lb)	10' (Top)	N/A	-	-	-	1915	Hold-down

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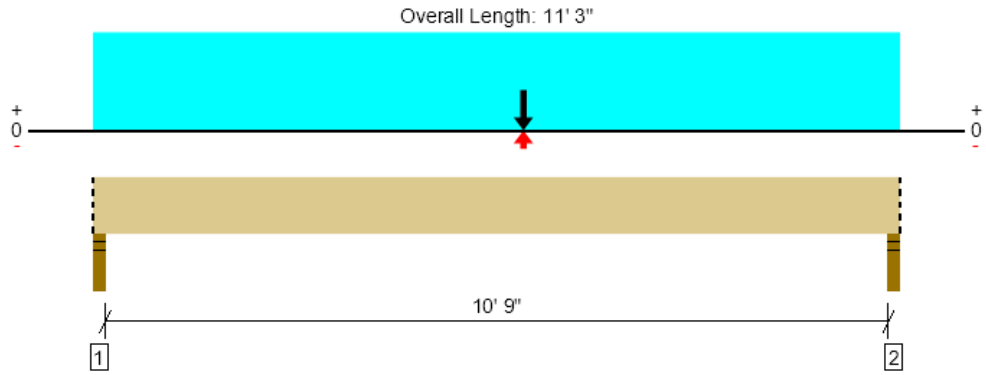
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Floor, 4/ Flush Beam

1 piece(s) 3 1/2" x 9 1/4" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	2566 @ 11' 1 1/2"	4253 (3.00")	Passed (60%)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	2457 @ 10' 2 3/4"	6259	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	11879 @ 6'	12416	Passed (96%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.332 @ 6'	0.367	Passed (L/398)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Total Load Defl. (in)	0.511 @ 6'	0.550	Passed (L/258)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.61"	816	1461	502	2289	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.81"	911	1631	575	2566	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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 11' 3"	N/A	10.1	--	--	
1 - Uniform (PSF)	0 to 11' 3" (Front)	1' 4"	15.0	40.0	-	Default Load
2 - Point (lb)	6' (Top)	N/A	755	2008	312	Linked from: 4/ Flush Beam, Support 2
3 - Point (lb)	6' (Top)	N/A	620	304	814	Linked from: 1/ Flush Beam, Support 2
4 - Point (lb)	6' (Top)	N/A	14	180/-182	-49	Linked from: 2/ Flush Cantilever, Support 1

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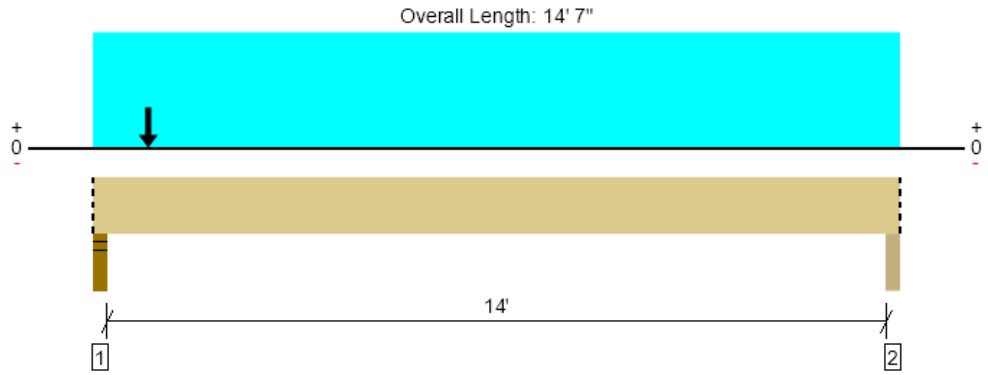
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Floor, Transfer Joist, 14' span
1 piece(s) 2 x 10 HF No.2 @ 12" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	630 @ 2 1/2"	2126 (3.50")	Passed (30%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	557 @ 1' 3/4"	1596	Passed (35%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	1431 @ 7' 1 15/16"	1917	Passed (75%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.282 @ 7' 3 7/16"	0.354	Passed (L/603)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.405 @ 7' 3"	0.708	Passed (L/420)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
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"	3.50"	1.50"	230	292	241	630	Blocking
2 - Beam - HF	3.50"	3.50"	1.50"	117	292	14	408	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' 2" o/c	
Bottom Edge (Lu)	14' 7" 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 14' 7"	12"	15.0	40.0	-	Default Load
2 - Point (PLF)	1'	12"	128.0	-	255.0	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
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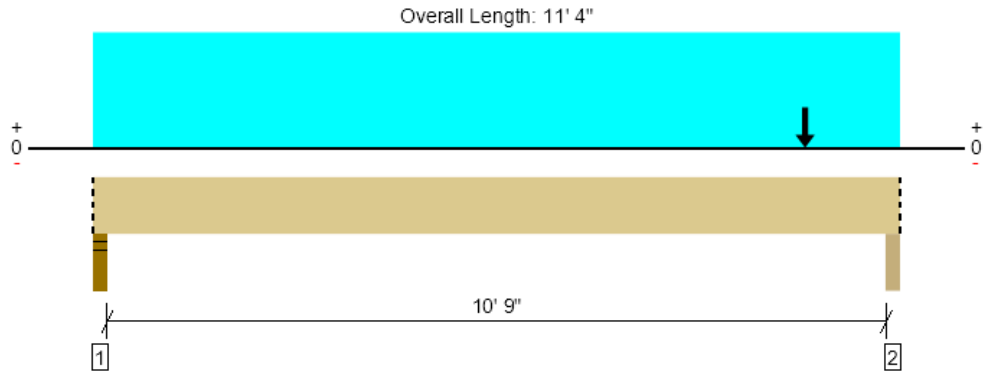
Weyerhaeuser

Main Floor, Transfer Joist, 10.75' span
1 piece(s) 2 x 10 HF No.2 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	722 @ 11' 1 1/2"	2126 (3.50")	Passed (34%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	658 @ 10' 3 1/4"	1596	Passed (41%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	1191 @ 5' 10 7/8"	1917	Passed (62%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.133 @ 5' 8 1/16"	0.273	Passed (L/989)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.201 @ 5' 8 13/16"	0.546	Passed (L/651)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
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"	3.50"	1.50"	131	302	35	433	Blocking
2 - Beam - HF	3.50"	3.50"	1.50"	266	302	305	722	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)	11' 4" 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' 4"	16"	15.0	40.0	-	Default Load
2 - Point (PLF)	10'	16"	128.0	-	255.0	Roof

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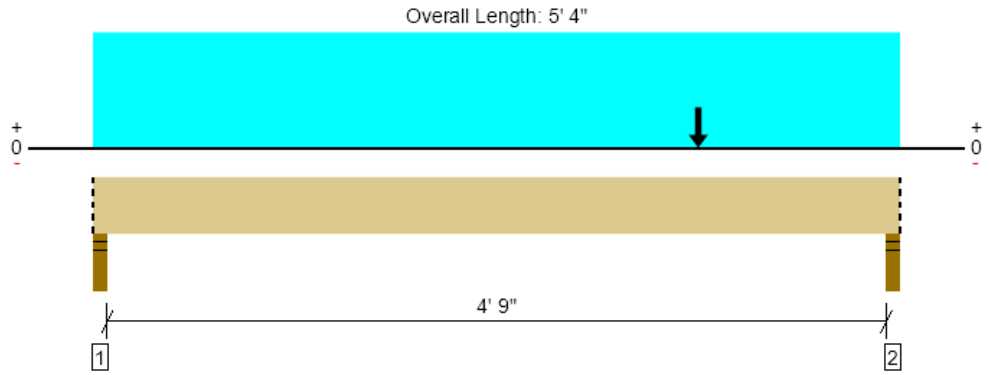
Weyerhaeuser

Main Floor, 5/ Flush Beam

1 piece(s) 5 1/4" x 9 1/4" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5456 @ 5' 2"	7442 (3.50")	Passed (73%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	5139 @ 4' 3 1/4"	10797	Passed (48%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6009 @ 4'	21417	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.025 @ 2' 11 3/16"	0.125	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.040 @ 2' 11 1/8"	0.250	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.50"	633	236	1008	447/-447	1800	Blocking
2 - Stud wall - HF	3.50"	3.50"	2.57"	1865	449	3312	1468/-1468	5456	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' 4" o/c	
Bottom Edge (Lu)	5' 4" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 5' 4"	N/A	15.2	--	--	--	
1 - Uniform (PSF)	0 to 5' 4" (Front)	1' 4"	15.0	40.0	-	-	Default Load
2 - Point (lb)	4' (Top)	N/A	2160	-	4320	-	Roof post
3 - Point (lb)	4' (Top)	N/A	150	400	-	-	Upper post
4 - Point (lb)	4' (Top)	N/A	-	-	-	1915	HD

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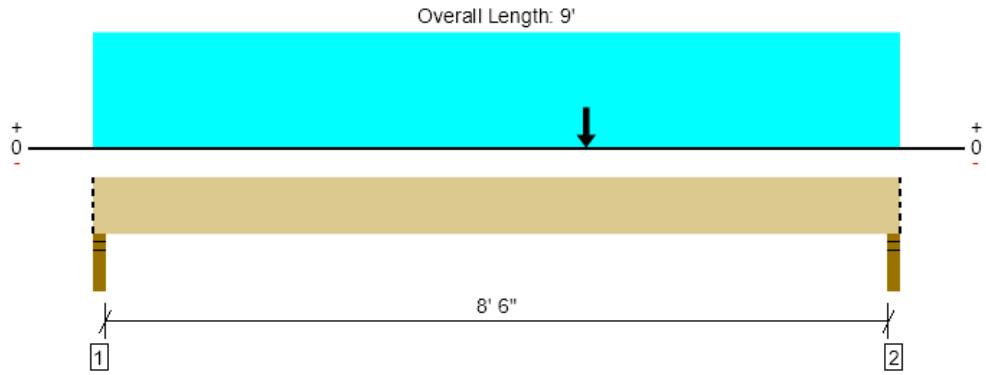
Weyerhaeuser

Main Floor, 6/ Flush Beam

1 piece(s) 3 1/2" x 9 1/4" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2733 @ 8' 10 1/2"	4253 (3.00")	Passed (64%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2662 @ 7' 11 3/4"	7198	Passed (37%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	8796 @ 5' 6"	14278	Passed (62%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.141 @ 4' 8 5/8"	0.219	Passed (L/745)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.239 @ 4' 8 5/8"	0.438	Passed (L/440)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - HF	3.00"	3.00"	1.50"	755	614	825	1834	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.93"	1121	835	1314	2733	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)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9'	N/A	10.1	--	--	
1 - Uniform (PSF)	0 to 9' (Front)	1' 4"	15.0	40.0	-	Default Load
2 - Point (lb)	5' 6" (Top)	N/A	1605	969	2139	Linked from: 2/ Flush Cantilever, Support 2

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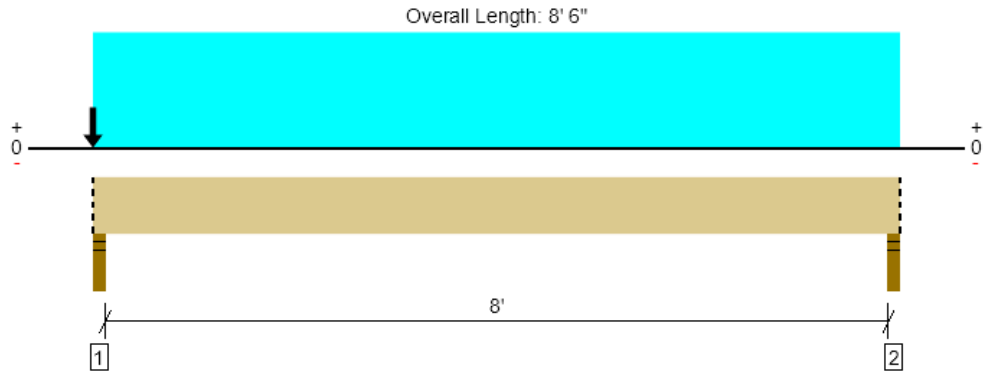
Weyerhaeuser

Main Floor, 7/ Flush Beam
2 piece(s) 2 x 10 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	892 @ 1 1/2"	3645 (3.00")	Passed (24%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	260 @ 1' 1/4"	2775	Passed (9%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	684 @ 4' 3"	3333	Passed (21%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.022 @ 4' 3"	0.206	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.033 @ 4' 3"	0.412	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- 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.

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"	265	627	892	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	115	227	342	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' 6" o/c	
Bottom Edge (Lu)	8' 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 8' 6"	N/A	7.0	--	
1 - Uniform (PSF)	0 to 8' 6" (Front)	1' 4"	15.0	40.0	Default Load
2 - Point (lb)	0 (Top)	N/A	150	400	Post, upper

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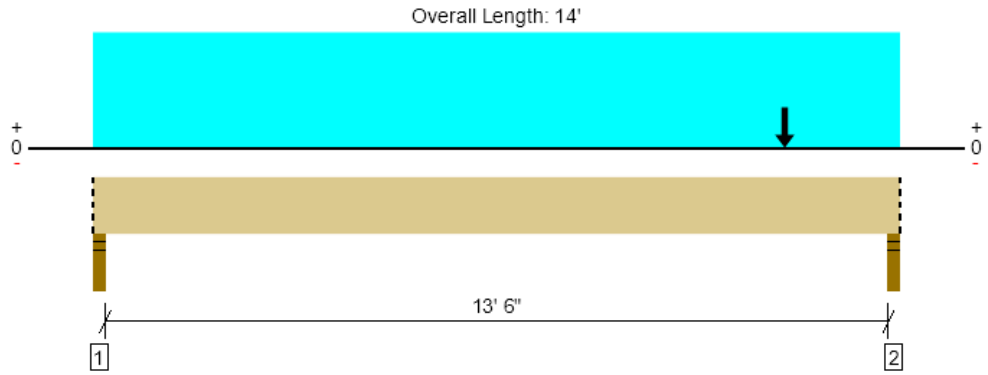
Weyerhaeuser

Main Floor, Dumb waiter opening
2 piece(s) 2 x 10 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	895 @ 13' 10 1/2"	3645 (3.00")	Passed (25%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	813 @ 12' 11 3/4"	2775	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2277 @ 7' 7 13/16"	3333	Passed (68%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.208 @ 7' 2 3/16"	0.344	Passed (L/795)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.307 @ 7' 2"	0.688	Passed (L/537)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- 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.

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"	204	412	615	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	280	615	895	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)	14' 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 14'	N/A	7.0	--	
1 - Uniform (PSF)	0 to 14' (Front)	1' 4"	15.0	40.0	Default Load
2 - Point (lb)	12' (Front)	N/A	105	280	

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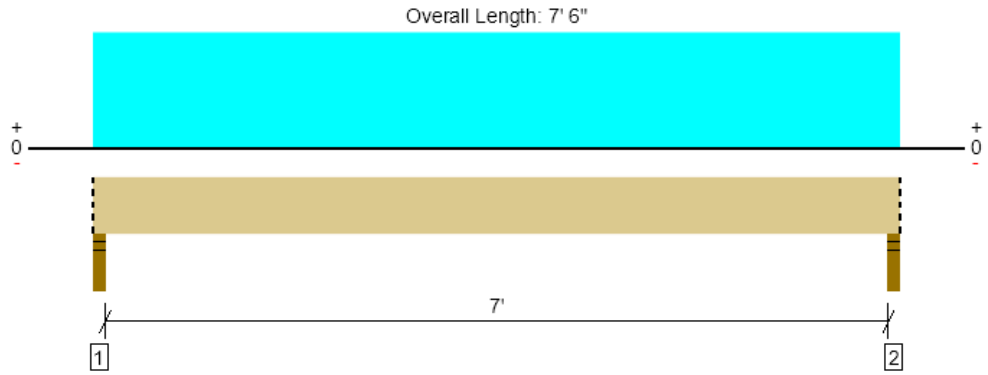
Weyerhaeuser

Main Floor, 8/ Flush Beam
2 piece(s) 2 x 10 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1470 @ 1 1/2"	3645 (3.00")	Passed (40%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1070 @ 1' 1/4"	2775	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2576 @ 3' 9"	3333	Passed (77%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.068 @ 3' 9"	0.181	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.095 @ 3' 9"	0.363	Passed (L/918)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- 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.

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"	420	1050	1470	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	420	1050	1470	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)	Comments
0 - Self Weight (PLF)	0 to 7' 6"	N/A	7.0	--	
1 - Uniform (PSF)	0 to 7' 6" (Front)	7'	15.0	40.0	Default Load

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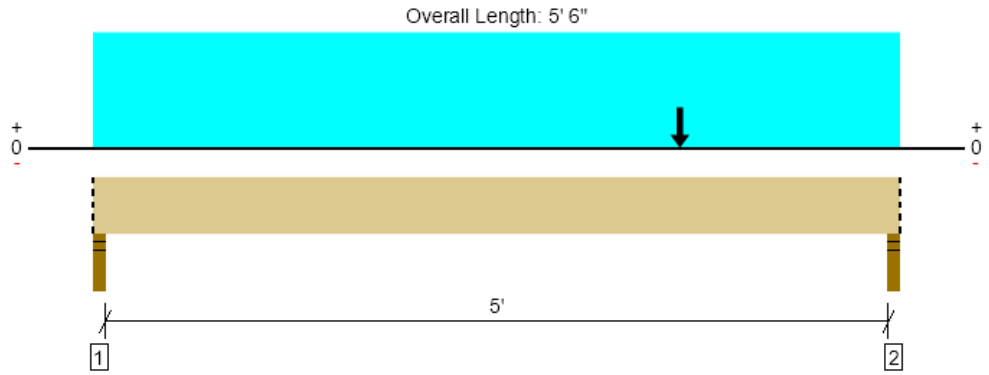
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Floor, 9/ Flush Beam
2 piece(s) 2 x 10 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1306 @ 5' 4 1/2"	3645 (3.00")	Passed (36%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1224 @ 4' 5 3/4"	2775	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1706 @ 4'	3333	Passed (51%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.019 @ 2' 11 1/2"	0.131	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.027 @ 2' 11 1/2"	0.262	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- 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.

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"	184	422	606	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	384	922	1306	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)	Comments
0 - Self Weight (PLF)	0 to 5' 6"	N/A	7.0	--	
1 - Uniform (PSF)	0 to 5' 6" (Front)	1' 4"	15.0	40.0	Default Load
2 - Point (lb)	4' (Front)	N/A	420	1050	Linked from: 8/ Flush Beam, Support 1

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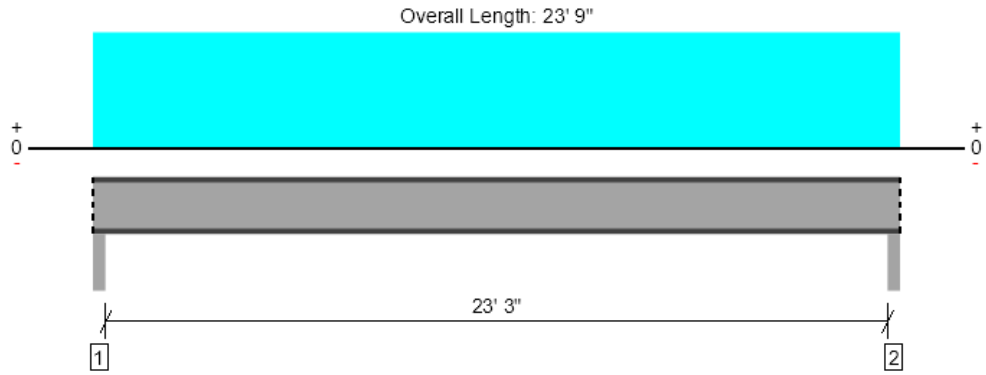
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Floor, 10/ Flush Steel Beam
1 piece(s) W10X68 (A992) ASTM Steel



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	10931 @ 1 1/2"	96742 (3.00")	Passed (11%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	10701 @ 3"	97760	Passed (11%)	--	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	63543 @ 11' 10 1/2"	176093	Passed (36%)	--	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.372 @ 11' 10 1/2"	0.587	Passed (L/757)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.553 @ 11' 10 1/2"	1.175	Passed (L/510)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Applicable calculations are based on ANSI/AISC 360-16.
- A lateral-torsional buckling factor (Cb) of 1.0 has been assumed.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Column - steel	3.00"	3.00"	3.00"	3568	7363	10931	Blocking
2 - Column - steel	3.00"	3.00"	3.00"	3568	7363	10931	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"	N/A	68.0	--	
1 - Uniform (PSF)	0 to 23' 9"	15' 6"	15.0	40.0	Default Load

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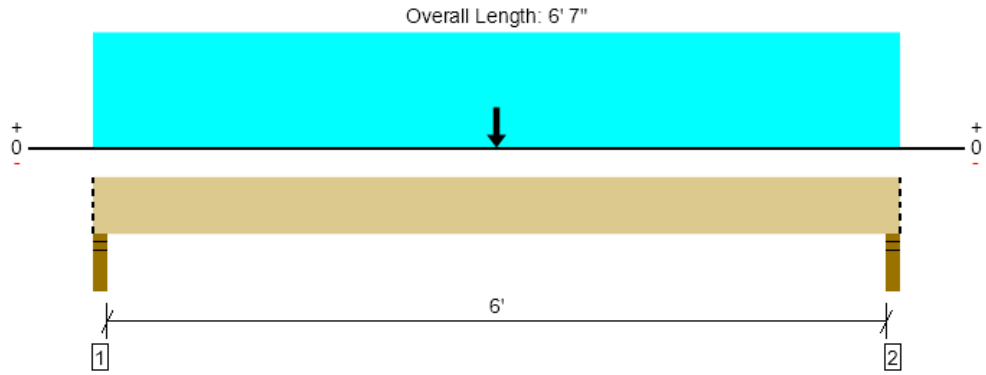
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Floor, 11/ Header

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4096 @ 2"	11484 (3.50")	Passed (36%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3544 @ 10 3/4"	7232	Passed (49%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	9469 @ 3' 3 1/2"	10672	Passed (89%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.122 @ 3' 3 1/2"	0.208	Passed (L/615)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.210 @ 3' 3 1/2"	0.313	Passed (L/357)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.50"	1665	2431	800	4096	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	1665	2431	800	4096	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' 7" o/c	
Bottom Edge (Lu)	6' 7" 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' 7"	N/A	11.1	--	--	
1 - Uniform (PSF)	0 to 6' 7" (Front)	11'	15.0	40.0	-	Default Load
2 - Point (lb)	3' 3 1/2" (Front)	N/A	2170	1965	1600	

Member Notes

(converted from: Roof Flush Beam)

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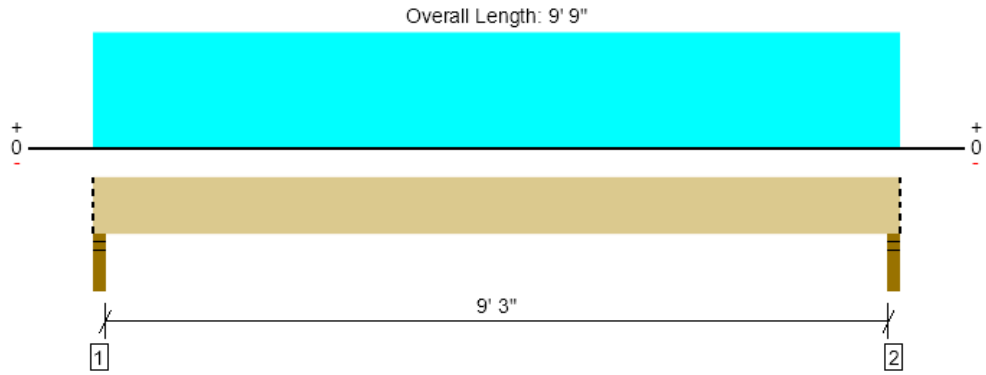
ForteWEB Software Operator	Job Notes
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	

Weyerhaeuser

Main Floor, 12/ Flush Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2745 @ 1 1/2"	6563 (3.00")	Passed (42%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2047 @ 1' 2 7/8"	8590	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	6351 @ 4' 10 1/2"	15953	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.113 @ 4' 10 1/2"	0.237	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.159 @ 4' 10 1/2"	0.475	Passed (L/717)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	3.00"	3.00"	1.50"	795	1950	2745	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	795	1950	2745	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' 9" o/c	
Bottom Edge (Lu)	9' 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 9' 9"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 9' 9" (Front)	10'	15.0	40.0	Default Load

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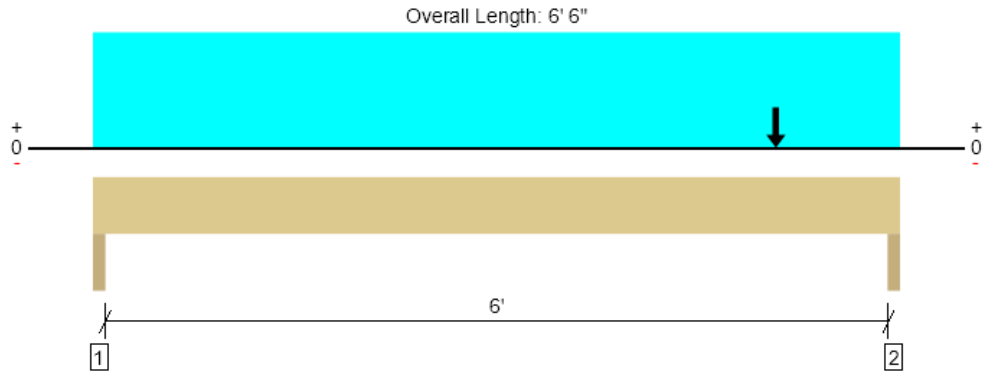
ForteWEB Software Operator	Job Notes
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	

Weyerhaeuser

Main Floor, South header, 6' span
2 piece(s) 2 x 8 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1675 @ 6' 4 1/2"	3645 (3.00")	Passed (46%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1653 @ 5' 7 3/4"	2501	Passed (66%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1453 @ 5' 6"	2569	Passed (57%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.037 @ 3' 6 3/16"	0.208	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.064 @ 3' 6 5/16"	0.313	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Trimmer - HF	3.00"	3.00"	1.50"	179	173	163	431	None
2 - Trimmer - HF	3.00"	3.00"	1.50"	674	173	1001	1675	None

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	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 6"	N/A	5.5	--	--	
1 - Uniform (PSF)	0 to 6' 6"	1' 4"	15.0	40.0	-	Floor
2 - Point (lb)	5' 6"	N/A	687	-	1164	Linked from: 9/ Header, low roof, Support 1

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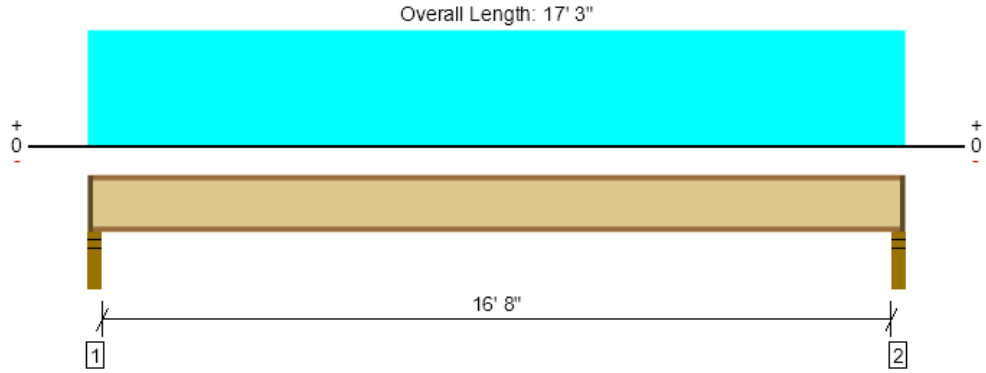
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Floor, New Main Floor 16'-8" Span
1 piece(s) 11 7/8" TJI® 110 @ 12" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	469 @ 2 1/2"	1041 (2.25")	Passed (45%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	458 @ 3 1/2"	1560	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1948 @ 8' 7 1/2"	3160	Passed (62%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.249 @ 8' 7 1/2"	0.421	Passed (L/812)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.342 @ 8' 7 1/2"	0.842	Passed (L/591)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	46	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
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
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - SPF	3.50"	2.25"	1.75"	129	345	474	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.75"	129	345	474	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)	4' o/c	
Bottom Edge (Lu)	17' 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)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 17' 3"	12"	15.0	40.0	Default Load

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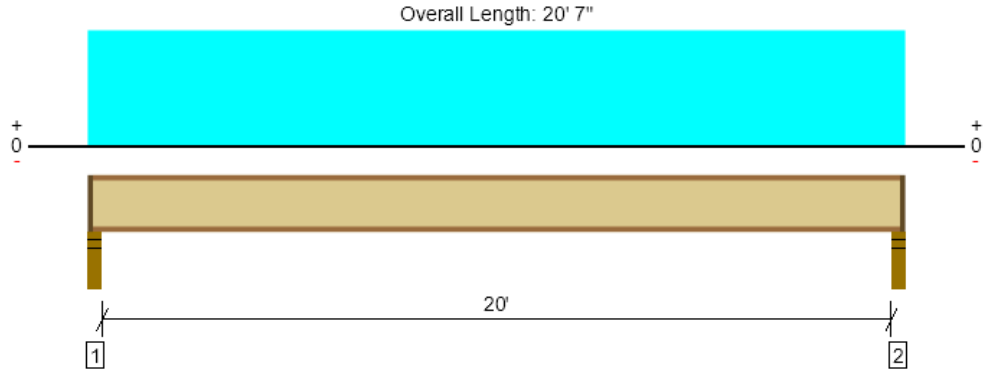
ForteWEB Software Operator	Job Notes
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	

Weyerhaeuser

Main Floor, New Main Floor 20'-0" Span
2 piece(s) 11 7/8" TJI® 110 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	747 @ 2 1/2"	2083 (2.25")	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	733 @ 3 1/2"	3120	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3728 @ 10' 3 1/2"	6320	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.346 @ 10' 3 1/2"	0.504	Passed (L/700)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.475 @ 10' 3 1/2"	1.008	Passed (L/509)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	42	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
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
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - SPF	3.50"	2.25"	1.75"	206	549	755	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.75"	206	549	755	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)	4' 2" o/c	
Bottom Edge (Lu)	20' 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 20' 7"	16"	15.0	40.0	Default Load

Weyerhaeuser Notes

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

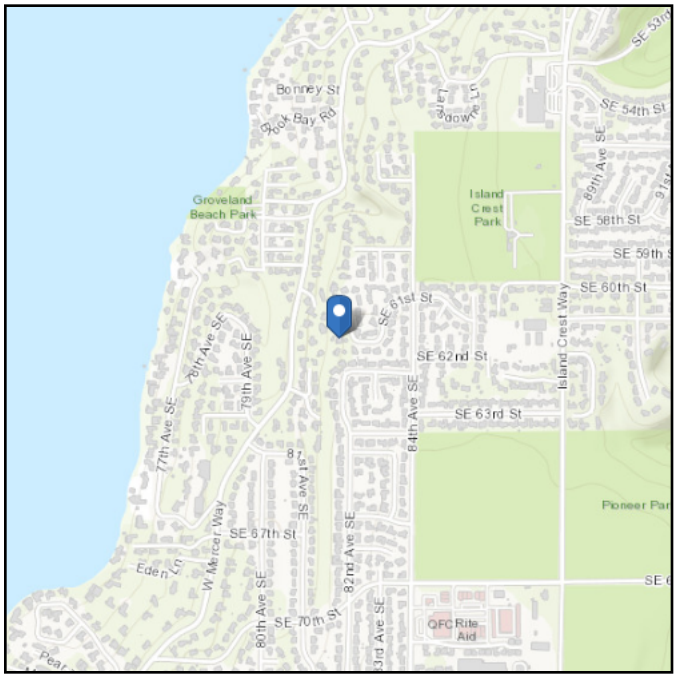
ForteWEB Software Operator	Job Notes
Steven Nickolas Carter Quinn Norlin (206) 264-7784 ssn@cqn-se.com	

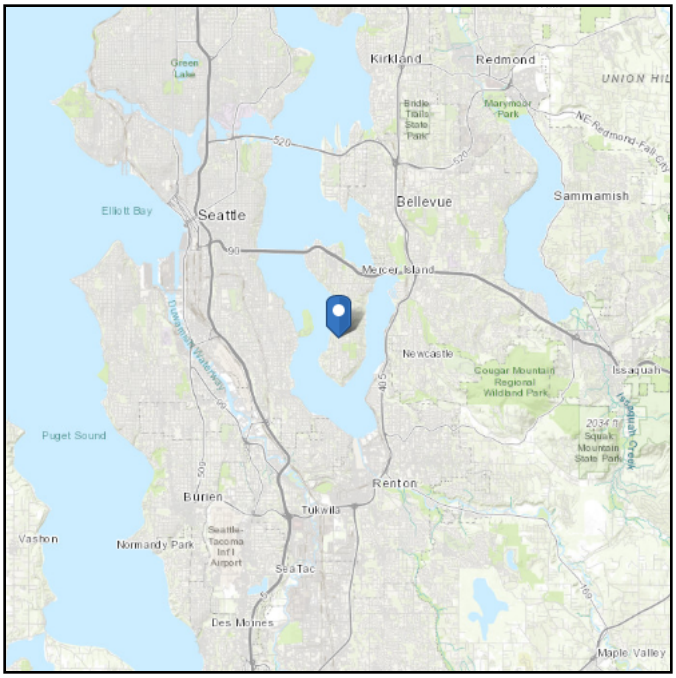
Weyerhaeuser

ASCE 7 Hazards Report

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

Standard:	ASCE/SEI 7-16	**Latitude:**	47.547915
Risk Category:	II	**Longitude:**	-122.22965
Soil Class:	D - Default (see Section 11.4.3)	**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.

Seismic

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

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Seismic (Overall - R=3.5)

Project: Nestler-Spare Residence (House)

Seismic Design Parameters		
Site Class	D	
Risk Category	II	*Table 1.5-1*
Importance Factor	1	*Table 1.5-2*
Ss	1.464	*From USGS*
S1	0.508	
Fa	1.000	*Table 11.4-1*
Fv	1.800	*Table 11.4-2*
Sms	1.464	*Eq. 11.4-1*
Sm1	0.914	*Eq. 11.4-2*
Sds	0.976	*Eq. 11.4-3*
Sd1	0.610	*Eq. 11.4-4*
R	3.5	*Table 12.2-1*
C_s	0.279	*Eq. 12.8-2*
T_a	0.229	*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)	52.1	*Eq. 12.8-1*
$V_{allowable}$ (k)	36.5	

Level	Weight (k)	Height (ft)	$w_x f_x^k$	C_{vx}	F_x (ult.)	F_x (allow.)
Roof	95.8375	25.83	2475.5	0.73	38.0	26.6
Upper Floor	19.8	16.58	328.3	0.10	5.0	3.5
Main Floor	71.25	8.25	587.8	0.17	9.0	6.3
TOTAL	186.9	-	3391.6	1	52.1	36.5

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

Seismic (Overall - R=6.5)

Project: Nestler-Spare Residence (House)

Seismic Design Parameters		
Site Class	D	
Risk Category	II	*Table 1.5-1*
Importance Factor	1	*Table 1.5-2*
Ss	1.464	*From USGS*
S1	0.508	
Fa	1.000	*Table 11.4-1*
Fv	1.800	*Table 11.4-2*
Sms	1.464	*Eq. 11.4-1*
Sm1	0.914	*Eq. 11.4-2*
Sds	0.976	*Eq. 11.4-3*
Sd1	0.610	*Eq. 11.4-4*
R	6.5	*Table 12.2-1*
C_s	0.150	*Eq. 12.8-2*
T_a	0.229	*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)	28.1	*Eq. 12.8-1*
$V_{allowable}$ (k)	19.6	

Level	Weight (k)	Height (ft)	$w_x f_x^k$	C_{vx}	F_x (ult.)	F_x (allow.)
Roof	95.8375	25.83	2475.5	0.73	20.5	14.3
Upper Floor	19.8	16.58	328.3	0.10	2.7	1.9
Main Floor	71.25	8.25	587.8	0.17	4.9	3.4
TOTAL	186.9	-	3391.6	1	28.1	19.6

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

Project: Nestler-Spare Residence (House)

Wind Load Parameters

Chapter 28 - Envelope Procedure

Exposure	C	*Sec. 26.7*
Risk Category	II	*Table 1.5-1*
Mean Roof Height (ft)	25.83	
Roof Slope (X/12)	1	
Angle	4.8	
a (ft)	3	*Figure 28.3-1 Note "a"*
K_d	0.85	*Table 26.6-1*
K_{zt}	1.6	
V (mph)	98	
K_z	0.95	*Table 26.10-1*
q_h (psf)	31.65	*Eq. 26.10-1*
Minimum Wind Pressure on Walls (psf)	16	*Sec. 28.3.4*
Minimum Wind Pressure on Roof (psf)	8	

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	45	58.25
Roof	8.83	4.415	45	58.25
Upper Floor	9	8.915	45	24
Main Floor	8.5	8.75	45	58.25
	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	78		0.79		0.99	0.72	0.60
Corners		12		0.20			
Roof - walls	172		3.76		4.63	3.18	2.78
Corners		26		0.87			
Upper Floor	348		7.59		9.35	6.42	5.61
Corners		53		1.76			
Main Floor	341		7.45		9.18	6.30	5.51
Corners		53		1.73			

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	111		2.41		2.61	0.93	1.57
Corners		6		0.20			
Roof - walls	244		5.33		5.76	4.11	3.46
Corners		13		0.44			
Upper Floor	187		4.09		4.97	3.42	2.98
Corners		27		0.88			
Main Floor	483		10.56		11.42	8.16	6.85
Corners		26		0.86			

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	5.62	3.37	8.37	5.02
Upper Floor	9.35	5.61	4.97	2.98
Main Floor	9.18	5.51	11.42	6.85
Base Shear	24.16	14.50	24.77	14.86

Project: Nestler-Spare Residence (Garage)

Wind Load Parameters

Chapter 28 - Envelope Procedure

Exposure	C	*Sec. 26.7*
Risk Category	II	*Table 1.5-1*
Mean Roof Height (ft)	25.83	
Roof Slope (X/12)	1	
Angle	4.8	
a (ft)	3	*Figure 28.3-1 Note "a"*
K_d	0.85	*Table 26.6-1*
K_{zt}	1.6	
V (mph)	98	
K_z	0.95	*Table 26.10-1*
q_h (psf)	31.65	*Eq. 26.10-1*
Minimum Wind Pressure on Walls (psf)	16	*Sec. 28.3.4*
Minimum Wind Pressure on Roof (psf)	8	

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	29.5	22.5
Roof	12	6	29.5	22.5

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

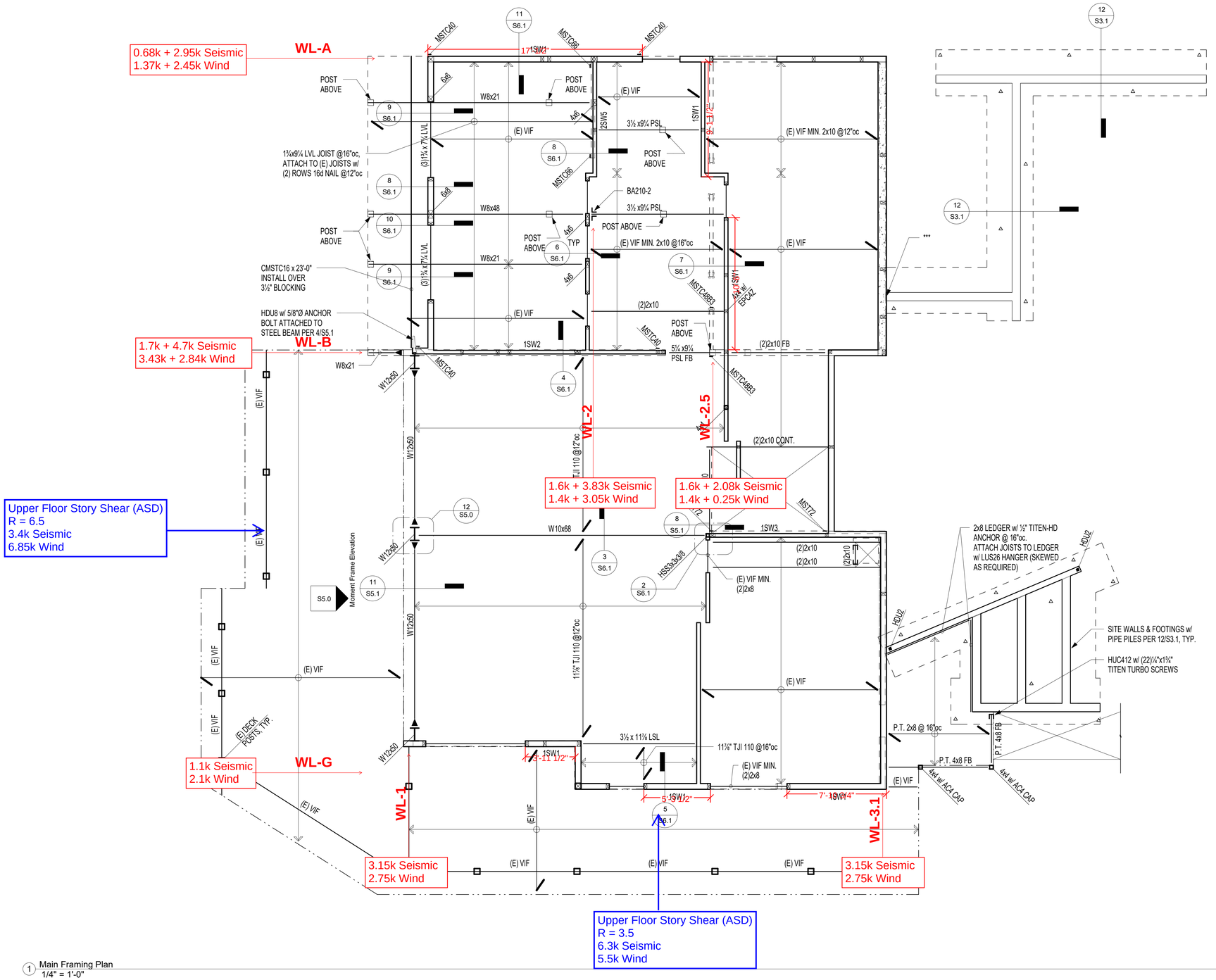
Level	A (ft^2)		$F = q_h*GC_{pf}*A$ (k)		Total Wind Load (Ultimate, k)	Minimum Load (Ultimate, k)	Total (allowable, k)
Roof - roof	47		0.47		0.68	0.47	0.41
Corners		12		0.20			
Roof - walls	141		3.08		4.26	2.83	2.56
Corners		36		1.19			

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	39		0.85		1.05	0.36	0.63
Corners		6		0.20			
Roof - walls	117		2.56		3.15	2.16	1.89
Corners		18		0.59			

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	4.94	2.97	4.20	2.52
Base Shear	4.94	2.97	4.20	2.52



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

FOUNDATION PLAN LEGEND

- ABRUPT CHANGE IN SLAB/FRAMING ELEVATION
- INDICATES EXISTING FOUNDATION
- INDICATES NEW FOUNDATION
- X / SX.XX — INDICATES DETAIL X ON SHEET SX.XX
- HDUX — 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

1. SLABS ON GRADE SHALL BE 4" THICK WITH 6x6 W1.4xW1.4 WWM CENTERED, U.N.O. PREPARED SOILS AND PROVIDE MINIMUM 6-MIL VISQUEEN VAPOR BARRIER UNDER ALL SLABS.
2. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS AND TOP OF SLAB ELEVATIONS.
3. ALL HOLDOWNS TO BE INSTALLED AS REQUIRED BY MANUFACTURER. REFER TO HOLDOWN SCHEDULE 10/S3.0.
4. 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
- X / SX.XX — INDICATES DETAIL X ON SHEET SX.XX
- FRAMING SPAN AND EXTENTS

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 24/0). 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)2x8 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 1½" x 3½" LSL STUDS @ 16"oc.

ECTYPOS ARCHITECTURE
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NESTLER-SPARE RESIDENCE

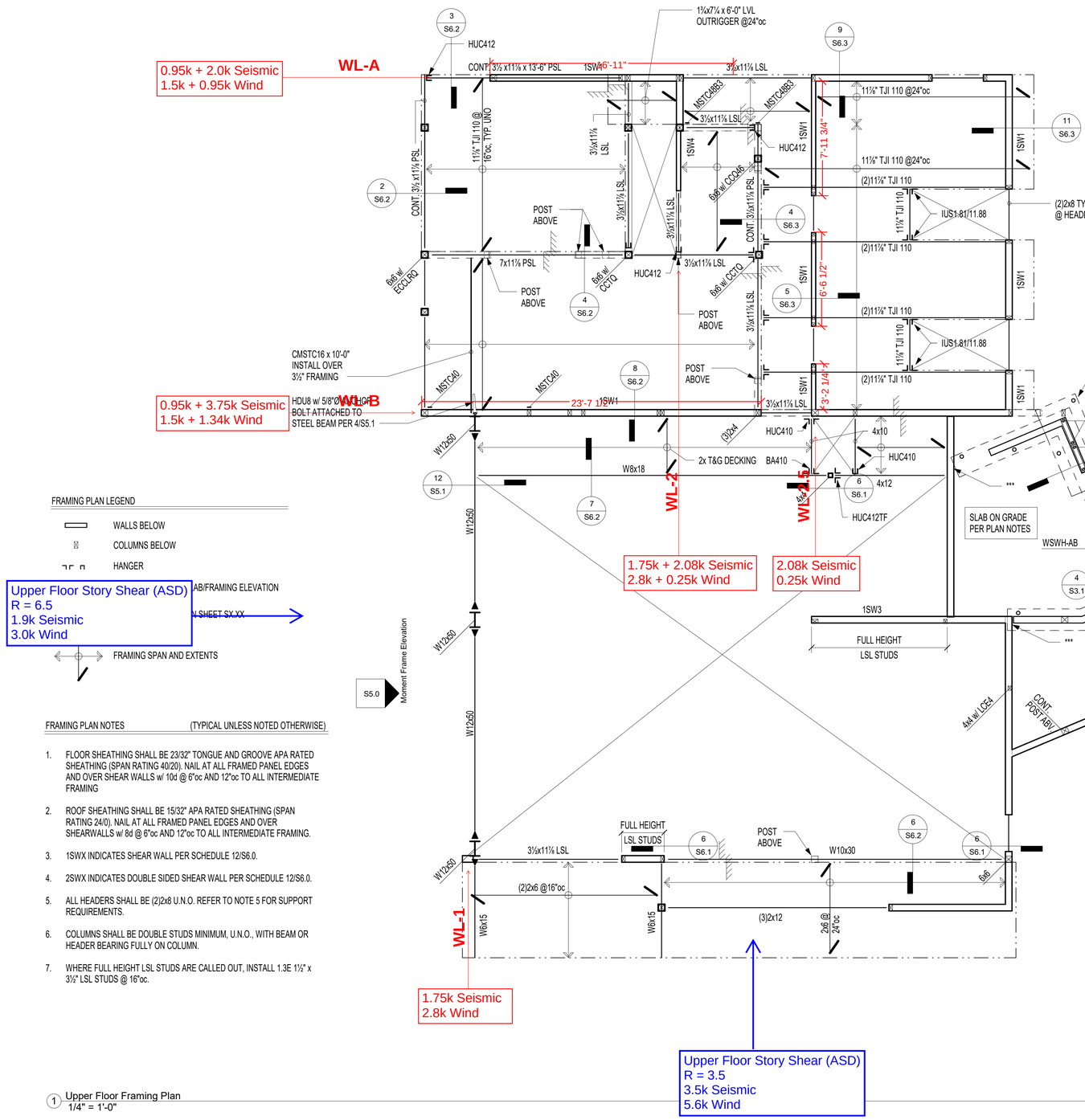
Remodel/Addition
8265 SE 61ST ST
Mercer Island, WA 98040

Date:

Scale:

Sheet: Main Floor Framing Plan

S2.1



FRAMING PLAN LEGEND

- WALLS BELOW
- COLUMNS BELOW
- HANGER
- AB/FRAMING ELEVATION
- N SHEET SX.XX
- FRAMING SPAN AND EXTENTS

Upper Floor Story Shear (ASD)
R = 6.5
1.9k Seismic
3.0k Wind

S5.0 Moment Frame Elevation

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 24/0). NAIL AT ALL FRAMED PANEL EDGES AND OVER SHEARWALLS w/ 8d @ 6"oc AND 12"oc TO ALL INTERMEDIATE FRAMING.
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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 1½" x 3½" LSL STUDS @ 16"oc.

1 Upper Floor Framing Plan
1/4" = 1'-0"

FOUNDATION PLAN LEGEND

- ABRUPT CHANGE IN SLAB/FRAMING ELEVATION
- INDICATES EXISTING FOUNDATION
- INDICATES NEW FOUNDATION
- X / SX.XX — INDICATES DETAIL X ON SHEET SX.XX
- HDUX — 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

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

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NESTLER-SPARE RESIDENCE

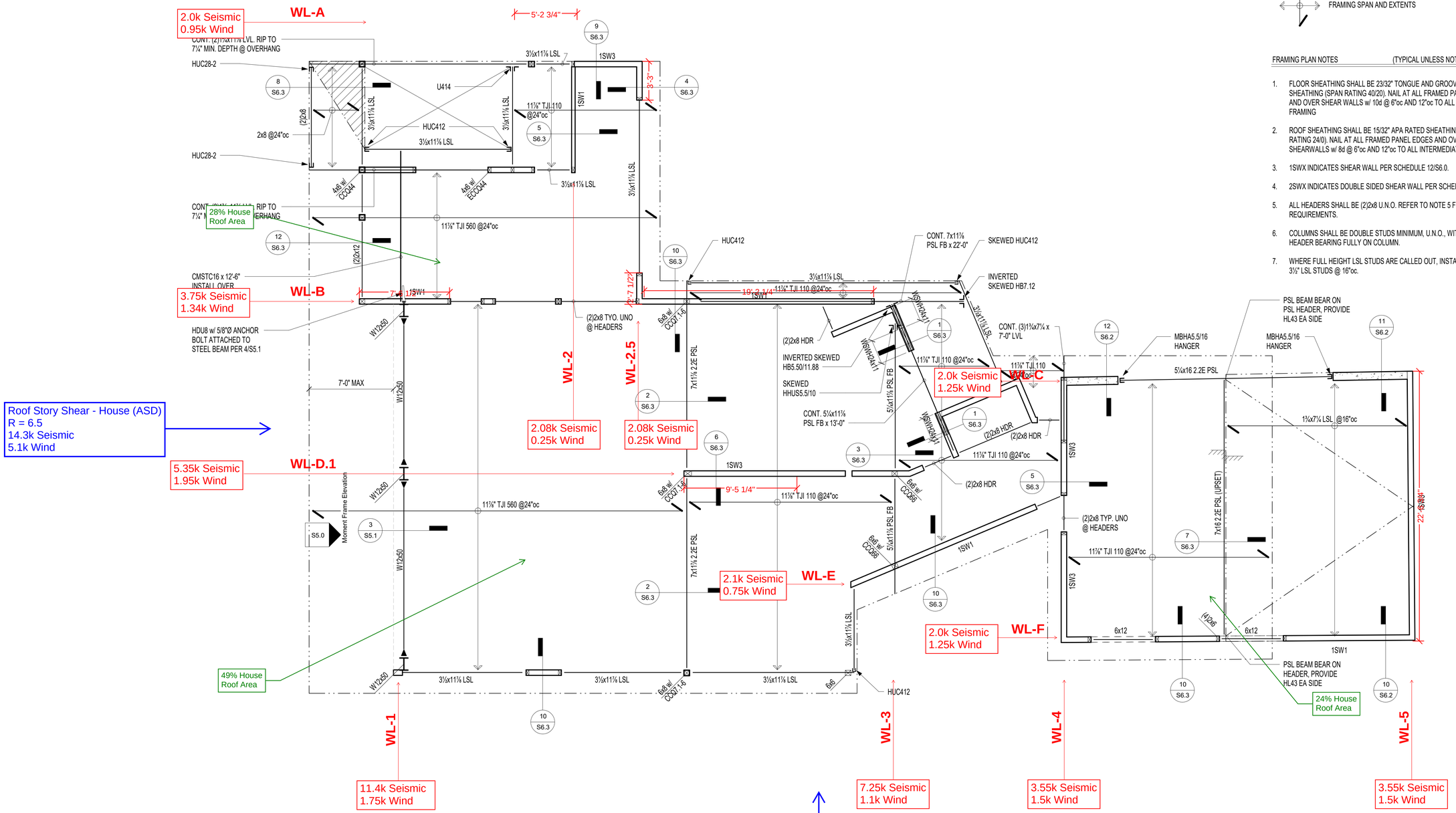
Remodel/Addition
8265 SE 61ST ST
Mercer Island, WA 98040

Date:

Scale:

Sheet: Upper Floor Framing Plan

S2.2



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

FRAMING PLAN LEGEND

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

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
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7. WHERE FULL HEIGHT LSL STUDS ARE CALLED OUT, INSTALL 1.3E 1⅛" x 3½" LSL STUDS @ 16"oc.

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NESTLER-SPARE RESIDENCE

Remodel/Addition
8265 SE 61ST ST
Mercer Island, WA 98040

Date:

Scale:

Sheet: Roof Framing Plan

S2.3

WL-A

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	5.83	2	0.95	10.5
Upper Floor	17	2.95	2.45	9
Main Floor	17	3.63	3.82	8.5

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)		
5.83	1.80	1.00	343	163	612	58	3.40	1.51
		Shear Wall	SW-2			Strap Tie	MSTC52	

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)		
17	0.53	1.00	174	144	1530	170	1.05	0.79
		Shear Wall	SW-1			Strap Tie	MSTC40	

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	0.50	1.00	214	225	1445	170	1.33	1.43
		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

WL-B

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	28.5	3.75	1.34	11
Upper Floor	23.5	4.7	2.84	9
Main Floor	23.5	6.4	6.27	8.5

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)		
7.5	1.47	1.00	132	47	825	75	1.18	0.25
21	0.52	1.00	132	47	2310	210	0.69	-0.24
		Shear Wall	SW-1			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)		
23.5	0.38	1.00	200	121	2115	235	1.10	0.38
		Shear Wall	SW-1			Strap Tie	MSTC40	

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)		
23.5	0.36	1.00	272	267	1998	235	1.65	1.60
		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-D.1

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	13.25	5.35	1.95	9
Main Floor	13.25	5.35	1.95	8.5

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)		
13.25	0.68	1.00	404	147	1193	133	3.24	0.93
		Shear Wall	SW-3			Strap Tie	MSTC52	

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)		
13.25	0.64	1.00	404	147	1126	133	6.29	1.80
		Shear Wall	SW-3			Holdown	HDU8 w/ (3) 2x	

[1] Increase per 4.3.4.2 ANSI/AWC SDPWS-2015

[2] Per Table 4.3.4 ANSI/AWC SDPWS-2015

WL-E

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	13.67	2.1	0.75	12

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)		
13.67	0.88	1.00	154	55	1640	137	1.31	0.13
		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

WL-F

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	10.83	2	1.25	12

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)		
10.83	1.11	1.00	185	115	1300	108	1.79	0.96
		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

WL-G

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Main Floor	17.08	1.1	2.1	8.5

Max H/W Ratio [2] 3.5

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	2.13	1.02	65	123	340	40	0.43	0.93
5.25	1.62	1.00	64	123	446	53	0.40	0.90
7.83	1.09	1.00	64	123	666	78	0.32	0.82
		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	12.75	2.08	0.25	10
Upper Floor	8	3.83	3.05	9
Main Floor	9	5.43	6.1	8.5

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)		
12.75	0.78	1.00	163	20	1275	956	0.96	-0.47
		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	1.13	1.00	479	381	720	80	4.07	3.19
		Shear Wall	SW-4			Strap Tie	MSTC66	

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)		
9	0.94	1.00	603	678	765	90	4.87	5.50
		Shear Wall	SW-5			Holdown	HDU8 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-2.5

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Upper Floor	17.75	2.08	0.25	11.25
Main Floor	19.6	3.68	1.65	8.5

Max H/W Ratio [2] 3.5

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	1.41	1.00	117	14	900	1020	0.74	-0.42
6.5	1.73	1.00	117	14	731	829	0.85	-0.31
3.25	3.46	1.22	143	14	366	414	1.08	-0.08
		Shear Wall	SW-1			Strap Tie	MSTC40	

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)		
10.5	0.81	1.00	188	84	893	105	1.30	0.42
9.1	0.93	1.00	188	84	774	91	1.34	0.46
		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

WL-3

- USE SIMPSON SHEAR WALLS

$V_{seismic} = 7.75k$ (governs)

$V_{WIND} = 1.1k$

- CHECK (3) WSWH24x11

CAPACITY SEISMIC = 4000lb x 3 = 12,000lb

- SINCE PANELS ARE AT AN ANGLE TO MAIN AXIS, SCALE CAPACITY BY PROJECTED LENGTH REDUCTION

$\theta = 67° \rightarrow \sin 67° = 0.92 \rightarrow 92\%$ reduction

- REDUCED CAPACITY = 0.92(12,000lb) = 11,040lb > 7,750 lb ∴ OK

ANCHORAGE

$V = 7750/3 = 2417\,lb$, $H = 129.25"$, $b = 17.5"$

$$T = \frac{VH}{b} = \frac{(2417\,lb)(129.25")}{17.5"} = 17,851\,lb$$

- PER SIMPSON CATALOG,

USE 4'-6" x 3'-0" x 18" FOOTING

WL-4

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	8.58	3.55	1.5	12

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)		
8.58	1.40	1.00	414	175	1030	86	4.63	1.76
		Shear Wall	SW-3			Holdown	HDU8 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-5

Level	Total Wall Line Lengths (ft)	Seismic Forces (k)	Wind Forces (k)	Story Heights (ft)
Roof	22.5	3.55	1.5	12

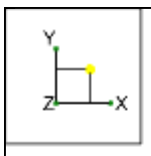
Max H/W Ratio [2] 3.5

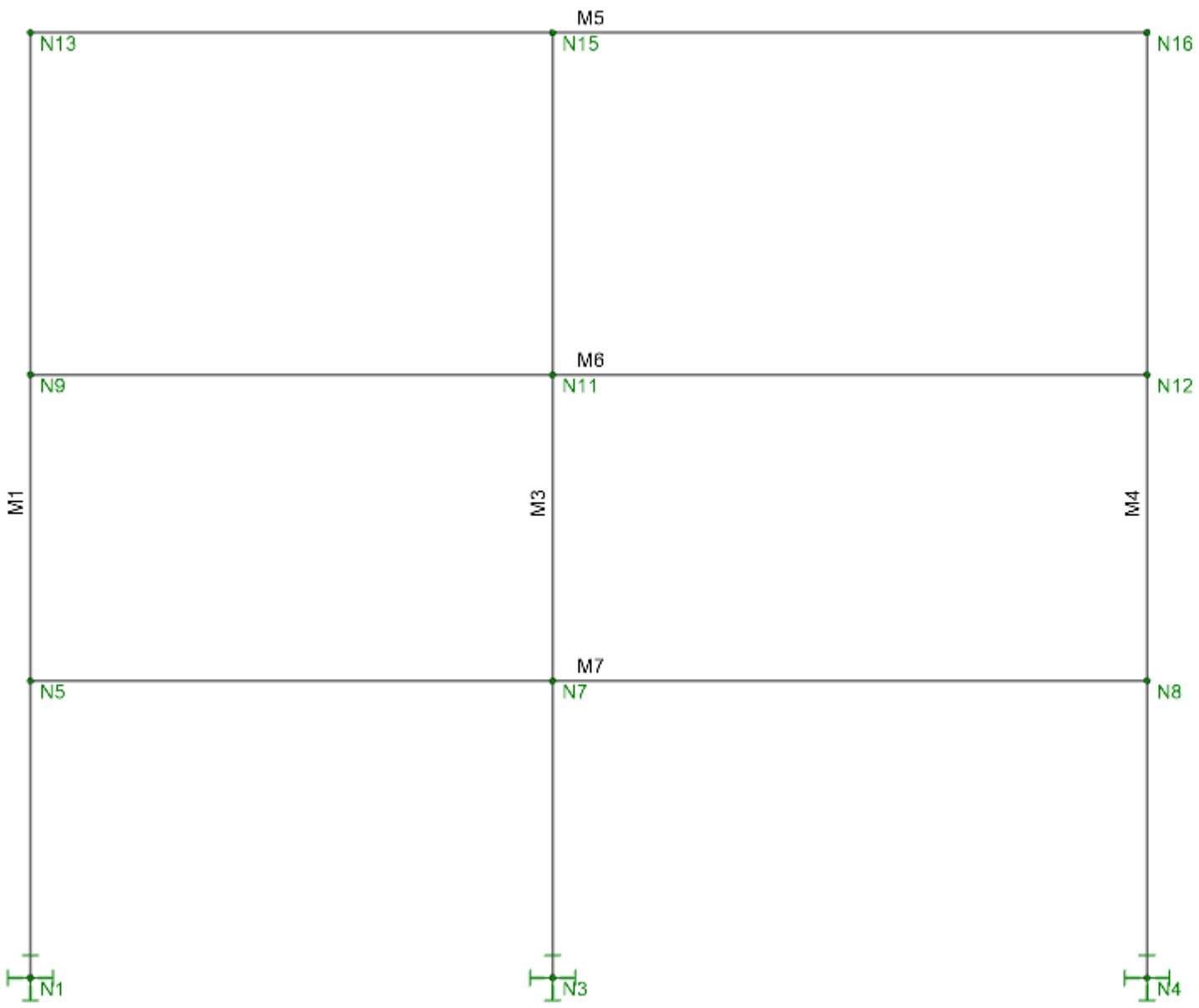
ROOF

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	0.53	1.00	158	67	2700	225	1.02	-0.08
		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





RISA A NEMETSCHEK COMPANY	BCQ	Neslter-Spare Moment Frame	SK-1
	ssn		Feb 06, 2024 at 07:49 AM
			Nestler-Spare Moment Frame_3 Colum…

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 14th (360-10): ASD
Cold Formed Steel	AISI S100-16: ASD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-18 / SDPWS-15 ASD
Temperature	< 100F
Concrete	ACI 318-14
Masonry	TMS 402-16: ASD
Aluminum	AA ADM1-15: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)

Analysis Methodology	Exact Integration Method
Parme Beta Factor	0.65

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	Yes
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
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes
S_1 (g)	1
SD_1 (g)	1
SD_s (g)	1
T_L (sec)	5
T Z (sec)	
T X (sec)	
C_tZ	0.02
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	3.5
R X	3.5
$\Omega_0 Z$	1
$\Omega_0 X$	1
$C_d Z$	3
$C_d X$	3
ρ Z	1
ρ X	1

Model Settings (Continued)

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N1	0	0	0	
2	N3	14.5	0	0	
3	N4	31	0	0	
4	N5	0	8.25	0	
5	N7	14.5	8.25	0	
6	N8	31	8.25	0	
7	N9	0	16.75	0	
8	N11	14.5	16.75	0	
9	N12	31	16.75	0	
10	N13	0	26.25	0	
11	N15	14.5	26.25	0	
12	N16	31	26.25	0	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction
2	N3	Reaction	Reaction	Reaction	Reaction	Reaction
3	N4	Reaction	Reaction	Reaction	Reaction	Reaction

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	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.25	65	1.15
8	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	W12X50	Column	Wide Flange	A992	Typical	14.6	56.3	391	1.71
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	W12X50	Beam	Wide Flange	A992	Typical	14.6	56.3	391	1.71

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N13	Columns	Column	Wide Flange	A992	Typical
2	M3	N3	N15	Columns	Column	Wide Flange	A992	Typical
3	M4	N4	N16	Columns	Column	Wide Flange	A992	Typical
4	M5	N13	N16	Roof Beam	Beam	Wide Flange	A992	Typical
5	M6	N9	N12	Upper Floor Beam	Beam	Wide Flange	A992	Typical
6	M7	N5	N8	Main Floor Beam	Beam	Wide Flange	A992	Typical

Member Advanced Data

	Label	Physical	Deflection Ratio Options	Seismic DR
1	M1	Yes	** NA **	None
2	M3	Yes	** NA **	None
3	M4	Yes	** NA **	None
4	M5	Yes	Default	None
5	M6	Yes	Default	None
6	M7	Yes	Default	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	M1	Columns	26.25	Lbyy	N/A	N/A	Lateral
2	M3	Columns	26.25	Lbyy	N/A	N/A	Lateral
3	M4	Columns	26.25	Lbyy	N/A	N/A	Lateral
4	M5	Roof Beam	31	Lbyy	N/A	N/A	Lateral
5	M6	Upper Floor Beam	31	Lbyy	N/A	N/A	Lateral
6	M7	Main Floor Beam	31	Lbyy	N/A	N/A	Lateral

Drift Definitions

	Type	Floor/Diaphragm	Node Label	Elevation [ft]
1	Node	-	N16	26.25
2	Node	-	N12	16.75
3	Node	-	N8	8.25

Basic Load Cases

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

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	N7	L	Y	-3.35

Node Loads and Enforced Displacements (BLC 2 : Live)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	N7	L	Y	-7.37

Node Loads and Enforced Displacements (BLC 4 : Seismic)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	N13	L	X	16.3
2	N9	L	X	2.5
3	N5	L	X	4.5

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	M5	Y	-0.225	-0.225	0	%100
2	M7	Y	-0.15	-0.15	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	M7	Y	-0.4	-0.4	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	M5	Y	-0.375	-0.375	0	%100

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	Deflection 1		Y	DL	1						
2	Deflection 2		Y	LL	1						
3	Deflection 3		Y	DL	1	LL	1				
4	IBC 16-8	Yes	Y	DL	1						
5	IBC 16-9	Yes	Y	DL	1	LL	1				
6	IBC 16-10 (b)	Yes	Y	DL	1	SL	1				
7	IBC 16-11 (b)	Yes	Y	DL	1	LL	0.75	SL	0.75		
8	IBC 16-12 (b)	Yes	Y	DL	1	EL	0.7				
9	IBC 16-14	Yes	Y	DL	1	EL	0.525	LL	0.75	SL	0.75
10	IBC 16-16	Yes	Y	DL	0.6	EL	0.7				
11	IBC 16-12 (b) reverse	Yes	Y	DL	1	EL	-0.7				
12	IBC 16-14 reverse	Yes	Y	DL	1	EL	-0.525	LL	0.75	SL	0.75
13	IBC 16-16 reverse	Yes	Y	DL	0.6	EL	-0.7				
14	DRIFT		Y	EL	1						
15	D		Y	DL	1						
16	L		Y	LL	1						
17	S		Y	SL	1						
18	E		Y	EL	1						

Node Reactions

	LC	Node Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N1	0.154	5.423	0	0	0	0
2	4	N3	0.055	13.273	0	0	0	0
3	4	N4	-0.208	5.482	0	0	0	0
4	4	Totals:	0	24.178	0			
5	4	COG (ft):	X: 14.989	Y: 16.155	Z: 0			
6	5	N1	0.46	9.135	0	0	0	0
7	5	N3	0.161	27.216	0	0	0	0
8	5	N4	-0.621	8.757	0	0	0	0
9	5	Totals:	0	45.108	0			
10	5	COG (ft):	X: 14.767	Y: 12.706	Z: 0			
11	6	N1	0.164	7.947	0	0	0	0
12	6	N3	0.058	19.451	0	0	0	0
13	6	N4	-0.221	8.405	0	0	0	0
14	6	Totals:	0	35.803	0			
15	6	COG (ft):	X: 15.155	Y: 19.433	Z: 0			
16	7	N1	0.391	10.1	0	0	0	0
17	7	N3	0.137	28.364	0	0	0	0
18	7	N4	-0.528	10.13	0	0	0	0
19	7	Totals:	0	48.594	0			
20	7	COG (ft):	X: 14.926	Y: 15.565	Z: 0			
21	8	N1	-4.902	-7.406	0	0	0	0
22	8	N3	-6.542	15.756	0	0	0	0
23	8	N4	-4.866	15.828	0	0	0	0
24	8	Totals:	-16.31	24.178	0			
25	8	COG (ft):	X: 14.989	Y: 16.155	Z: 0			
26	9	N1	-3.4	0.427	0	0	0	0
27	9	N3	-4.786	30.236	0	0	0	0
28	9	N4	-4.047	17.93	0	0	0	0
29	9	Totals:	-12.233	48.594	0			
30	9	COG (ft):	X: 14.926	Y: 15.565	Z: 0			
31	10	N1	-4.958	-9.548	0	0	0	0
32	10	N3	-6.574	10.442	0	0	0	0
33	10	N4	-4.778	13.613	0	0	0	0
34	10	Totals:	-16.31	14.507	0			
35	10	COG (ft):	X: 14.989	Y: 16.155	Z: 0			
36	11	N1	5.04	18.251	0	0	0	0
37	11	N3	6.684	10.791	0	0	0	0
38	11	N4	4.585	-4.864	0	0	0	0
39	11	Totals:	16.31	24.178	0			
40	11	COG (ft):	X: 14.989	Y: 16.155	Z: 0			
41	12	N1	4.085	19.771	0	0	0	0
42	12	N3	5.078	26.493	0	0	0	0

Node Reactions (Continued)

	LC	Node Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
43	12	N4	3.069	2.33	0	0	0	0
44	12	Totals:	12.233	48.594	0			
45	12	COG (ft):	X: 14.926	Y: 15.565	Z: 0			
46	13	N1	4.974	16.054	0	0	0	0
47	13	N3	6.673	5.488	0	0	0	0
48	13	N4	4.664	-7.035	0	0	0	0
49	13	Totals:	16.31	14.507	0			
50	13	COG (ft):	X: 14.989	Y: 16.155	Z: 0			

Node Displacements

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
1	4	N1	0	0	0	0	0	2.754e-5
2	4	N3	0	0	0	0	0	1.118e-5
3	4	N4	0	0	0	0	0	-3.08e-5
4	4	N5	0	-0.002	0	0	0	-5.551e-5
5	4	N7	0	-0.004	0	0	0	-1.829e-5
6	4	N8	0	-0.002	0	0	0	8.167e-5
7	4	N9	0	-0.003	0	0	0	-1.764e-5
8	4	N11	0	-0.006	0	0	0	1.156e-5
9	4	N12	0	-0.003	0	0	0	-2.308e-5
10	4	N13	0	-0.003	0	0	0	-1.262e-4
11	4	N15	0	-0.007	0	0	0	-3.761e-5
12	4	N16	0	-0.003	0	0	0	1.915e-4
13	5	N1	0	0	0	0	0	8.386e-5
14	5	N3	0	0	0	0	0	3.476e-5
15	5	N4	0	0	0	0	0	-9.021e-5
16	5	N5	-0.001	-0.003	0	0	0	-1.647e-4
17	5	N7	-0.001	-0.008	0	0	0	-5.241e-5
18	5	N8	-0.001	-0.002	0	0	0	2.451e-4
19	5	N9	0	-0.004	0	0	0	-5.268e-5
20	5	N11	0	-0.01	0	0	0	2.857e-5
21	5	N12	0	-0.004	0	0	0	-5.532e-5
22	5	N13	0.001	-0.005	0	0	0	-1.308e-4
23	5	N15	0.001	-0.011	0	0	0	-4.742e-5
24	5	N16	0.001	-0.004	0	0	0	2.003e-4
25	6	N1	0	0	0	0	0	2.798e-5
26	6	N3	0	0	0	0	0	1.092e-5
27	6	N4	0	0	0	0	0	-3.308e-5
28	6	N5	0	-0.002	0	0	0	-6.044e-5
29	6	N7	0	-0.006	0	0	0	-2.033e-5
30	6	N8	0	-0.002	0	0	0	8.653e-5
31	6	N9	0	-0.004	0	0	0	6.503e-6
32	6	N11	0	-0.009	0	0	0	1.94e-5
33	6	N12	0.001	-0.004	0	0	0	-5.96e-5
34	6	N13	0	-0.006	0	0	0	-3.002e-4
35	6	N15	0	-0.013	0	0	0	-8.278e-5
36	6	N16	-0.001	-0.006	0	0	0	4.539e-4
37	7	N1	0	0	0	0	0	7.011e-5
38	7	N3	0	0	0	0	0	2.867e-5
39	7	N4	0	0	0	0	0	-7.707e-5
40	7	N5	-0.001	-0.003	0	0	0	-1.411e-4
41	7	N7	-0.001	-0.008	0	0	0	-4.541e-5
42	7	N8	-0.001	-0.003	0	0	0	2.079e-4
43	7	N9	0	-0.005	0	0	0	-2.582e-5
44	7	N11	0	-0.011	0	0	0	3.019e-5
45	7	N12	0	-0.005	0	0	0	-7.466e-5
46	7	N13	0.001	-0.006	0	0	0	-2.602e-4
47	7	N15	0	-0.015	0	0	0	-7.886e-5
48	7	N16	0	-0.006	0	0	0	3.949e-4
49	8	N1	0	0	0	0	0	-4.929e-3
50	8	N3	0	0	0	0	0	-5.207e-3
51	8	N4	0	0	0	0	0	-4.932e-3
52	8	N5	0.412	0.002	0	0	0	-2.308e-3
53	8	N7	0.411	-0.005	0	0	0	-1.617e-3
54	8	N8	0.41	-0.005	0	0	0	-2.247e-3
55	8	N9	0.639	0.003	0	0	0	-1.453e-3
56	8	N11	0.638	-0.007	0	0	0	-1.134e-3
57	8	N12	0.638	-0.007	0	0	0	-1.473e-3
58	8	N13	0.826	0.003	0	0	0	-1.06e-3
59	8	N15	0.821	-0.009	0	0	0	-5.923e-4
60	8	N16	0.819	-0.009	0	0	0	-7.387e-4
61	9	N1	0	0	0	0	0	-3.681e-3
62	9	N3	0	0	0	0	0	-3.92e-3
63	9	N4	0	0	0	0	0	-3.785e-3
64	9	N5	0.311	0	0	0	0	-1.843e-3
65	9	N7	0.311	-0.009	0	0	0	-1.253e-3
66	9	N8	0.31	-0.005	0	0	0	-1.551e-3
67	9	N9	0.482	0	0	0	0	-1.106e-3
68	9	N11	0.482	-0.012	0	0	0	-8.319e-4
69	9	N12	0.482	-0.008	0	0	0	-1.166e-3
70	9	N13	0.624	-0.001	0	0	0	-9.626e-4
71	9	N15	0.62	-0.016	0	0	0	-4.96e-4
72	9	N16	0.618	-0.01	0	0	0	-3.046e-4
73	10	N1	0	0	0	0	0	-4.923e-3
74	10	N3	0	0	0	0	0	-5.193e-3
75	10	N4	0	0	0	0	0	-4.902e-3
76	10	N5	0.411	0.003	0	0	0	-2.28e-3
77	10	N7	0.41	-0.003	0	0	0	-1.605e-3
78	10	N8	0.409	-0.004	0	0	0	-2.273e-3
79	10	N9	0.637	0.004	0	0	0	-1.443e-3
80	10	N11	0.636	-0.004	0	0	0	-1.136e-3
81	10	N12	0.636	-0.006	0	0	0	-1.462e-3
82	10	N13	0.823	0.005	0	0	0	-1.009e-3
83	10	N15	0.819	-0.006	0	0	0	-5.766e-4
84	10	N16	0.817	-0.007	0	0	0	-8.143e-4

Node Displacements (Continued)

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
85	11	N1	0	0	0	0	0	4.985e-3
86	11	N3	0	0	0	0	0	5.229e-3
87	11	N4	0	0	0	0	0	4.869e-3
88	11	N5	-0.413	-0.005	0	0	0	2.197e-3
89	11	N7	-0.412	-0.003	0	0	0	1.58e-3
90	11	N8	-0.411	0.001	0	0	0	2.41e-3
91	11	N9	-0.639	-0.008	0	0	0	1.417e-3
92	11	N11	-0.638	-0.005	0	0	0	1.157e-3
93	11	N12	-0.637	0.002	0	0	0	1.427e-3
94	11	N13	-0.825	-0.01	0	0	0	8.08e-4
95	11	N15	-0.821	-0.006	0	0	0	5.171e-4
96	11	N16	-0.82	0.002	0	0	0	1.122e-3
97	12	N1	0	0	0	0	0	3.821e-3
98	12	N3	0	0	0	0	0	3.977e-3
99	12	N4	0	0	0	0	0	3.631e-3
100	12	N5	-0.313	-0.006	0	0	0	1.561e-3
101	12	N7	-0.312	-0.008	0	0	0	1.162e-3
102	12	N8	-0.311	-0.001	0	0	0	1.967e-3
103	12	N9	-0.483	-0.009	0	0	0	1.054e-3
104	12	N11	-0.482	-0.011	0	0	0	8.923e-4
105	12	N12	-0.481	-0.001	0	0	0	1.017e-3
106	12	N13	-0.622	-0.011	0	0	0	4.422e-4
107	12	N15	-0.619	-0.014	0	0	0	3.383e-4
108	12	N16	-0.619	-0.002	0	0	0	1.094e-3
109	13	N1	0	0	0	0	0	4.957e-3
110	13	N3	0	0	0	0	0	5.207e-3
111	13	N4	0	0	0	0	0	4.865e-3
112	13	N5	-0.411	-0.005	0	0	0	2.213e-3
113	13	N7	-0.411	-0.002	0	0	0	1.583e-3
114	13	N8	-0.409	0.002	0	0	0	2.371e-3
115	13	N9	-0.637	-0.007	0	0	0	1.422e-3
116	13	N11	-0.636	-0.002	0	0	0	1.15e-3
117	13	N12	-0.636	0.003	0	0	0	1.434e-3
118	13	N13	-0.823	-0.008	0	0	0	8.574e-4
119	13	N15	-0.819	-0.003	0	0	0	5.315e-4
120	13	N16	-0.817	0.003	0	0	0	1.044e-3

Member Section Forces

	LC	Member Label	Sec	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
1	4	M1	1	5.423	-0.154	0	0	0	0
2			2	5.097	-0.154	0	0	0	1.009
3			3	3.402	-0.286	0	0	0	-0.102
4			4	2.122	-0.482	0	0	0	-0.154
5			5	1.796	-0.482	0	0	0	3.01
6	4	M3	1	13.273	-0.055	0	0	0	0
7			2	12.947	-0.055	0	0	0	0.358
8			3	6.044	-0.001	0	0	0	-0.221
9			4	4.928	-0.087	0	0	0	0.168
10			5	4.602	-0.087	0	0	0	0.741
11	4	M4	1	5.482	0.208	0	0	0	0
12			2	5.156	0.208	0	0	0	-1.366
13			3	3.235	0.287	0	0	0	0.597
14			4	2.443	0.569	0	0	0	-0.391
15			5	2.117	0.569	0	0	0	-4.128
16	4	M5	1	0.482	1.796	0	0	0	3.01
17			2	0.482	-0.333	0	0	0	-2.658
18			3	0.569	2.14	0	0	0	4.309
19			4	0.569	0.012	0	0	0	-4.031
20			5	0.569	-2.117	0	0	0	4.128
21	4	M6	1	-0.196	0.954	0	0	0	2.504
22			2	-0.196	-0.101	0	0	0	-0.887
23			3	-0.283	0.304	0	0	0	0.466
24			4	-0.283	-0.081	0	0	0	-0.397
25			5	-0.283	-0.466	0	0	0	1.724
26	4	M7	1	-0.132	1.369	0	0	0	2.764
27			2	-0.132	-0.179	0	0	0	-1.846
28			3	-0.079	1.501	0	0	0	2.985
29			4	-0.079	-0.047	0	0	0	-2.648
30			5	-0.079	-1.595	0	0	0	3.713
31	5	M1	1	9.135	-0.46	0	0	0	0
32			2	8.809	-0.46	0	0	0	3.019
33			3	4.395	-0.825	0	0	0	-0.314
34			4	2.149	-0.571	0	0	0	-0.517
35			5	1.823	-0.571	0	0	0	3.23
36	5	M3	1	27.216	-0.161	0	0	0	0
37			2	26.89	-0.161	0	0	0	1.059
38			3	6.108	-0.029	0	0	0	-0.582
39			4	4.859	0.001	0	0	0	0.506
40			5	4.533	0.001	0	0	0	0.499
41	5	M4	1	8.757	0.621	0	0	0	0
42			2	8.431	0.621	0	0	0	-4.074
43			3	3.338	0.854	0	0	0	1.693
44			4	2.485	0.57	0	0	0	-0.662
45			5	2.159	0.57	0	0	0	-4.402
46	5	M5	1	0.571	1.823	0	0	0	3.23
47			2	0.571	-0.306	0	0	0	-2.649
48			3	0.57	2.099	0	0	0	3.935
49			4	0.57	-0.03	0	0	0	-4.081
50			5	0.57	-2.159	0	0	0	4.402
51	5	M6	1	0.254	1.92	0	0	0	4.87
52			2	0.254	-0.295	0	0	0	-1.656
53			3	0.284	0.243	0	0	0	0.212
54			4	0.284	-0.142	0	0	0	-0.178
55			5	0.284	-0.527	0	0	0	2.415
56	5	M7	1	-0.365	4.087	0	0	0	8.131

Member Section Forces (Continued)

	LC	Member Label	Sec	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
57			2	-0.365	-0.56	0	0	0	-5.535
58			3	-0.233	4.529	0	0	0	9.134
59			4	-0.233	-0.119	0	0	0	-7.953
60			5	-0.233	-4.767	0	0	0	10.978
61	6	M1	1	7.947	-0.164	0	0	0	0
62			2	7.621	-0.164	0	0	0	1.074
63			3	5.918	-0.228	0	0	0	-0.354
64			4	4.542	-1.016	0	0	0	0.193
65			5	4.216	-1.016	0	0	0	6.858
66	6	M3	1	19.451	-0.058	0	0	0	0
67			2	19.125	-0.058	0	0	0	0.38
68			3	12.239	0.028	0	0	0	-0.312
69			4	11.282	-0.259	0	0	0	0.209
70			5	10.956	-0.259	0	0	0	1.906
71	6	M4	1	8.405	0.221	0	0	0	0
72			2	8.079	0.221	0	0	0	-1.453
73			3	6.149	0.2	0	0	0	0.958
74			4	5.294	1.274	0	0	0	-1.096
75			5	4.968	1.274	0	0	0	-9.457
76	6	M5	1	1.016	4.216	0	0	0	6.858
77			2	1.016	-0.819	0	0	0	-6.307
78			3	1.274	5.102	0	0	0	10.499
79			4	1.274	0.067	0	0	0	-9.533
80			5	1.274	-4.968	0	0	0	9.457
81	6	M6	1	-0.788	1.049	0	0	0	3.263
82			2	-0.788	-0.006	0	0	0	-0.864
83			3	-1.074	0.241	0	0	0	0.178
84			4	-1.074	-0.144	0	0	0	-0.196
85			5	-1.074	-0.529	0	0	0	2.414
86	6	M7	1	-0.064	1.378	0	0	0	2.816
87			2	-0.064	-0.17	0	0	0	-1.863
88			3	0.021	1.492	0	0	0	2.894
89			4	0.021	-0.056	0	0	0	-2.67
90			5	0.021	-1.603	0	0	0	3.76
91	7	M1	1	10.1	-0.391	0	0	0	0
92			2	9.774	-0.391	0	0	0	2.565
93			3	6.034	-0.647	0	0	0	-0.45
94			4	3.958	-0.949	0	0	0	-0.166
95			5	3.632	-0.949	0	0	0	6.061
96	7	M3	1	28.364	-0.137	0	0	0	0
97			2	28.038	-0.137	0	0	0	0.9
98			3	10.739	0	0	0	0	-0.56
99			4	9.642	-0.15	0	0	0	0.452
100			5	9.316	-0.15	0	0	0	1.433
101	7	M4	1	10.13	0.527	0	0	0	0
102			2	9.804	0.527	0	0	0	-3.462
103			3	5.498	0.647	0	0	0	1.69
104			4	4.613	1.098	0	0	0	-1.123
105			5	4.287	1.098	0	0	0	-8.331
106	7	M5	1	0.949	3.632	0	0	0	6.061
107			2	0.949	-0.677	0	0	0	-5.388
108			3	1.098	4.33	0	0	0	8.67
109			4	1.098	0.022	0	0	0	-8.195
110			5	1.098	-4.287	0	0	0	8.331
111	7	M6	1	-0.302	1.75	0	0	0	4.848
112			2	-0.302	-0.175	0	0	0	-1.447
113			3	-0.451	0.211	0	0	0	0.059
114			4	-0.451	-0.174	0	0	0	-0.082
115			5	-0.451	-0.559	0	0	0	2.76
116	7	M7	1	-0.256	3.414	0	0	0	6.828
117			2	-0.256	-0.458	0	0	0	-4.625
118			3	-0.12	3.765	0	0	0	7.529
119			4	-0.12	-0.108	0	0	0	-6.643
120			5	-0.12	-3.98	0	0	0	9.197
121	8	M1	1	-7.406	4.851	0	0	0	0
122			2	-7.732	4.851	0	0	0	-31.837
123			3	-3.098	2.89	0	0	0	-8.148
124			4	-0.211	2.725	0	0	0	2.337
125			5	-0.537	2.725	0	0	0	-15.543
126	8	M3	1	15.756	6.646	0	0	0	0
127			2	15.43	6.646	0	0	0	-43.611
128			3	7.305	7.169	0	0	0	-8.061
129			4	5.371	5.281	0	0	0	5.983
130			5	5.045	5.281	0	0	0	-28.674
131	8	M4	1	15.828	4.969	0	0	0	0
132			2	15.502	4.969	0	0	0	-32.612
133			3	8.474	3.146	0	0	0	-7.701
134			4	4.333	3.428	0	0	0	1.343
135			5	4.007	3.428	0	0	0	-21.153
136	8	M5	1	8.685	-0.536	0	0	0	-15.543
137			2	8.685	-2.665	0	0	0	-3.141
138			3	3.417	0.251	0	0	0	-7.959
139			4	3.417	-1.878	0	0	0	-1.652
140			5	3.417	-4.007	0	0	0	21.153
141	8	M6	1	1.574	-3.213	0	0	0	-28.967
142			2	1.574	-4.268	0	0	0	-0.063
143			3	-0.302	-3.045	0	0	0	-22.649
144			4	-0.302	-3.43	0	0	0	2.442
145			5	-0.302	-3.815	0	0	0	30.517
146	8	M7	1	1.149	-4.961	0	0	0	-45.966
147			2	1.149	-6.508	0	0	0	-1.525
148			3	1.75	-3.607	0	0	0	-31.254
149			4	1.75	-5.154	0	0	0	2.693
150			5	1.75	-6.702	0	0	0	48.634
151	9	M1	1	0.427	3.401	0	0	0	0

Member Section Forces (Continued)

	LC	Member Label	Sec	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
152			2	0.101	3.401	0	0	0	-22.322
153			3	1.143	1.739	0	0	0	-6.55
154			4	2.204	1.461	0	0	0	1.697
155			5	1.878	1.461	0	0	0	-7.888
156	9	M3	1	30.236	4.936	0	0	0	0
157			2	29.91	4.936	0	0	0	-32.395
158			3	11.687	5.398	0	0	0	-6.493
159			4	9.975	3.885	0	0	0	4.815
160			5	9.649	3.885	0	0	0	-20.683
161	9	M4	1	17.93	4.135	0	0	0	0
162			2	17.604	4.135	0	0	0	-27.139
163			3	9.44	2.793	0	0	0	-4.601
164			4	6.034	3.246	0	0	0	0.171
165			5	5.708	3.246	0	0	0	-21.133
166	9	M5	1	7.101	1.879	0	0	0	-7.888
167			2	7.101	-2.43	0	0	0	-5.751
168			3	3.235	2.909	0	0	0	-0.555
169			4	3.235	-1.399	0	0	0	-6.406
170			5	3.235	-5.708	0	0	0	21.133
171	9	M6	1	1.033	-1.387	0	0	0	-18.841
172			2	1.033	-3.312	0	0	0	-0.825
173			3	-0.467	-2.31	0	0	0	-17.342
174			4	-0.467	-2.695	0	0	0	2.054
175			5	-0.467	-3.08	0	0	0	24.434
176	9	M7	1	0.698	-1.367	0	0	0	-29.987
177			2	0.698	-5.24	0	0	0	-4.383
178			3	1.279	-0.093	0	0	0	-18.336
179			4	1.279	-3.966	0	0	0	-2.607
180			5	1.279	-7.838	0	0	0	43.134
181	10	M1	1	-9.548	4.893	0	0	0	0
182			2	-9.743	4.893	0	0	0	-32.113
183			3	-4.449	3.001	0	0	0	-8.073
184			4	-1.057	2.915	0	0	0	2.403
185			5	-1.252	2.915	0	0	0	-16.728
186	10	M3	1	10.442	6.643	0	0	0	0
187			2	10.246	6.643	0	0	0	-43.592
188			3	4.885	7.157	0	0	0	-7.945
189			4	3.399	5.311	0	0	0	5.915
190			5	3.203	5.311	0	0	0	-28.938
191	10	M4	1	13.613	4.867	0	0	0	0
192			2	13.417	4.867	0	0	0	-31.942
193			3	7.173	3.029	0	0	0	-7.904
194			4	3.354	3.198	0	0	0	1.503
195			5	3.158	3.198	0	0	0	-19.484
196	10	M5	1	8.492	-1.252	0	0	0	-16.728
197			2	8.492	-2.529	0	0	0	-2.077
198			3	3.19	-0.604	0	0	0	-9.669
199			4	3.19	-1.881	0	0	0	-0.042
200			5	3.19	-3.158	0	0	0	19.484
201	10	M6	1	1.651	-3.588	0	0	0	-29.919
202			2	1.651	-4.221	0	0	0	0.29
203			3	-0.186	-3.161	0	0	0	-22.798
204			4	-0.186	-3.392	0	0	0	2.597
205			5	-0.186	-3.623	0	0	0	29.782
206	10	M7	1	1.21	-5.49	0	0	0	-46.93
207			2	1.21	-6.418	0	0	0	-0.787
208			3	1.775	-4.192	0	0	0	-32.348
209			4	1.775	-5.12	0	0	0	3.737
210			5	1.775	-6.049	0	0	0	47.018
211	11	M1	1	18.251	-5.161	0	0	0	0
212			2	17.925	-5.161	0	0	0	33.866
213			3	9.9	-3.46	0	0	0	7.945
214			4	4.453	-3.689	0	0	0	-2.648
215			5	4.127	-3.689	0	0	0	21.563
216	11	M3	1	10.791	-6.755	0	0	0	0
217			2	10.465	-6.755	0	0	0	44.329
218			3	4.785	-7.171	0	0	0	7.62
219			4	4.487	-5.456	0	0	0	-5.648
220			5	4.161	-5.456	0	0	0	30.156
221	11	M4	1	-4.864	-4.552	0	0	0	0
222			2	-5.19	-4.552	0	0	0	29.871
223			3	-2.004	-2.575	0	0	0	8.894
224			4	0.553	-2.289	0	0	0	-2.123
225			5	0.227	-2.289	0	0	0	12.899
226	11	M5	1	-7.732	4.128	0	0	0	21.563
227			2	-7.732	1.999	0	0	0	-2.176
228			3	-2.288	4.03	0	0	0	16.578
229			4	-2.288	1.902	0	0	0	-6.409
230			5	-2.288	-0.227	0	0	0	-12.899
231	11	M6	1	-2.003	5.121	0	0	0	33.972
232			2	-2.003	4.066	0	0	0	-1.713
233			3	-0.294	3.653	0	0	0	23.583
234			4	-0.294	3.268	0	0	0	-3.237
235			5	-0.294	2.883	0	0	0	-27.073
236	11	M7	1	-1.534	7.698	0	0	0	51.496
237			2	-1.534	6.151	0	0	0	-2.167
238			3	-2.004	6.608	0	0	0	37.223
239			4	-2.004	5.06	0	0	0	-7.989
240			5	-2.004	3.513	0	0	0	-41.209
241	12	M1	1	19.771	-4.184	0	0	0	0
242			2	19.445	-4.184	0	0	0	27.459
243			3	10.923	-3.031	0	0	0	5.651
244			4	5.711	-3.358	0	0	0	-2.03
245			5	5.385	-3.358	0	0	0	20.01
246	12	M3	1	26.493	-5.211	0	0	0	0

Member Section Forces (Continued)

	LC	Member Label	Sec	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
247			2	26.166	-5.211	0	0	0	34.196
248			3	9.791	-5.398	0	0	0	5.373
249			4	9.309	-4.184	0	0	0	-3.911
250			5	8.983	-4.184	0	0	0	23.55
251	12	M4	1	2.33	-3.08	0	0	0	0
252			2	2.004	-3.08	0	0	0	20.211
253			3	1.556	-1.5	0	0	0	7.98
254			4	3.192	-1.049	0	0	0	-2.415
255			5	2.866	-1.049	0	0	0	4.471
256	12	M5	1	-5.21	5.385	0	0	0	20.01
257			2	-5.21	1.076	0	0	0	-5.025
258			3	-1.043	5.751	0	0	0	17.895
259			4	-1.043	1.443	0	0	0	-9.983
260			5	-1.043	-2.866	0	0	0	-4.471
261	12	M6	1	-1.658	4.886	0	0	0	28.534
262			2	-1.658	2.961	0	0	0	-2.069
263			3	-0.453	2.732	0	0	0	17.461
264			4	-0.453	2.347	0	0	0	-2.219
265			5	-0.453	1.962	0	0	0	-18.915
266	12	M7	1	-1.279	8.196	0	0	0	43.644
267			2	-1.279	4.323	0	0	0	-4.867
268			3	-1.573	7.623	0	0	0	33.394
269			4	-1.573	3.751	0	0	0	-10.68
270			5	-1.573	-0.122	0	0	0	-24.741
271	13	M1	1	16.054	-5.08	0	0	0	0
272			2	15.858	-5.08	0	0	0	33.335
273			3	8.53	-3.342	0	0	0	7.952
274			4	3.602	-3.494	0	0	0	-2.59
275			5	3.406	-3.494	0	0	0	20.34
276	13	M3	1	5.488	-6.708	0	0	0	0
277			2	5.292	-6.708	0	0	0	44.023
278			3	2.369	-7.158	0	0	0	7.68
279			4	2.516	-5.416	0	0	0	-5.714
280			5	2.32	-5.416	0	0	0	29.828
281	13	M4	1	-7.035	-4.616	0	0	0	0
282			2	-7.23	-4.616	0	0	0	30.294
283			3	-3.291	-2.687	0	0	0	8.62
284			4	-0.422	-2.514	0	0	0	-1.97
285			5	-0.618	-2.514	0	0	0	14.531
286	13	M5	1	-7.925	3.407	0	0	0	20.34
287			2	-7.925	2.129	0	0	0	-1.113
288			3	-2.516	3.172	0	0	0	14.841
289			4	-2.516	1.895	0	0	0	-4.795
290			5	-2.516	0.618	0	0	0	-14.531
291	13	M6	1	-1.923	4.733	0	0	0	32.921
292			2	-1.923	4.1	0	0	0	-1.356
293			3	-0.183	3.526	0	0	0	23.359
294			4	-0.183	3.295	0	0	0	-3.074
295			5	-0.183	3.064	0	0	0	-27.717
296	13	M7	1	-1.488	7.132	0	0	0	50.248
297			2	-1.488	6.204	0	0	0	-1.428
298			3	-1.965	5.993	0	0	0	35.93
299			4	-1.965	5.064	0	0	0	-6.914
300			5	-1.965	4.136	0	0	0	-42.563

Maximum Member Section Forces

	LC	Member Label		Axial[k]	Loc[ft]	y Shear[k]	Loc[ft]	z Shear[k]	Loc[ft]	Torque[k-ft]	Loc[ft]	y-y Moment[k-ft]	Loc[ft]	z-z Moment[k-ft]	Loc[ft]
1	4	M1	max	5.423	0	-0.154	8.203	0	26.25	0	26.25	0	26.25	3.01	26.25
2			min	1.796	26.25	-0.482	16.953	0	0	0	0	0	0	-1.472	16.953
3	4	M3	max	13.273	0	-0.001	16.68	0	26.25	0	26.25	0	26.25	0.741	26.25
4			min	4.602	26.25	-0.087	16.953	0	0	0	0	0	0	-0.225	8.477
5	4	M4	max	5.482	0	0.569	26.25	0	26.25	0	26.25	0	26.25	1.93	8.477
6			min	2.117	26.25	0.208	0	0	0	0	0	0	0	-4.128	26.25
7	4	M5	max	0.569	31	2.407	14.531	0	31	0	31	0	31	6.512	14.531
8			min	0.482	0	-2.117	31	0	0	0	0	0	0	-4.031	23.25
9	4	M6	max	-0.196	14.208	0.954	0	0	31	0	31	0	31	2.504	0
10			min	-0.283	14.531	-0.466	31	0	0	0	0	0	0	-0.989	5.813
11	4	M7	max	-0.079	31	1.694	14.531	0	31	0	31	0	31	4.532	14.531
12			min	-0.132	0	-1.595	31	0	0	0	0	0	0	-2.653	22.927
13	5	M1	max	9.135	0	-0.46	8.203	0	26.25	0	26.25	0	26.25	3.774	8.203
14			min	1.823	26.25	-0.825	8.477	0	0	0	0	0	0	-4.149	8.477
15	5	M3	max	27.216	0	0.001	26.25	0	26.25	0	26.25	0	26.25	1.324	8.203
16			min	4.533	26.25	-0.161	0	0	0	0	0	0	0	-0.716	8.477
17	5	M4	max	8.757	0	0.854	16.68	0	26.25	0	26.25	0	26.25	5.663	8.477
18			min	2.159	26.25	0.57	16.953	0	0	0	0	0	0	-5.092	8.203
19	5	M5	max	0.571	14.208	2.365	14.531	0	31	0	31	0	31	6.096	14.531
20			min	0.57	14.531	-2.159	31	0	0	0	0	0	0	-4.081	23.25
21	5	M6	max	0.284	31	1.92	0	0	31	0	31	0	31	4.87	0
22			min	0.254	0	-0.616	14.208	0	0	0	0	0	0	-2.391	4.198
23	5	M7	max	-0.233	31	5.109	14.531	0	31	0	31	0	31	13.803	14.531
24			min	-0.365	0	-4.767	31	0	0	0	0	0	0	-7.961	22.927
25	6	M1	max	7.947	0	-0.164	8.203	0	26.25	0	26.25	0	26.25	6.858	26.25
26			min	4.216	26.25	-1.016	16.953	0	0	0	0	0	0	-2.584	16.953
27	6	M3	max	19.451	0	0.028	16.68	0	26.25	0	26.25	0	26.25	1.906	26.25
28			min	10.956	26.25	-0.259	16.953	0	0	0	0	0	0	-0.499	16.953
29	6	M4	max	8.405	0	1.274	26.25	0	26.25	0	26.25	0	26.25	2.388	16.953
30			min	4.968	26.25	0.2	8.477	0	0	0	0	0	0	-9.457	26.25
31	6	M5	max	1.274	31	5.732	14.531	0	31	0	31	0	31	15.746	14.531
32			min	1.016	0	-5.014	14.208	0	0	0	0	0	0	-9.533	23.25
33	6	M6	max	-0.788	14.208	1.049	0	0	31	0	31	0	31	3.263	0
34			min	-1.074	14.531	-0.529	31	0	0	0	0	0	0	-0.864	7.75
35	6	M7	max	0.021	31	1.685	14.531	0	31	0	31	0	31	4.432	14.531
36			min	-0.064	0	-1.603	31	0	0	0	0	0	0	-2.678	22.927
37	7	M1	max	10.1	0	-0.391	8.203	0	26.25	0	26.25	0	26.25	6.061	26.25
38			min	3.632	26.25	-0.949	16.953	0	0	0	0	0	0	-3.457	8.477

Maximum Member Section Forces (Continued)

	LC	Member Label		Axial[k]	Loc[ft]	y Shear[k]	Loc[ft]	z Shear[k]	Loc[ft]	Torque[k-ft]	Loc[ft]	y-y Moment[k-ft]	Loc[ft]	z-z Moment[k-ft]	Loc[ft]
39	7	M3	max	28.364	0	0	16.68	0	26.25	0	26.25	0	26.25	1.433	26.25
40			min	9.316	26.25	-0.15	16.953	0	0	0	0	0	0	-0.561	8.477
41	7	M4	max	10.13	0	1.098	26.25	0	26.25	0	26.25	0	26.25	4.698	8.477
42			min	4.287	26.25	0.527	0	0	0	0	0	0	0	-8.331	26.25
43	7	M5	max	1.098	31	4.869	14.531	0	31	0	31	0	31	13.126	14.531
44			min	0.949	0	-4.287	31	0	0	0	0	0	0	-8.195	23.25
45	7	M6	max	-0.302	14.208	1.75	0	0	31	0	31	0	31	4.848	0
46			min	-0.451	14.531	-0.559	31	0	0	0	0	0	0	-1.756	4.198
47	7	M7	max	-0.12	31	4.249	14.531	0	31	0	31	0	31	11.41	14.531
48			min	-0.256	0	-3.98	31	0	0	0	0	0	0	-6.652	22.927
49	8	M1	max	-0.075	16.953	4.851	8.203	0	26.25	0	26.25	0	26.25	9.788	16.953
50			min	-7.814	8.203	2.725	16.953	0	0	0	0	0	0	-39.796	8.203
51	8	M3	max	15.756	0	7.169	16.68	0	26.25	0	26.25	0	26.25	25.264	8.477
52			min	5.045	26.25	5.281	16.953	0	0	0	0	0	0	-54.514	8.203
53	8	M4	max	15.828	0	4.969	8.203	0	26.25	0	26.25	0	26.25	10.716	16.953
54			min	4.007	26.25	3.146	8.477	0	0	0	0	0	0	-40.765	8.203
55	8	M5	max	8.685	14.208	0.517	14.531	0	31	0	31	0	31	21.153	31
56			min	3.417	14.531	-4.439	14.208	0	0	0	0	0	0	-15.543	0
57	8	M6	max	1.574	14.208	-2.997	14.531	0	31	0	31	0	31	30.517	31
58			min	-0.302	14.531	-4.589	14.208	0	0	0	0	0	0	-28.967	0
59	8	M7	max	1.75	31	-3.413	14.531	0	31	0	31	0	31	48.634	31
60			min	1.149	0	-7.798	14.208	0	0	0	0	0	0	-45.966	0
61	9	M1	max	2.34	16.953	3.401	8.203	0	26.25	0	26.25	0	26.25	5.691	16.953
62			min	0.02	8.203	1.461	16.953	0	0	0	0	0	0	-27.902	8.203
63	9	M3	max	30.236	0	5.398	16.68	0	26.25	0	26.25	0	26.25	18.6	8.477
64			min	9.649	26.25	3.885	16.953	0	0	0	0	0	0	-40.494	8.203
65	9	M4	max	17.93	0	4.135	8.203	0	26.25	0	26.25	0	26.25	9.048	16.953
66			min	5.708	26.25	2.793	8.477	0	0	0	0	0	0	-33.924	8.203
67	9	M5	max	7.101	14.208	3.448	14.531	0	31	0	31	0	31	21.535	14.208
68			min	3.235	14.531	-6.02	14.208	0	0	0	0	0	0	-11.054	3.229
69	9	M6	max	1.033	14.208	-1.387	0	0	31	0	31	0	31	24.434	31
70			min	-0.467	14.531	-3.633	14.208	0	0	0	0	0	0	-19.557	14.531
71	9	M7	max	1.279	31	0.391	14.531	0	31	0	31	0	31	43.134	31
72			min	0.698	0	-8.467	14.208	0	0	0	0	0	0	-29.987	0
73	10	M1	max	-0.975	16.953	4.893	8.203	0	26.25	0	26.25	0	26.25	10.374	16.953
74			min	-9.792	8.203	2.915	16.953	0	0	0	0	0	0	-40.141	8.203
75	10	M3	max	10.442	0	7.157	16.68	0	26.25	0	26.25	0	26.25	25.322	8.477
76			min	3.203	26.25	5.311	16.953	0	0	0	0	0	0	-54.49	8.203
77	10	M4	max	13.613	0	4.867	8.203	0	26.25	0	26.25	0	26.25	10.248	16.953
78			min	3.158	26.25	3.029	8.477	0	0	0	0	0	0	-39.927	8.203
79	10	M5	max	8.492	14.208	-0.444	14.531	0	31	0	31	0	31	19.484	31
80			min	3.19	14.531	-3.593	14.208	0	0	0	0	0	0	-16.728	0
81	10	M6	max	1.651	14.208	-3.132	14.531	0	31	0	31	0	31	29.782	31
82			min	-0.186	14.531	-4.413	14.208	0	0	0	0	0	0	-29.919	0
83	10	M7	max	1.775	31	-4.076	14.531	0	31	0	31	0	31	47.018	31
84			min	1.21	0	-7.192	14.208	0	0	0	0	0	0	-46.93	0
85	11	M1	max	18.251	0	-3.46	16.68	0	26.25	0	26.25	0	26.25	42.333	8.203
86			min	4.127	26.25	-5.161	0	0	0	0	0	0	0	-12.735	16.953
87	11	M3	max	10.791	0	-5.456	26.25	0	26.25	0	26.25	0	26.25	55.411	8.203
88			min	4.161	26.25	-7.171	8.477	0	0	0	0	0	0	-25.713	8.477
89	11	M4	max	0.689	16.953	-2.289	26.25	0	26.25	0	26.25	0	26.25	37.339	8.203
90			min	-5.272	8.203	-4.552	0	0	0	0	0	0	0	-8.381	16.953
91	11	M5	max	-2.288	31	4.297	14.531	0	31	0	31	0	31	21.563	0
92			min	-7.732	0	-0.227	31	0	0	0	0	0	0	-12.989	30.031
93	11	M6	max	-0.294	31	5.121	0	0	31	0	31	0	31	33.972	0
94			min	-2.003	0	2.883	31	0	0	0	0	0	0	-27.073	31
95	11	M7	max	-1.534	14.208	7.698	0	0	31	0	31	0	31	51.496	0
96			min	-2.004	14.531	3.513	31	0	0	0	0	0	0	-41.209	31
97	12	M1	max	19.771	0	-3.031	16.68	0	26.25	0	26.25	0	26.25	34.324	8.203
98			min	5.385	26.25	-4.184	0	0	0	0	0	0	0	-11.213	16.953
99	12	M3	max	26.493	0	-4.184	26.25	0	26.25	0	26.25	0	26.25	42.745	8.203
100			min	8.983	26.25	-5.398	8.477	0	0	0	0	0	0	-19.722	8.477
101	12	M4	max	3.327	16.953	-1.049	26.25	0	26.25	0	26.25	0	26.25	25.263	8.203
102			min	1.379	16.68	-3.08	0	0	0	0	0	0	0	-5.284	16.953
103	12	M5	max	-1.043	31	6.29	14.531	0	31	0	31	0	31	23.728	14.531
104			min	-5.21	0	-2.866	31	0	0	0	0	0	0	-11.856	25.833
105	12	M6	max	-0.453	31	4.886	0	0	31	0	31	0	31	28.534	0
106			min	-1.658	0	1.962	31	0	0	0	0	0	0	-20.158	14.208
107	12	M7	max	-1.279	14.208	8.196	0	0	31	0	31	0	31	43.644	0
108			min	-1.573	14.531	-0.122	31	0	0	0	0	0	0	-24.754	30.677
109	13	M1	max	16.054	0	-3.342	16.68	0	26.25	0	26.25	0	26.25	41.669	8.203
110			min	3.406	26.25	-5.08	0	0	0	0	0	0	0	-12.144	16.953
111	13	M3	max	5.488	0	-5.416	26.25	0	26.25	0	26.25	0	26.25	55.029	8.203
112			min	2.263	16.68	-7.158	8.477	0	0	0	0	0	0	-25.592	8.477
113	13	M4	max	-0.34	16.953	-2.514	26.25	0	26.25	0	26.25	0	26.25	37.867	8.203
114			min	-7.279	8.203	-4.616	0	0	0	0	0	0	0	-8.846	16.953
115	13	M5	max	-2.516	31	3.407	0	0	31	0	31	0	31	20.34	0
116			min	-7.925	0	0.618	31	0	0	0	0	0	0	-14.531	31
117	13	M6	max	-0.183	31	4.733	0	0	31	0	31	0	31	32.921	0
118			min	-1.923	0	3.064	31	0	0	0	0	0	0	-27.717	31
119	13	M7	max	-1.488	14.208	7.132	0	0	31	0	31	0	31	50.248	0
120			min	-1.965	14.531	4.136	31	0	0	0	0	0	0	-42.563	31

Member End Reactions

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
1	4	M1	I	5.423	-0.154	0	0	0	0
2			J	1.796	-0.482	0	0	0	3.01
3	4	M3	I	13.273	-0.055	0	0	0	0
4			J	4.602	-0.087	0	0	0	0.741
5	4	M4	I	5.482	0.208	0	0	0	0
6			J	2.117	0.569	0	0	0	-4.128
7	4	M5	I	0.482	1.796	0	0	0	3.01
8			J	0.569	-2.117	0	0	0	4.128
9	4	M6	I	-0.196	0.954	0	0	0	2.504
10			J	-0.283	-0.466	0	0	0	1.724

Member End Reactions (Continued)

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
11	4	M7	I	-0.132	1.369	0	0	0	2.764
12			J	-0.079	-1.595	0	0	0	3.713
13	5	M1	I	9.135	-0.46	0	0	0	0
14			J	1.823	-0.571	0	0	0	3.23
15	5	M3	I	27.216	-0.161	0	0	0	0
16			J	4.533	0.001	0	0	0	0.499
17	5	M4	I	8.757	0.621	0	0	0	0
18			J	2.159	0.57	0	0	0	-4.402
19	5	M5	I	0.571	1.823	0	0	0	3.23
20			J	0.57	-2.159	0	0	0	4.402
21	5	M6	I	0.254	1.92	0	0	0	4.87
22			J	0.284	-0.527	0	0	0	2.415
23	5	M7	I	-0.365	4.087	0	0	0	8.131
24			J	-0.233	-4.767	0	0	0	10.978
25	6	M1	I	7.947	-0.164	0	0	0	0
26			J	4.216	-1.016	0	0	0	6.858
27	6	M3	I	19.451	-0.058	0	0	0	0
28			J	10.956	-0.259	0	0	0	1.906
29	6	M4	I	8.405	0.221	0	0	0	0
30			J	4.968	1.274	0	0	0	-9.457
31	6	M5	I	1.016	4.216	0	0	0	6.858
32			J	1.274	-4.968	0	0	0	9.457
33	6	M6	I	-0.788	1.049	0	0	0	3.263
34			J	-1.074	-0.529	0	0	0	2.414
35	6	M7	I	-0.064	1.378	0	0	0	2.816
36			J	0.021	-1.603	0	0	0	3.76
37	7	M1	I	10.1	-0.391	0	0	0	0
38			J	3.632	-0.949	0	0	0	6.061
39	7	M3	I	28.364	-0.137	0	0	0	0
40			J	9.316	-0.15	0	0	0	1.433
41	7	M4	I	10.13	0.527	0	0	0	0
42			J	4.287	1.098	0	0	0	-8.331
43	7	M5	I	0.949	3.632	0	0	0	6.061
44			J	1.098	-4.287	0	0	0	8.331
45	7	M6	I	-0.302	1.75	0	0	0	4.848
46			J	-0.451	-0.559	0	0	0	2.76
47	7	M7	I	-0.256	3.414	0	0	0	6.828
48			J	-0.12	-3.98	0	0	0	9.197
49	8	M1	I	-7.406	4.851	0	0	0	0
50			J	-0.537	2.725	0	0	0	-15.543
51	8	M3	I	15.756	6.646	0	0	0	0
52			J	5.045	5.281	0	0	0	-28.674
53	8	M4	I	15.828	4.969	0	0	0	0
54			J	4.007	3.428	0	0	0	-21.153
55	8	M5	I	8.685	-0.536	0	0	0	-15.543
56			J	3.417	-4.007	0	0	0	21.153
57	8	M6	I	1.574	-3.213	0	0	0	-28.967
58			J	-0.302	-3.815	0	0	0	30.517
59	8	M7	I	1.149	-4.961	0	0	0	-45.966
60			J	1.75	-6.702	0	0	0	48.634
61	9	M1	I	0.427	3.401	0	0	0	0
62			J	1.878	1.461	0	0	0	-7.888
63	9	M3	I	30.236	4.936	0	0	0	0
64			J	9.649	3.885	0	0	0	-20.683
65	9	M4	I	17.93	4.135	0	0	0	0
66			J	5.708	3.246	0	0	0	-21.133
67	9	M5	I	7.101	1.879	0	0	0	-7.888
68			J	3.235	-5.708	0	0	0	21.133
69	9	M6	I	1.033	-1.387	0	0	0	-18.841
70			J	-0.467	-3.08	0	0	0	24.434
71	9	M7	I	0.698	-1.367	0	0	0	-29.987
72			J	1.279	-7.838	0	0	0	43.134
73	10	M1	I	-9.548	4.893	0	0	0	0
74			J	-1.252	2.915	0	0	0	-16.728
75	10	M3	I	10.442	6.643	0	0	0	0
76			J	3.203	5.311	0	0	0	-28.938
77	10	M4	I	13.613	4.867	0	0	0	0
78			J	3.158	3.198	0	0	0	-19.484
79	10	M5	I	8.492	-1.252	0	0	0	-16.728
80			J	3.19	-3.158	0	0	0	19.484
81	10	M6	I	1.651	-3.588	0	0	0	-29.919
82			J	-0.186	-3.623	0	0	0	29.782
83	10	M7	I	1.21	-5.49	0	0	0	-46.93
84			J	1.775	-6.049	0	0	0	47.018
85	11	M1	I	18.251	-5.161	0	0	0	0
86			J	4.127	-3.689	0	0	0	21.563
87	11	M3	I	10.791	-6.755	0	0	0	0
88			J	4.161	-5.456	0	0	0	30.156
89	11	M4	I	-4.864	-4.552	0	0	0	0
90			J	0.227	-2.289	0	0	0	12.899
91	11	M5	I	-7.732	4.128	0	0	0	21.563
92			J	-2.288	-0.227	0	0	0	-12.899
93	11	M6	I	-2.003	5.121	0	0	0	33.972
94			J	-0.294	2.883	0	0	0	-27.073
95	11	M7	I	-1.534	7.698	0	0	0	51.496
96			J	-2.004	3.513	0	0	0	-41.209
97	12	M1	I	19.771	-4.184	0	0	0	0
98			J	5.385	-3.358	0	0	0	20.01
99	12	M3	I	26.493	-5.211	0	0	0	0
100			J	8.983	-4.184	0	0	0	23.55
101	12	M4	I	2.33	-3.08	0	0	0	0
102			J	2.866	-1.049	0	0	0	4.471
103	12	M5	I	-5.21	5.385	0	0	0	20.01
104			J	-1.043	-2.866	0	0	0	-4.471
105	12	M6	I	-1.658	4.886	0	0	0	28.534

Member End Reactions (Continued)

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
106			J	-0.453	1.962	0	0	0	-18.915
107	12	M7	I	-1.279	8.196	0	0	0	43.644
108			J	-1.573	-0.122	0	0	0	-24.741
109	13	M1	I	16.054	-5.08	0	0	0	0
110			J	3.406	-3.494	0	0	0	20.34
111	13	M3	I	5.488	-6.708	0	0	0	0
112			J	2.32	-5.416	0	0	0	29.828
113	13	M4	I	-7.035	-4.616	0	0	0	0
114			J	-0.618	-2.514	0	0	0	14.531
115	13	M5	I	-7.925	3.407	0	0	0	20.34
116			J	-2.516	0.618	0	0	0	-14.531
117	13	M6	I	-1.923	4.733	0	0	0	32.921
118			J	-0.183	3.064	0	0	0	-27.717
119	13	M7	I	-1.488	7.132	0	0	0	50.248
120			J	-1.965	4.136	0	0	0	-42.563

Member 2nd/1st Moment Ratios

	LC	Member	y-y Moment [k-ft]	2nd/1st Ratio	Loc [ft]	z-z Moment [k-ft]	2nd/1st Ratio	Loc [ft]
1	4	M1	0	NC	0	3.01	1	26.25
2	4	M3	0	NC	0	0.741	1	26.25
3	4	M4	0	NC	0	-4.128	1	26.25
4	4	M5	0	NC	0	6.512	1	14.531
5	4	M6	0	NC	0	2.504	1	0
6	4	M7	0	NC	0	4.532	1	14.531
7	5	M1	0	NC	0	-4.149	1	8.477
8	5	M3	0	NC	0	1.324	1.002	8.203
9	5	M4	0	NC	0	5.663	1	8.477
10	5	M5	0	NC	0	6.096	1	14.531
11	5	M6	0	NC	0	4.87	1	0
12	5	M7	0	NC	0	13.803	1	14.531
13	6	M1	0	NC	0	6.858	1	26.25
14	6	M3	0	NC	0	1.906	1	26.25
15	6	M4	0	NC	0	-9.457	1	26.25
16	6	M5	0	NC	0	15.746	1	14.531
17	6	M6	0	NC	0	3.263	1	0
18	6	M7	0	NC	0	4.432	1	14.531
19	7	M1	0	NC	0	6.061	1	26.25
20	7	M3	0	NC	0	1.433	1	26.25
21	7	M4	0	NC	0	-8.331	1	26.25
22	7	M5	0	NC	0	13.126	1	14.531
23	7	M6	0	NC	0	4.848	1	0
24	7	M7	0	NC	0	11.41	1	14.531
25	8	M1	0	NC	0	-39.796	1.01	8.203
26	8	M3	0	NC	0	-54.514	1.009	8.203
27	8	M4	0	NC	0	-40.765	1.01	8.203
28	8	M5	0	NC	0	21.153	1.002	31
29	8	M6	0	NC	0	30.517	1.004	31
30	8	M7	0	NC	0	48.634	1.007	31
31	9	M1	0	NC	0	-27.902	1.022	8.203
32	9	M3	0	NC	0	-40.494	1.019	8.203
33	9	M4	0	NC	0	-33.924	1.018	8.203
34	9	M5	0	NC	0	21.535	1.003	14.208
35	9	M6	0	NC	0	24.434	1.007	31
36	9	M7	0	NC	0	43.134	1.011	31
37	10	M1	0	NC	0	-40.141	1.006	8.203
38	10	M3	0	NC	0	-54.49	1.006	8.203
39	10	M4	0	NC	0	-39.927	1.006	8.203
40	10	M5	0	NC	0	19.484	1.001	31
41	10	M6	0	NC	0	-29.919	1.003	0
42	10	M7	0	NC	0	47.018	1.004	31
43	11	M1	0	NC	0	42.333	1.01	8.203
44	11	M3	0	NC	0	55.411	1.009	8.203
45	11	M4	0	NC	0	37.339	1.01	8.203
46	11	M5	0	NC	0	21.563	1.002	0
47	11	M6	0	NC	0	33.972	1.004	0
48	11	M7	0	NC	0	51.496	1.007	0
49	12	M1	0	NC	0	34.324	1.018	8.203
50	12	M3	0	NC	0	42.745	1.019	8.203
51	12	M4	0	NC	0	25.263	1.024	8.203
52	12	M5	0	NC	0	23.728	1.002	14.531
53	12	M6	0	NC	0	28.534	1.006	0
54	12	M7	0	NC	0	43.644	1.012	0
55	13	M1	0	NC	0	41.669	1.006	8.203
56	13	M3	0	NC	0	55.029	1.006	8.203
57	13	M4	0	NC	0	37.867	1.006	8.203
58	13	M5	0	NC	0	20.34	1.001	0
59	13	M6	0	NC	0	32.921	1.002	0
60	13	M7	0	NC	0	50.248	1.004	0

Member Section Stresses

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
1	4	M1	1	0.371	-0.034	0	0	0	0	0
2			2	0.349	-0.034	0	-0.189	0.189	0	0
3			3	0.233	-0.063	0	0.019	-0.019	0	0
4			4	0.145	-0.107	0	0.029	-0.029	0	0
5			5	0.123	-0.107	0	-0.563	0.563	0	0
6	4	M3	1	0.909	-0.012	0	0	0	0	0
7			2	0.887	-0.012	0	-0.067	0.067	0	0
8			3	0.414	0	0	0.041	-0.041	0	0
9			4	0.338	-0.019	0	-0.031	0.031	0	0
10			5	0.315	-0.019	0	-0.139	0.139	0	0
11	4	M4	1	0.375	0.046	0	0	0	0	0
12			2	0.353	0.046	0	0.256	-0.256	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
13			3	0.222	0.064	0	-0.112	0.112	0	0
14			4	0.167	0.126	0	0.073	-0.073	0	0
15			5	0.145	0.126	0	0.773	-0.773	0	0
16	4	M5	1	0.033	0.398	0	-0.563	0.563	0	0
17			2	0.033	-0.074	0	0.498	-0.498	0	0
18			3	0.039	0.474	0	-0.807	0.807	0	0
19			4	0.039	0.003	0	0.755	-0.755	0	0
20			5	0.039	-0.469	0	-0.773	0.773	0	0
21	4	M6	1	-0.013	0.211	0	-0.469	0.469	0	0
22			2	-0.013	-0.022	0	0.166	-0.166	0	0
23			3	-0.019	0.067	0	-0.087	0.087	0	0
24			4	-0.019	-0.018	0	0.074	-0.074	0	0
25			5	-0.019	-0.103	0	-0.323	0.323	0	0
26	4	M7	1	-0.009	0.303	0	-0.517	0.517	0	0
27			2	-0.009	-0.04	0	0.346	-0.346	0	0
28			3	-0.005	0.332	0	-0.559	0.559	0	0
29			4	-0.005	-0.01	0	0.496	-0.496	0	0
30			5	-0.005	-0.353	0	-0.695	0.695	0	0
31	5	M1	1	0.626	-0.102	0	0	0	0	0
32			2	0.603	-0.102	0	-0.565	0.565	0	0
33			3	0.301	-0.183	0	0.059	-0.059	0	0
34			4	0.147	-0.126	0	0.097	-0.097	0	0
35			5	0.125	-0.126	0	-0.605	0.605	0	0
36	5	M3	1	1.864	-0.036	0	0	0	0	0
37			2	1.842	-0.036	0	-0.198	0.198	0	0
38			3	0.418	-0.006	0	0.109	-0.109	0	0
39			4	0.333	0	0	-0.095	0.095	0	0
40			5	0.31	0	0	-0.093	0.093	0	0
41	5	M4	1	0.6	0.138	0	0	0	0	0
42			2	0.577	0.138	0	0.763	-0.763	0	0
43			3	0.229	0.189	0	-0.317	0.317	0	0
44			4	0.17	0.126	0	0.124	-0.124	0	0
45			5	0.148	0.126	0	0.824	-0.824	0	0
46	5	M5	1	0.039	0.404	0	-0.605	0.605	0	0
47			2	0.039	-0.068	0	0.496	-0.496	0	0
48			3	0.039	0.465	0	-0.737	0.737	0	0
49			4	0.039	-0.007	0	0.764	-0.764	0	0
50			5	0.039	-0.478	0	-0.824	0.824	0	0
51	5	M6	1	0.017	0.425	0	-0.912	0.912	0	0
52			2	0.017	-0.065	0	0.31	-0.31	0	0
53			3	0.019	0.054	0	-0.04	0.04	0	0
54			4	0.019	-0.031	0	0.033	-0.033	0	0
55			5	0.019	-0.117	0	-0.452	0.452	0	0
56	5	M7	1	-0.025	0.905	0	-1.522	1.522	0	0
57			2	-0.025	-0.124	0	1.036	-1.036	0	0
58			3	-0.016	1.003	0	-1.71	1.71	0	0
59			4	-0.016	-0.026	0	1.489	-1.489	0	0
60			5	-0.016	-1.056	0	-2.055	2.055	0	0
61	6	M1	1	0.544	-0.036	0	0	0	0	0
62			2	0.522	-0.036	0	-0.201	0.201	0	0
63			3	0.405	-0.051	0	0.066	-0.066	0	0
64			4	0.311	-0.225	0	-0.036	0.036	0	0
65			5	0.289	-0.225	0	-1.284	1.284	0	0
66	6	M3	1	1.332	-0.013	0	0	0	0	0
67			2	1.31	-0.013	0	-0.071	0.071	0	0
68			3	0.838	0.006	0	0.058	-0.058	0	0
69			4	0.773	-0.057	0	-0.039	0.039	0	0
70			5	0.75	-0.057	0	-0.357	0.357	0	0
71	6	M4	1	0.576	0.049	0	0	0	0	0
72			2	0.553	0.049	0	0.272	-0.272	0	0
73			3	0.421	0.044	0	-0.179	0.179	0	0
74			4	0.363	0.282	0	0.205	-0.205	0	0
75			5	0.34	0.282	0	1.77	-1.77	0	0
76	6	M5	1	0.07	0.934	0	-1.284	1.284	0	0
77			2	0.07	-0.181	0	1.181	-1.181	0	0
78			3	0.087	1.13	0	-1.966	1.966	0	0
79			4	0.087	0.015	0	1.785	-1.785	0	0
80			5	0.087	-1.101	0	-1.77	1.77	0	0
81	6	M6	1	-0.054	0.232	0	-0.611	0.611	0	0
82			2	-0.054	-0.001	0	0.162	-0.162	0	0
83			3	-0.074	0.053	0	-0.033	0.033	0	0
84			4	-0.074	-0.032	0	0.037	-0.037	0	0
85			5	-0.074	-0.117	0	-0.452	0.452	0	0
86	6	M7	1	-0.004	0.305	0	-0.527	0.527	0	0
87			2	-0.004	-0.038	0	0.349	-0.349	0	0
88			3	0.001	0.33	0	-0.542	0.542	0	0
89			4	0.001	-0.012	0	0.5	-0.5	0	0
90			5	0.001	-0.355	0	-0.704	0.704	0	0
91	7	M1	1	0.692	-0.087	0	0	0	0	0
92			2	0.669	-0.087	0	-0.48	0.48	0	0
93			3	0.413	-0.143	0	0.084	-0.084	0	0
94			4	0.271	-0.21	0	0.031	-0.031	0	0
95			5	0.249	-0.21	0	-1.135	1.135	0	0
96	7	M3	1	1.943	-0.03	0	0	0	0	0
97			2	1.92	-0.03	0	-0.168	0.168	0	0
98			3	0.736	0	0	0.105	-0.105	0	0
99			4	0.66	-0.033	0	-0.085	0.085	0	0
100			5	0.638	-0.033	0	-0.268	0.268	0	0
101	7	M4	1	0.694	0.117	0	0	0	0	0
102			2	0.672	0.117	0	0.648	-0.648	0	0
103			3	0.377	0.143	0	-0.316	0.316	0	0
104			4	0.316	0.243	0	0.21	-0.21	0	0
105			5	0.294	0.243	0	1.56	-1.56	0	0
106	7	M5	1	0.065	0.805	0	-1.135	1.135	0	0
107			2	0.065	-0.15	0	1.009	-1.009	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
108			3	0.075	0.959	0	-1.623	1.623	0	0
109			4	0.075	0.005	0	1.534	-1.534	0	0
110			5	0.075	-0.95	0	-1.56	1.56	0	0
111	7	M6	1	-0.021	0.388	0	-0.908	0.908	0	0
112			2	-0.021	-0.039	0	0.271	-0.271	0	0
113			3	-0.031	0.047	0	-0.011	0.011	0	0
114			4	-0.031	-0.039	0	0.015	-0.015	0	0
115			5	-0.031	-0.124	0	-0.517	0.517	0	0
116	7	M7	1	-0.018	0.756	0	-1.278	1.278	0	0
117			2	-0.018	-0.102	0	0.866	-0.866	0	0
118			3	-0.008	0.834	0	-1.409	1.409	0	0
119			4	-0.008	-0.024	0	1.244	-1.244	0	0
120			5	-0.008	-0.882	0	-1.722	1.722	0	0
121	8	M1	1	-0.507	1.075	0	0	0	0	0
122			2	-0.53	1.075	0	5.96	-5.96	0	0
123			3	-0.212	0.64	0	1.525	-1.525	0	0
124			4	-0.014	0.604	0	-0.438	0.438	0	0
125			5	-0.037	0.604	0	2.91	-2.91	0	0
126	8	M3	1	1.079	1.472	0	0	0	0	0
127			2	1.057	1.472	0	8.165	-8.165	0	0
128			3	0.5	1.588	0	1.509	-1.509	0	0
129			4	0.368	1.17	0	-1.12	1.12	0	0
130			5	0.346	1.17	0	5.368	-5.368	0	0
131	8	M4	1	1.084	1.101	0	0	0	0	0
132			2	1.062	1.101	0	6.105	-6.105	0	0
133			3	0.58	0.697	0	1.442	-1.442	0	0
134			4	0.297	0.759	0	-0.251	0.251	0	0
135			5	0.274	0.759	0	3.96	-3.96	0	0
136	8	M5	1	0.595	-0.119	0	2.91	-2.91	0	0
137			2	0.595	-0.59	0	0.588	-0.588	0	0
138			3	0.234	0.056	0	1.49	-1.49	0	0
139			4	0.234	-0.416	0	0.309	-0.309	0	0
140			5	0.234	-0.888	0	-3.96	3.96	0	0
141	8	M6	1	0.108	-0.712	0	5.423	-5.423	0	0
142			2	0.108	-0.945	0	0.012	-0.012	0	0
143			3	-0.021	-0.675	0	4.24	-4.24	0	0
144			4	-0.021	-0.76	0	-0.457	0.457	0	0
145			5	-0.021	-0.845	0	-5.713	5.713	0	0
146	8	M7	1	0.079	-1.099	0	8.605	-8.605	0	0
147			2	0.079	-1.442	0	0.285	-0.285	0	0
148			3	0.12	-0.799	0	5.851	-5.851	0	0
149			4	0.12	-1.142	0	-0.504	0.504	0	0
150			5	0.12	-1.485	0	-9.105	9.105	0	0
151	9	M1	1	0.029	0.754	0	0	0	0	0
152			2	0.007	0.754	0	4.179	-4.179	0	0
153			3	0.078	0.385	0	1.226	-1.226	0	0
154			4	0.151	0.324	0	-0.318	0.318	0	0
155			5	0.129	0.324	0	1.477	-1.477	0	0
156	9	M3	1	2.071	1.094	0	0	0	0	0
157			2	2.049	1.094	0	6.065	-6.065	0	0
158			3	0.801	1.196	0	1.216	-1.216	0	0
159			4	0.683	0.861	0	-0.901	0.901	0	0
160			5	0.661	0.861	0	3.872	-3.872	0	0
161	9	M4	1	1.228	0.916	0	0	0	0	0
162			2	1.206	0.916	0	5.081	-5.081	0	0
163			3	0.647	0.619	0	0.861	-0.861	0	0
164			4	0.413	0.719	0	-0.032	0.032	0	0
165			5	0.391	0.719	0	3.956	-3.956	0	0
166	9	M5	1	0.486	0.416	0	1.477	-1.477	0	0
167			2	0.486	-0.538	0	1.077	-1.077	0	0
168			3	0.222	0.644	0	0.104	-0.104	0	0
169			4	0.222	-0.31	0	1.199	-1.199	0	0
170			5	0.222	-1.264	0	-3.956	3.956	0	0
171	9	M6	1	0.071	-0.307	0	3.527	-3.527	0	0
172			2	0.071	-0.734	0	0.154	-0.154	0	0
173			3	-0.032	-0.512	0	3.247	-3.247	0	0
174			4	-0.032	-0.597	0	-0.385	0.385	0	0
175			5	-0.032	-0.682	0	-4.574	4.574	0	0
176	9	M7	1	0.048	-0.303	0	5.614	-5.614	0	0
177			2	0.048	-1.161	0	0.821	-0.821	0	0
178			3	0.088	-0.021	0	3.433	-3.433	0	0
179			4	0.088	-0.879	0	0.488	-0.488	0	0
180			5	0.088	-1.736	0	-8.075	8.075	0	0
181	10	M1	1	-0.654	1.084	0	0	0	0	0
182			2	-0.667	1.084	0	6.012	-6.012	0	0
183			3	-0.305	0.665	0	1.511	-1.511	0	0
184			4	-0.072	0.646	0	-0.45	0.45	0	0
185			5	-0.086	0.646	0	3.132	-3.132	0	0
186	10	M3	1	0.715	1.472	0	0	0	0	0
187			2	0.702	1.472	0	8.161	-8.161	0	0
188			3	0.335	1.585	0	1.487	-1.487	0	0
189			4	0.233	1.177	0	-1.107	1.107	0	0
190			5	0.219	1.177	0	5.418	-5.418	0	0
191	10	M4	1	0.932	1.078	0	0	0	0	0
192			2	0.919	1.078	0	5.98	-5.98	0	0
193			3	0.491	0.671	0	1.48	-1.48	0	0
194			4	0.23	0.708	0	-0.281	0.281	0	0
195			5	0.216	0.708	0	3.648	-3.648	0	0
196	10	M5	1	0.582	-0.277	0	3.132	-3.132	0	0
197			2	0.582	-0.56	0	0.389	-0.389	0	0
198			3	0.218	-0.134	0	1.81	-1.81	0	0
199			4	0.218	-0.417	0	0.008	-0.008	0	0
200			5	0.218	-0.7	0	-3.648	3.648	0	0
201	10	M6	1	0.113	-0.795	0	5.601	-5.601	0	0
202			2	0.113	-0.935	0	-0.054	0.054	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
203			3	-0.013	-0.7	0	4.268	-4.268	0	0
204			4	-0.013	-0.751	0	-0.486	0.486	0	0
205			5	-0.013	-0.803	0	-5.576	5.576	0	0
206	10	M7	1	0.083	-1.216	0	8.786	-8.786	0	0
207			2	0.083	-1.422	0	0.147	-0.147	0	0
208			3	0.122	-0.929	0	6.056	-6.056	0	0
209			4	0.122	-1.134	0	-0.7	0.7	0	0
210			5	0.122	-1.34	0	-8.802	8.802	0	0
211	11	M1	1	1.25	-1.143	0	0	0	0	0
212			2	1.228	-1.143	0	-6.34	6.34	0	0
213			3	0.678	-0.766	0	-1.487	1.487	0	0
214			4	0.305	-0.817	0	0.496	-0.496	0	0
215			5	0.283	-0.817	0	-4.037	4.037	0	0
216	11	M3	1	0.739	-1.496	0	0	0	0	0
217			2	0.717	-1.496	0	-8.299	8.299	0	0
218			3	0.328	-1.589	0	-1.427	1.427	0	0
219			4	0.307	-1.209	0	1.057	-1.057	0	0
220			5	0.285	-1.209	0	-5.646	5.646	0	0
221	11	M4	1	-0.333	-1.008	0	0	0	0	0
222			2	-0.355	-1.008	0	-5.592	5.592	0	0
223			3	-0.137	-0.57	0	-1.665	1.665	0	0
224			4	0.038	-0.507	0	0.397	-0.397	0	0
225			5	0.016	-0.507	0	-2.415	2.415	0	0
226	11	M5	1	-0.53	0.914	0	-4.037	4.037	0	0
227			2	-0.53	0.443	0	0.407	-0.407	0	0
228			3	-0.157	0.893	0	-3.104	3.104	0	0
229			4	-0.157	0.421	0	1.2	-1.2	0	0
230			5	-0.157	-0.05	0	2.415	-2.415	0	0
231	11	M6	1	-0.137	1.135	0	-6.36	6.36	0	0
232			2	-0.137	0.901	0	0.321	-0.321	0	0
233			3	-0.02	0.809	0	-4.415	4.415	0	0
234			4	-0.02	0.724	0	0.606	-0.606	0	0
235			5	-0.02	0.639	0	5.068	-5.068	0	0
236	11	M7	1	-0.105	1.705	0	-9.641	9.641	0	0
237			2	-0.105	1.363	0	0.406	-0.406	0	0
238			3	-0.137	1.464	0	-6.969	6.969	0	0
239			4	-0.137	1.121	0	1.496	-1.496	0	0
240			5	-0.137	0.778	0	7.715	-7.715	0	0
241	12	M1	1	1.354	-0.927	0	0	0	0	0
242			2	1.332	-0.927	0	-5.141	5.141	0	0
243			3	0.748	-0.671	0	-1.058	1.058	0	0
244			4	0.391	-0.744	0	0.38	-0.38	0	0
245			5	0.369	-0.744	0	-3.746	3.746	0	0
246	12	M3	1	1.815	-1.154	0	0	0	0	0
247			2	1.792	-1.154	0	-6.402	6.402	0	0
248			3	0.671	-1.196	0	-1.006	1.006	0	0
249			4	0.638	-0.927	0	0.732	-0.732	0	0
250			5	0.615	-0.927	0	-4.409	4.409	0	0
251	12	M4	1	0.16	-0.682	0	0	0	0	0
252			2	0.137	-0.682	0	-3.784	3.784	0	0
253			3	0.107	-0.332	0	-1.494	1.494	0	0
254			4	0.219	-0.232	0	0.452	-0.452	0	0
255			5	0.196	-0.232	0	-0.837	0.837	0	0
256	12	M5	1	-0.357	1.193	0	-3.746	3.746	0	0
257			2	-0.357	0.238	0	0.941	-0.941	0	0
258			3	-0.071	1.274	0	-3.35	3.35	0	0
259			4	-0.071	0.32	0	1.869	-1.869	0	0
260			5	-0.071	-0.635	0	0.837	-0.837	0	0
261	12	M6	1	-0.114	1.082	0	-5.342	5.342	0	0
262			2	-0.114	0.656	0	0.387	-0.387	0	0
263			3	-0.031	0.605	0	-3.269	3.269	0	0
264			4	-0.031	0.52	0	0.415	-0.415	0	0
265			5	-0.031	0.435	0	3.541	-3.541	0	0
266	12	M7	1	-0.088	1.816	0	-8.171	8.171	0	0
267			2	-0.088	0.958	0	0.911	-0.911	0	0
268			3	-0.108	1.689	0	-6.252	6.252	0	0
269			4	-0.108	0.831	0	1.999	-1.999	0	0
270			5	-0.108	-0.027	0	4.632	-4.632	0	0
271	13	M1	1	1.1	-1.125	0	0	0	0	0
272			2	1.086	-1.125	0	-6.241	6.241	0	0
273			3	0.584	-0.74	0	-1.489	1.489	0	0
274			4	0.247	-0.774	0	0.485	-0.485	0	0
275			5	0.233	-0.774	0	-3.808	3.808	0	0
276	13	M3	1	0.376	-1.486	0	0	0	0	0
277			2	0.362	-1.486	0	-8.242	8.242	0	0
278			3	0.162	-1.586	0	-1.438	1.438	0	0
279			4	0.172	-1.2	0	1.07	-1.07	0	0
280			5	0.159	-1.2	0	-5.584	5.584	0	0
281	13	M4	1	-0.482	-1.023	0	0	0	0	0
282			2	-0.495	-1.023	0	-5.671	5.671	0	0
283			3	-0.225	-0.595	0	-1.614	1.614	0	0
284			4	-0.029	-0.557	0	0.369	-0.369	0	0
285			5	-0.042	-0.557	0	-2.72	2.72	0	0
286	13	M5	1	-0.543	0.755	0	-3.808	3.808	0	0
287			2	-0.543	0.472	0	0.208	-0.208	0	0
288			3	-0.172	0.703	0	-2.778	2.778	0	0
289			4	-0.172	0.42	0	0.898	-0.898	0	0
290			5	-0.172	0.137	0	2.72	-2.72	0	0
291	13	M6	1	-0.132	1.048	0	-6.163	6.163	0	0
292			2	-0.132	0.908	0	0.254	-0.254	0	0
293			3	-0.013	0.781	0	-4.373	4.373	0	0
294			4	-0.013	0.73	0	0.576	-0.576	0	0
295			5	-0.013	0.679	0	5.189	-5.189	0	0
296	13	M7	1	-0.102	1.58	0	-9.407	9.407	0	0
297			2	-0.102	1.374	0	0.267	-0.267	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
298			3	-0.135	1.328	0	-6.727	6.727	0	0
299			4	-0.135	1.122	0	1.294	-1.294	0	0
300			5	-0.135	0.916	0	7.968	-7.968	0	0

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

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	4	M1	W12X50	0.064	0	0.005	26.25	y	85.284	437.126	53.144	179.391	3	H1-1b*
2	4	M3	W12X50	0.156	0	0.001	26.25	y	85.284	437.126	53.144	179.391	2.147	H1-1b*
3	4	M4	W12X50	0.064	0	0.006	26.25	y	85.284	437.126	53.144	179.391	2.87	H1-1b*
4	4	M5	W12X50	0.057	14.531	0.027	14.531	y	61.151	437.126	53.144	123.977	1.519	H1-1b
5	4	M6	W12X50	0.014	0	0.011	0	y	61.151	437.126	53.144	179.391	2.614	H1-1b
6	4	M7	W12X50	0.036	14.531	0.019	14.531	y	61.151	437.126	53.144	125.803	1.541	H1-1b
7	5	M1	W12X50	0.107	0	0.009	16.68	y	85.284	437.126	53.144	179.391	2.332	H1-1b*
8	5	M3	W12X50	0.322	8.203	0.002	8.203	y	85.284	437.126	53.144	159.423	1.601	H1-1a
9	5	M4	W12X50	0.103	0	0.009	16.68	y	85.284	437.126	53.144	179.391	2.015	H1-1b*
10	5	M5	W12X50	0.055	14.531	0.026	14.531	y	61.151	437.126	53.144	121.544	1.489	H1-1b
11	5	M6	W12X50	0.029	0	0.021	0	y	61.151	437.126	53.144	179.391	3	H1-1b
12	5	M7	W12X50	0.11	14.531	0.057	14.531	y	61.151	437.126	53.144	126.278	1.547	H1-1b
13	6	M1	W12X50	0.093	0	0.011	26.25	y	85.284	437.126	53.144	179.391	3	H1-1b*
14	6	M3	W12X50	0.228	0	0.003	26.25	y	85.284	437.126	53.144	179.391	3	H1-1a*
15	6	M4	W12X50	0.099	0	0.014	26.25	y	85.284	437.126	53.144	179.391	3	H1-1b*
16	6	M5	W12X50	0.137	14.531	0.063	14.531	y	61.151	437.126	53.144	124.643	1.527	H1-1b
17	6	M6	W12X50	0.019	0	0.012	0	y	61.151	437.126	53.144	179.391	3	H1-1b
18	6	M7	W12X50	0.036	14.531	0.019	14.531	y	61.151	437.126	53.144	124.724	1.528	H1-1b
19	7	M1	W12X50	0.118	0	0.011	26.25	y	85.284	437.126	53.144	179.391	3	H1-1b*
20	7	M3	W12X50	0.333	8.203	0.002	26.25	y	85.284	437.126	53.144	179.391	1.813	H1-1a
21	7	M4	W12X50	0.119	0	0.012	26.25	y	85.284	437.126	53.144	179.391	2.519	H1-1b*
22	7	M5	W12X50	0.115	14.531	0.054	14.531	y	61.151	437.126	53.144	123.709	1.516	H1-1b
23	7	M6	W12X50	0.027	0	0.019	0	y	61.151	437.126	53.144	179.391	3	H1-1b
24	7	M7	W12X50	0.091	14.531	0.047	14.531	y	61.151	437.126	53.144	125.916	1.543	H1-1b
25	8	M1	W12X50	0.231	8.203	0.054	8.203	y	85.284	437.126	53.144	179.391	2.12	H1-1b
26	8	M3	W12X50	0.394	8.203	0.079	16.68	y	85.284	437.126	53.144	179.391	2.147	H1-1b
27	8	M4	W12X50	0.318	8.203	0.055	8.203	y	85.284	437.126	53.144	179.391	2.172	H1-1b
28	8	M5	W12X50	0.181	14.208	0.049	14.208	y	61.151	437.126	53.144	179.391	2.668	H1-1b
29	8	M6	W12X50	0.175	0	0.051	14.208	y	61.151	437.126	53.144	178.506	2.187	H1-1b
30	8	M7	W12X50	0.285	31	0.086	14.208	y	61.151	437.126	53.144	179.391	2.345	H1-1b
31	9	M1	W12X50	0.156	8.203	0.038	8.203	y	85.284	437.126	53.144	179.391	2.076	H1-1b
32	9	M3	W12X50	0.55	8.203	0.06	16.68	y	85.284	437.126	53.144	179.391	2.119	H1-1a
33	9	M4	W12X50	0.374	8.203	0.046	8.203	y	85.284	437.126	53.144	179.391	2.29	H1-1a
34	9	M5	W12X50	0.178	14.208	0.067	14.208	y	61.151	437.126	53.144	179.391	2.909	H1-1b
35	9	M6	W12X50	0.137	31	0.04	14.208	y	61.151	437.126	53.144	179.211	2.196	H1-1b
36	9	M7	W12X50	0.251	31	0.094	14.208	y	61.151	437.126	53.144	179.391	2.667	H1-1b
37	10	M1	W12X50	0.235	8.203	0.054	8.203	y	85.284	437.126	53.144	179.391	2.124	H1-1b
38	10	M3	W12X50	0.364	8.203	0.079	16.68	y	85.284	437.126	53.144	179.391	2.152	H1-1b
39	10	M4	W12X50	0.301	8.203	0.054	8.203	y	85.284	437.126	53.144	179.391	2.153	H1-1b
40	10	M5	W12X50	0.168	14.208	0.04	14.208	y	61.151	437.126	53.144	179.391	2.598	H1-1b
41	10	M6	W12X50	0.185	0	0.049	14.208	y	61.151	437.126	53.144	174.765	2.141	H1-1b
42	10	M7	W12X50	0.277	31	0.08	14.208	y	61.151	437.126	53.144	179.391	2.256	H1-1b
43	11	M1	W12X50	0.419	8.203	0.057	8.203	y	85.284	437.126	53.144	179.391	2.141	H1-1a
44	11	M3	W12X50	0.37	8.203	0.079	16.68	y	85.284	437.126	53.144	179.391	2.172	H1-1b
45	11	M4	W12X50	0.214	8.203	0.05	8.203	y	85.284	437.126	53.144	179.391	2.075	H1-1b
46	11	M5	W12X50	0.152	0	0.048	14.531	y	61.151	437.126	53.144	150.696	1.846	H1-1b
47	11	M6	W12X50	0.193	0	0.057	0	y	61.151	437.126	53.144	178.542	2.188	H1-1b
48	11	M7	W12X50	0.304	0	0.085	0	y	61.151	437.126	53.144	170.509	2.089	H1-1b
49	12	M1	W12X50	0.397	8.203	0.046	8.203	y	85.284	437.126	53.144	179.391	2.179	H1-1a
50	12	M3	W12X50	0.518	8.203	0.06	16.68	y	85.284	437.126	53.144	179.391	2.202	H1-1a
51	12	M4	W12X50	0.152	8.203	0.034	8.203	y	85.284	437.126	53.144	179.391	1.938	H1-1b
52	12	M5	W12X50	0.174	14.531	0.07	14.531	y	61.151	437.126	53.144	137.594	1.686	H1-1b
53	12	M6	W12X50	0.161	0	0.054	0	y	61.151	437.126	53.144	179.391	2.315	H1-1b
54	12	M7	W12X50	0.285	0	0.091	0	y	61.151	437.126	53.144	153.89	1.886	H1-1b
55	13	M1	W12X50	0.325	8.203	0.056	8.203	y	85.284	437.126	53.144	179.391	2.137	H1-1b
56	13	M3	W12X50	0.337	8.203	0.079	16.68	y	85.284	437.126	53.144	179.391	2.166	H1-1b
57	13	M4	W12X50	0.219	8.203	0.051	8.203	y	85.284	437.126	53.144	179.391	2.095	H1-1b
58	13	M5	W12X50	0.134	0	0.038	0	y	61.151	437.126	53.144	162.192	1.987	H1-1b
59	13	M6	W12X50	0.187	0	0.052	0	y	61.151	437.126	53.144	177.669	2.177	H1-1b
60	13	M7	W12X50	0.29	0	0.079	0	y	61.151	437.126	53.144	174.139	2.134	H1-1b

X-Direction Story Drift - Strength

No Data to Print...

Envelope Member Section Forces

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
1	M1	1	max	19.771	12	4.893	10	0	13	0	13	0	13	0	13
2			min	-9.548	10	-5.161	11	0	4	0	4	0	4	0	4
3		2	max	19.445	12	4.893	10	0	13	0	13	0	13	33.866	11
4			min	-9.743	10	-5.161	11	0	4	0	4	0	4	-32.113	10
5		3	max	10.923	12	3.001	10	0	13	0	13	0	13	7.952	13
6			min	-4.449	10	-3.46	11	0	4	0	4	0	4	-8.148	8
7		4	max	5.711	12	2.915	10	0	13	0	13	0	13	2.403	10
8			min	-1.057	10	-3.689	11	0	4	0	4	0	4	-2.648	11
9		5	max	5.385	12	2.915	10	0	13	0	13	0	13	21.563	11
10			min	-1.252	10	-3.689	11	0	4	0	4	0	4	-16.728	10
11	M3	1	max	30.236	9	6.646	8	0	13	0	13	0	13	0	13
12			min	5.488	13	-6.755	11	0	4	0	4	0	4	0	4
13		2	max	29.91	9	6.646	8	0	13	0	13	0	13	44.329	11
14			min	5.292	13	-6.755	11	0	4	0	4	0	4	-43.611	8
15		3	max	12.239	6	7.169	8	0	13	0	13	0	13	7.68	13
16			min	2.369	13	-7.171	11	0	4	0	4	0	4	-8.061	8
17		4	max	11.282	6	5.311	10	0	13	0	13	0	13	5.983	8
18			min	2.516	13	-5.456	11	0	4	0	4	0	4	-5.714	13
19		5	max	10.956	6	5.311	10	0	13	0	13	0	13	30.156	11
20			min	2.32	13	-5.456	11	0	4	0	4	0	4	-28.938	10
21	M4	1	max	17.93	9	4.969	8	0	13	0	13	0	13	0	13

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
22			min	-7.035	13	-4.616	13	0	4	0	4	0	4	0	4
23		2	max	17.604	9	4.969	8	0	13	0	13	0	13	30.294	13
24			min	-7.23	13	-4.616	13	0	4	0	4	0	4	-32.612	8
25		3	max	9.44	9	3.146	8	0	13	0	13	0	13	8.894	11
26			min	-3.291	13	-2.687	13	0	4	0	4	0	4	-7.904	10
27		4	max	6.034	9	3.428	8	0	13	0	13	0	13	1.503	10
28			min	-0.422	13	-2.514	13	0	4	0	4	0	4	-2.415	12
29		5	max	5.708	9	3.428	8	0	13	0	13	0	13	14.531	13
30			min	-0.618	13	-2.514	13	0	4	0	4	0	4	-21.153	8
31	M5	1	max	8.685	8	5.385	12	0	13	0	13	0	13	21.563	11
32			min	-7.925	13	-1.252	10	0	4	0	4	0	4	-16.728	10
33		2	max	8.685	8	2.129	13	0	13	0	13	0	13	-1.113	13
34			min	-7.925	13	-2.665	8	0	4	0	4	0	4	-6.307	6
35		3	max	3.417	8	5.751	12	0	13	0	13	0	13	17.895	12
36			min	-2.516	13	-0.604	10	0	4	0	4	0	4	-9.669	10
37		4	max	3.417	8	1.902	11	0	13	0	13	0	13	-0.042	10
38			min	-2.516	13	-1.881	10	0	4	0	4	0	4	-9.983	12
39		5	max	3.417	8	0.618	13	0	13	0	13	0	13	21.153	8
40			min	-2.516	13	-5.708	9	0	4	0	4	0	4	-14.531	13
41	M6	1	max	1.651	10	5.121	11	0	13	0	13	0	13	33.972	11
42			min	-2.003	11	-3.588	10	0	4	0	4	0	4	-29.919	10
43		2	max	1.651	10	4.1	13	0	13	0	13	0	13	0.29	10
44			min	-2.003	11	-4.268	8	0	4	0	4	0	4	-2.069	12
45		3	max	0.284	5	3.653	11	0	13	0	13	0	13	23.583	11
46			min	-1.074	6	-3.161	10	0	4	0	4	0	4	-22.798	10
47		4	max	0.284	5	3.295	13	0	13	0	13	0	13	2.597	10
48			min	-1.074	6	-3.43	8	0	4	0	4	0	4	-3.237	11
49		5	max	0.284	5	3.064	13	0	13	0	13	0	13	30.517	8
50			min	-1.074	6	-3.815	8	0	4	0	4	0	4	-27.717	13
51	M7	1	max	1.21	10	8.196	12	0	13	0	13	0	13	51.496	11
52			min	-1.534	11	-5.49	10	0	4	0	4	0	4	-46.93	10
53		2	max	1.21	10	6.204	13	0	13	0	13	0	13	-0.787	10
54			min	-1.534	11	-6.508	8	0	4	0	4	0	4	-5.535	5
55		3	max	1.775	10	7.623	12	0	13	0	13	0	13	37.223	11
56			min	-2.004	11	-4.192	10	0	4	0	4	0	4	-32.348	10
57		4	max	1.775	10	5.064	13	0	13	0	13	0	13	3.737	10
58			min	-2.004	11	-5.154	8	0	4	0	4	0	4	-10.68	12
59		5	max	1.775	10	4.136	13	0	13	0	13	0	13	48.634	8
60			min	-2.004	11	-7.838	9	0	4	0	4	0	4	-42.563	13

Envelope Maximum Member Section Forces

	Member		Axial[k]	Loc[ft]	LC	y Shear[k]	Loc[ft]	LC	z Shear[k]	Loc[ft]	LC	Torque[k-ft]	Loc[ft]	LC	y-y Moment[k-ft]	Loc[ft]	LC	z-z Moment[k-ft]	Loc[ft]	LC
1	M1	max	19.771	0	12	4.893	8.203	10	0	26.25	13	0	26.25	13	0	26.25	13	42.333	8.203	11
2		min	-9.792	8.203	10	-5.161	0	11	0	0	4	0	0	4	0	0	4	-40.141	8.203	10
3	M3	max	30.236	0	9	7.169	16.68	8	0	26.25	13	0	26.25	13	0	26.25	13	55.411	8.203	11
4		min	2.263	16.68	13	-7.171	8.477	11	0	0	4	0	0	4	0	0	4	-54.514	8.203	8
5	M4	max	17.93	0	9	4.969	8.203	8	0	26.25	13	0	26.25	13	0	26.25	13	37.867	8.203	13
6		min	-7.279	8.203	13	-4.616	0	13	0	0	4	0	0	4	0	0	4	-40.765	8.203	8
7	M5	max	8.685	14.208	8	6.29	14.531	12	0	31	13	0	31	13	0	31	13	23.728	14.531	12
8		min	-7.925	0	13	-6.02	14.208	9	0	0	4	0	0	4	0	0	4	-16.728	0	10
9	M6	max	1.651	14.208	10	5.121	0	11	0	31	13	0	31	13	0	31	13	33.972	0	11
10		min	-2.003	0	11	-4.589	14.208	8	0	0	4	0	0	4	0	0	4	-29.919	0	10
11	M7	max	1.775	31	10	8.196	0	12	0	31	13	0	31	13	0	31	13	51.496	0	11
12		min	-2.004	14.531	11	-8.467	14.208	9	0	0	4	0	0	4	0	0	4	-46.93	0	10

Envelope Member End Reactions

	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
1	M1	I	max	19.771	12	4.893	10	0	13	0	13	0	13	0	13
2			min	-9.548	10	-5.161	11	0	4	0	4	0	4	0	4
3		J	max	5.385	12	2.915	10	0	13	0	13	0	13	21.563	11
4			min	-1.252	10	-3.689	11	0	4	0	4	0	4	-16.728	10
5	M3	I	max	30.236	9	6.646	8	0	13	0	13	0	13	0	13
6			min	5.488	13	-6.755	11	0	4	0	4	0	4	0	4
7		J	max	10.956	6	5.311	10	0	13	0	13	0	13	30.156	11
8			min	2.32	13	-5.456	11	0	4	0	4	0	4	-28.938	10
9	M4	I	max	17.93	9	4.969	8	0	13	0	13	0	13	0	13
10			min	-7.035	13	-4.616	13	0	4	0	4	0	4	0	4
11		J	max	5.708	9	3.428	8	0	13	0	13	0	13	14.531	13
12			min	-0.618	13	-2.514	13	0	4	0	4	0	4	-21.153	8
13	M5	I	max	8.685	8	5.385	12	0	13	0	13	0	13	21.563	11
14			min	-7.925	13	-1.252	10	0	4	0	4	0	4	-16.728	10
15		J	max	3.417	8	0.618	13	0	13	0	13	0	13	21.153	8
16			min	-2.516	13	-5.708	9	0	4	0	4	0	4	-14.531	13
17	M6	I	max	1.651	10	5.121	11	0	13	0	13	0	13	33.972	11
18			min	-2.003	11	-3.588	10	0	4	0	4	0	4	-29.919	10
19		J	max	0.284	5	3.064	13	0	13	0	13	0	13	30.517	8
20			min	-1.074	6	-3.815	8	0	4	0	4	0	4	-27.717	13
21	M7	I	max	1.21	10	8.196	12	0	13	0	13	0	13	51.496	11
22			min	-1.534	11	-5.49	10	0	4	0	4	0	4	-46.93	10
23		J	max	1.775	10	4.136	13	0	13	0	13	0	13	48.634	8
24			min	-2.004	11	-7.838	9	0	4	0	4	0	4	-42.563	13

Envelope Member 2nd/1st Moment Ratios

	Member		y-y Moment [k-ft]	2nd/1st Ratio	z-z Moment [k-ft]	2nd/1st Ratio	Loc [ft]	LC
1	M1	max	NC	NC	-27.902	1.022	8.203	9
2		min	NC	NC	-4.149	1	8.477	5
3	M3	max	NC	NC	-40.494	1.019	8.203	9
4		min	NC	NC	1.433	1	26.25	7
5	M4	max	NC	NC	25.263	1.024	8.203	12
6		min	NC	NC	-9.457	1	26.25	6
7	M5	max	NC	NC	21.535	1.003	14.208	9
8		min	NC	NC	6.096	1	14.531	5

Envelope Member 2nd/1st Moment Ratios (Continued)

	Member		y-y Moment [k-ft]	2nd/1st Ratio	z-z Moment [k-ft]	2nd/1st Ratio	Loc [ft]	LC
9	M6	max	NC	NC	24.434	1.007	31	9
10		min	NC	NC	4.848	1	0	7
11	M7	max	NC	NC	43.644	1.012	0	12
12		min	NC	NC	4.432	1	14.531	6

Envelope Member Section Stresses

	Member	Sec		Axial[ksi]	LC	y Shear[ksi]	LC	z Shear[ksi]	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
1	M1	1	max	1.354	12	1.084	10	0	13	0	13	0	13	0	13	0	13
2			min	-0.654	10	-1.143	11	0	4	0	4	0	4	0	4	0	4
3		2	max	1.332	12	1.084	10	0	13	6.012	10	6.34	11	0	13	0	13
4			min	-0.667	10	-1.143	11	0	4	-6.34	11	-6.012	10	0	4	0	4
5		3	max	0.748	12	0.665	10	0	13	1.525	8	1.489	13	0	13	0	13
6			min	-0.305	10	-0.766	11	0	4	-1.489	13	-1.525	8	0	4	0	4
7		4	max	0.391	12	0.646	10	0	13	0.496	11	0.45	10	0	13	0	13
8			min	-0.072	10	-0.817	11	0	4	-0.45	10	-0.496	11	0	4	0	4
9		5	max	0.369	12	0.646	10	0	13	3.132	10	4.037	11	0	13	0	13
10			min	-0.086	10	-0.817	11	0	4	-4.037	11	-3.132	10	0	4	0	4
11	M3	1	max	2.071	9	1.472	8	0	13	0	13	0	13	0	13	0	13
12			min	0.376	13	-1.496	11	0	4	0	4	0	4	0	4	0	4
13		2	max	2.049	9	1.472	8	0	13	8.165	8	8.299	11	0	13	0	13
14			min	0.362	13	-1.496	11	0	4	-8.299	11	-8.165	8	0	4	0	4
15		3	max	0.838	6	1.588	8	0	13	1.509	8	1.438	13	0	13	0	13
16			min	0.162	13	-1.589	11	0	4	-1.438	13	-1.509	8	0	4	0	4
17		4	max	0.773	6	1.177	10	0	13	1.07	13	1.12	8	0	13	0	13
18			min	0.172	13	-1.209	11	0	4	-1.12	8	-1.07	13	0	4	0	4
19		5	max	0.75	6	1.177	10	0	13	5.418	10	5.646	11	0	13	0	13
20			min	0.159	13	-1.209	11	0	4	-5.646	11	-5.418	10	0	4	0	4
21	M4	1	max	1.228	9	1.101	8	0	13	0	13	0	13	0	13	0	13
22			min	-0.482	13	-1.023	13	0	4	0	4	0	4	0	4	0	4
23		2	max	1.206	9	1.101	8	0	13	6.105	8	5.671	13	0	13	0	13
24			min	-0.495	13	-1.023	13	0	4	-5.671	13	-6.105	8	0	4	0	4
25		3	max	0.647	9	0.697	8	0	13	1.48	10	1.665	11	0	13	0	13
26			min	-0.225	13	-0.595	13	0	4	-1.665	11	-1.48	10	0	4	0	4
27		4	max	0.413	9	0.759	8	0	13	0.452	12	0.281	10	0	13	0	13
28			min	-0.029	13	-0.557	13	0	4	-0.281	10	-0.452	12	0	4	0	4
29		5	max	0.391	9	0.759	8	0	13	3.96	8	2.72	13	0	13	0	13
30			min	-0.042	13	-0.557	13	0	4	-2.72	13	-3.96	8	0	4	0	4
31	M5	1	max	0.595	8	1.193	12	0	13	3.132	10	4.037	11	0	13	0	13
32			min	-0.543	13	-0.277	10	0	4	-4.037	11	-3.132	10	0	4	0	4
33		2	max	0.595	8	0.472	13	0	13	1.181	6	-0.208	13	0	13	0	13
34			min	-0.543	13	-0.59	8	0	4	0.208	13	-1.181	6	0	4	0	4
35		3	max	0.234	8	1.274	12	0	13	1.81	10	3.35	12	0	13	0	13
36			min	-0.172	13	-0.134	10	0	4	-3.35	12	-1.81	10	0	4	0	4
37		4	max	0.234	8	0.421	11	0	13	1.869	12	-0.008	10	0	13	0	13
38			min	-0.172	13	-0.417	10	0	4	0.008	10	-1.869	12	0	4	0	4
39		5	max	0.234	8	0.137	13	0	13	2.72	13	3.96	8	0	13	0	13
40			min	-0.172	13	-1.264	9	0	4	-3.96	8	-2.72	13	0	4	0	4
41	M6	1	max	0.113	10	1.135	11	0	13	5.601	10	6.36	11	0	13	0	13
42			min	-0.137	11	-0.795	10	0	4	-6.36	11	-5.601	10	0	4	0	4
43		2	max	0.113	10	0.908	13	0	13	0.387	12	0.054	10	0	13	0	13
44			min	-0.137	11	-0.945	8	0	4	-0.054	10	-0.387	12	0	4	0	4
45		3	max	0.019	5	0.809	11	0	13	4.268	10	4.415	11	0	13	0	13
46			min	-0.074	6	-0.7	10	0	4	-4.415	11	-4.268	10	0	4	0	4
47		4	max	0.019	5	0.73	13	0	13	0.606	11	0.486	10	0	13	0	13
48			min	-0.074	6	-0.76	8	0	4	-0.486	10	-0.606	11	0	4	0	4
49		5	max	0.019	5	0.679	13	0	13	5.189	13	5.713	8	0	13	0	13
50			min	-0.074	6	-0.845	8	0	4	-5.713	8	-5.189	13	0	4	0	4
51	M7	1	max	0.083	10	1.816	12	0	13	8.786	10	9.641	11	0	13	0	13
52			min	-0.105	11	-1.216	10	0	4	-9.641	11	-8.786	10	0	4	0	4
53		2	max	0.083	10	1.374	13	0	13	1.036	5	-0.147	10	0	13	0	13
54			min	-0.105	11	-1.442	8	0	4	0.147	10	-1.036	5	0	4	0	4
55		3	max	0.122	10	1.689	12	0	13	6.056	10	6.969	11	0	13	0	13
56			min	-0.137	11	-0.929	10	0	4	-6.969	11	-6.056	10	0	4	0	4
57		4	max	0.122	10	1.122	13	0	13	1.999	12	0.7	10	0	13	0	13
58			min	-0.137	11	-1.142	8	0	4	-0.7	10	-1.999	12	0	4	0	4
59		5	max	0.122	10	0.916	13	0	13	7.968	13	9.105	8	0	13	0	13
60			min	-0.137	11	-1.736	9	0	4	-9.105	8	-7.968	13	0	4	0	4

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	M1	W12X50	0.419	8.203	11	0.057	8.203	y	11	85.284	437.126	53.144	179.391	2.141	H1-1a
2	M3	W12X50	0.55	8.203	9	0.079	16.68	y	11	85.284	437.126	53.144	179.391	2.119	H1-1a
3	M4	W12X50	0.374	8.203	9	0.055	8.203	y	8	85.284	437.126	53.144	179.391	2.29	H1-1a
4	M5	W12X50	0.181	14.208	8	0.07	14.531	y	12	61.151	437.126	53.144	179.391	2.668	H1-1b
5	M6	W12X50	0.193	0	11	0.057	0	y	11	61.151	437.126	53.144	178.542	2.188	H1-1b
6	M7	W12X50	0.304	0	11	0.094	14.208	y	9	61.151	437.126	53.144	170.509	2.089	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	5.04	11	19.771	12	0	13	0	13	0	13	0	13
2		min	-4.958	10	-9.548	10	0	4	0	4	0	4	0	4
3	N3	max	6.684	11	30.236	9	0	13	0	13	0	13	0	13
4		min	-6.574	10	5.488	13	0	4	0	4	0	4	0	4
5	N4	max	4.664	13	17.93	9	0	13	0	13	0	13	0	13
6		min	-4.866	8	-7.035	13	0	4	0	4	0	4	0	4
7	Totals:	max	16.31	11	48.594	12	0	13						
8		min	-16.31	8	14.507	10	0	4						

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	10	0	10	0	13	0	13	0	13	4.985e-3	11
2		min	0	11	0	12	0	4	0	4	0	4	-4.929e-3	8
3	N3	max	0	10	0	13	0	13	0	13	0	13	5.229e-3	11
4		min	0	11	0	9	0	4	0	4	0	4	-5.207e-3	8
5	N4	max	0	8	0	13	0	13	0	13	0	13	4.869e-3	11
6		min	0	13	0	9	0	4	0	4	0	4	-4.932e-3	8
7	N5	max	0.412	8	0.003	10	0	13	0	13	0	13	2.213e-3	13
8		min	-0.413	11	-0.006	12	0	4	0	4	0	4	-2.308e-3	8
9	N7	max	0.411	8	-0.002	13	0	13	0	13	0	13	1.583e-3	13
10		min	-0.412	11	-0.009	9	0	4	0	4	0	4	-1.617e-3	8
11	N8	max	0.41	8	0.002	13	0	13	0	13	0	13	2.41e-3	11
12		min	-0.411	11	-0.005	9	0	4	0	4	0	4	-2.273e-3	10
13	N9	max	0.639	8	0.004	10	0	13	0	13	0	13	1.422e-3	13
14		min	-0.639	11	-0.009	12	0	4	0	4	0	4	-1.453e-3	8
15	N11	max	0.638	8	-0.002	13	0	13	0	13	0	13	1.157e-3	11
16		min	-0.638	11	-0.012	9	0	4	0	4	0	4	-1.136e-3	10
17	N12	max	0.638	8	0.003	13	0	13	0	13	0	13	1.434e-3	13
18		min	-0.637	11	-0.008	9	0	4	0	4	0	4	-1.473e-3	8
19	N13	max	0.826	8	0.005	10	0	13	0	13	0	13	8.574e-4	13
20		min	-0.825	11	-0.011	12	0	4	0	4	0	4	-1.06e-3	8
21	N15	max	0.821	8	-0.003	13	0	13	0	13	0	13	5.315e-4	13
22		min	-0.821	11	-0.016	9	0	4	0	4	0	4	-5.923e-4	8
23	N16	max	0.819	8	0.003	13	0	13	0	13	0	13	1.122e-3	11
24		min	-0.82	11	-0.01	9	0	4	0	4	0	4	-8.143e-4	10

Envelope X-Direction Story Drift - Strength

No Data to Print...

Company:		Date:	2/22/2023
Engineer:		Page:	1/6
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): 0.750
Effective Embedment depth, h_{ef} (inch): 10.000
Anchor category: -
Anchor ductility: Yes
h_{min} (inch): 12.25
C_{min} (inch): 4.50
S_{min} (inch): 4.50

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: No

Base Plate
Length x Width x Thickness (inch): 14.00 x 14.00 x 0.50
Yield stress: 36000 psi

Profile type/size: W12X50

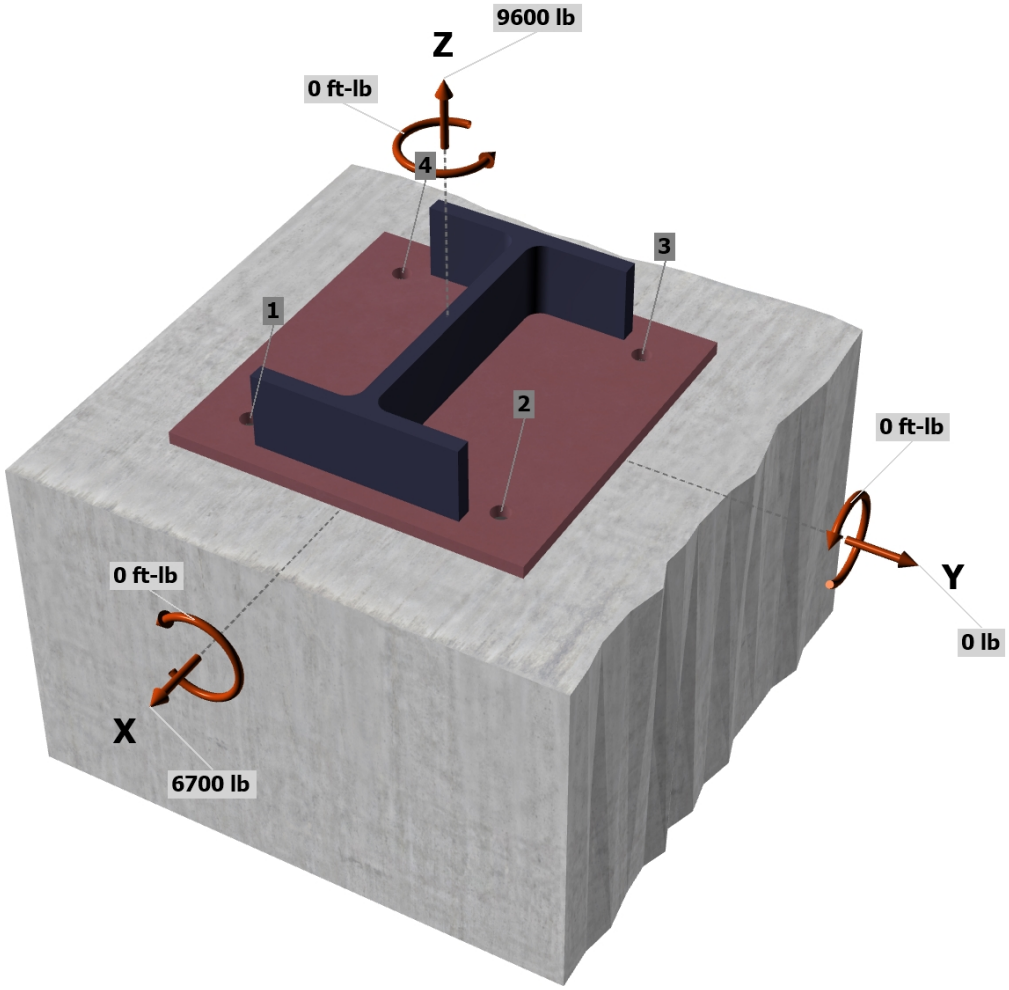
Recommended Anchor
Anchor Name: PAB Pre-Assembled Anchor Bolt - PAB6 (3/4"Ø)

Load and Geometry
Load factor source: ACI 318 Section 5.3
Load combination: not set
Seismic design: Yes
Anchors subjected to sustained tension: Not applicable
Ductility section for tension: 17.10.5.2 not applicable
Ductility section for shear: 17.10.6.2 not applicable
Ω_0 factor: not set
Apply entire shear load at front row: No
Anchors only resisting wind and/or seismic loads: No

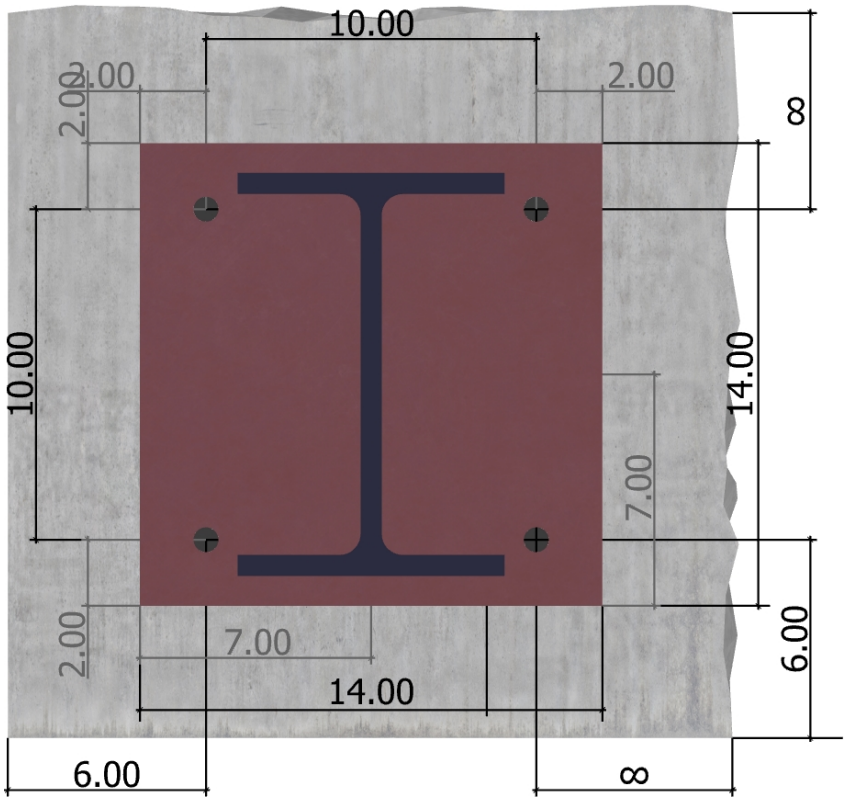
Strength level loads:

N_{ua} [lb]: 9600
V_{uax} [lb]: 6700
V_{uay} [lb]: 0
M_{ux} [ft-lb]: 0
M_{uy} [ft-lb]: 0
M_{uz} [ft-lb]: 0

<Figure 1>



<Figure 2>

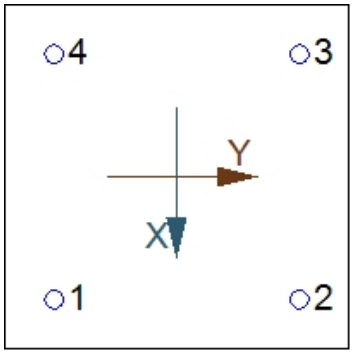


3. Resulting Anchor Forces

Anchor	Tension load, N_{ua} (lb)	Shear load x, V_{uax} (lb)	Shear load y, V_{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2+(V_{uay})^2}$ (lb)
1	2400.0	1675.0	0.0	1675.0
2	2400.0	1675.0	0.0	1675.0
3	2400.0	1675.0	0.0	1675.0
4	2400.0	1675.0	0.0	1675.0
Sum	9600.0	6700.0	0.0	6700.0

Maximum concrete compression strain (‰): 0.00
Maximum concrete compression stress (psi): 0
Resultant tension force (lb): 9600
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)
19370	0.75	14528

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

$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5}$ (Eq. 17.6.2.2.1)

k_c	λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	2500	10.000	37947

$0.75\phi N_{cbg} = 0.75\phi (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b$ (Sec. 17.5.1.2 & Eq. 17.6.2.1a)

A_{Nc} (in²)	A_{Nco} (in²)	$c_{a,min}$ (in)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	$0.75\phi N_{cbg}$ (lb)
1032.02	900.00	6.00	1.000	0.820	1.00	1.000	37947	0.70	18733

6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$0.75\phi N_{pn} = 0.75\phi \Psi_{c,P} N_p = 0.75\phi \Psi_{c,P} 8 A_{brg} f'_c$ (Sec. 17.5.1.2, Eq. 17.6.3.1 & 17.6.3.2.2a)

$\Psi_{c,P}$	A_{brg} (in²)	f'_c (psi)	ϕ	$0.75\phi N_{pn}$ (lb)
1.0	3.53	2500	0.70	37107

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

V_{sa} (lb)	ϕ_{grout}	ϕ	$\phi_{grout}\phi V_{sa}$ (lb)
11625	1.0	0.65	7556

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

Shear perpendicular to edge in x-direction:

$V_{bx} = \min|7(l_e / d_a)^{0.2}\sqrt{d_a}\lambda_a\sqrt{f'_c}c_{a1}^{1.5};\ 9\lambda_a\sqrt{f'_c}c_{a1}^{1.5}|$ (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)
6.00	0.750	1.00	2500	6.00	6614

$\phi V_{cbgx} = \phi\,(A_{Vc} / A_{Vco})\,\Psi_{ec,V}\Psi_{ed,V}\Psi_{c,V}\Psi_{h,V}V_{bx}$ (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)
225.00	162.00	1.000	0.900	1.000	1.000	6614	0.70	5787

Shear parallel to edge in y-direction:

$V_{bx} = \min|7(l_e / d_a)^{0.2}\sqrt{d_a}\lambda_a\sqrt{f'_c}c_{a1}^{1.5};\ 9\lambda_a\sqrt{f'_c}c_{a1}^{1.5}|$ (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)
6.00	0.750	1.00	2500	6.00	6614

$\phi V_{cbgy} = \phi\,(2)(A_{Vc} / A_{Vco})\,\Psi_{ec,V}\Psi_{ed,V}\Psi_{c,V}\Psi_{h,V}V_{bx}$ (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)
225.00	162.00	1.000	1.000	1.000	1.000	6614	0.70	12860

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

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

k_{cp}	A_{Nc} (in^2)	A_{Nco} (in^2)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕV_{cpg} (lb)
2.0	1032.02	900.00	1.000	0.820	1.000	1.000	37947	0.70	49954

11. Results

Interaction of Tensile and Shear Forces (Sec. R17.8)

Tension	Factored Load, N_{ua} (lb)	Design Strength, øN_n (lb)	Ratio	Status
Steel	2400	14528	0.17	Pass
Concrete breakout	**9600**	**18733**	**0.51**	**Pass (Governs)**
Pullout	2400	37107	0.06	Pass

Shear	Factored Load, V_{ua} (lb)	Design Strength, øV_n (lb)	Ratio	Status
Steel	1675	7556	0.22	Pass
T Concrete breakout x+	**3350**	**5787**	**0.58**	**Pass (Governs)**
|| Concrete breakout y-	**3350**	**12860**	**0.26**	**Pass (Governs)**
Pryout	6700	49954	0.13	Pass

Interaction check	$(N_{ua}/\phi N_{ua})^{5/3}$	$(V_{ua}/\phi V_{ua})^{5/3}$	Combined Ratio	Permissible	Status
Sec. R17.8	0.33	0.40	73.0%	1.0	Pass

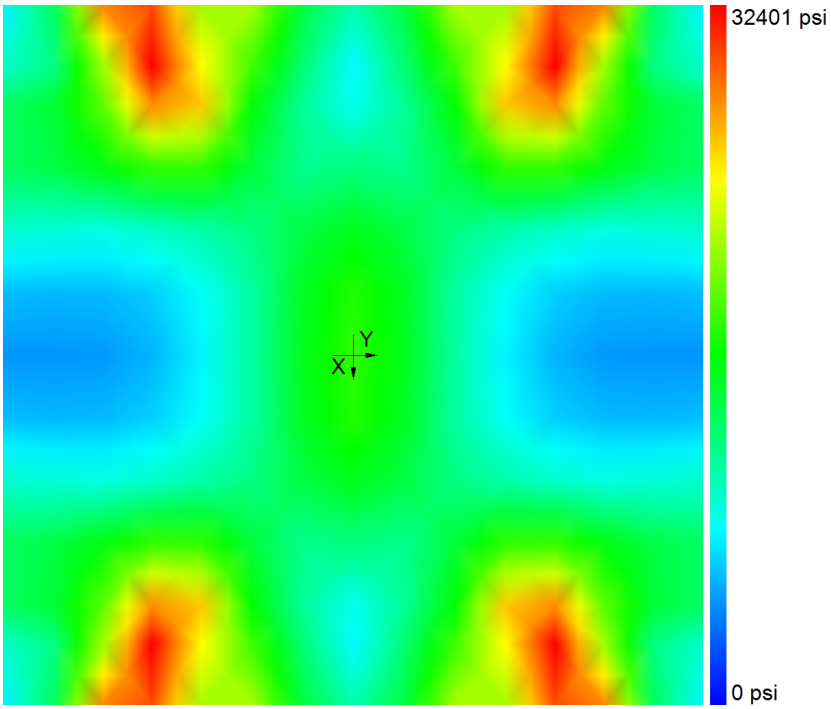
PAB6 (3/4"Ø) with hef = 10.000 inch meets the selected design criteria.

Base Plate Thickness

Required base plate thickness: 0.281 inch

Steel	**36000 psi**
Maximum stress	**32401 psi**
Calculated plate thickness	**0.281 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.

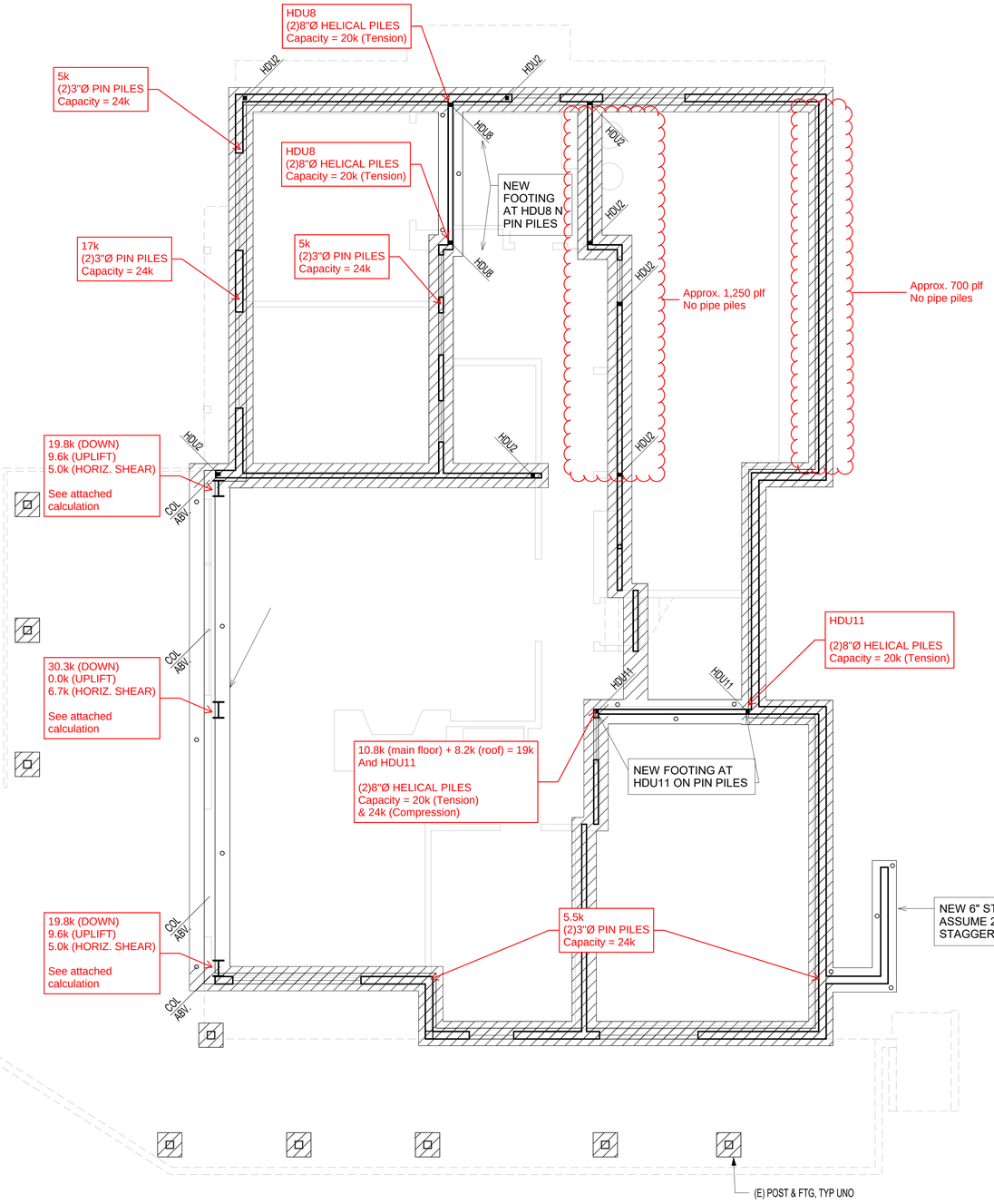
12. Warnings

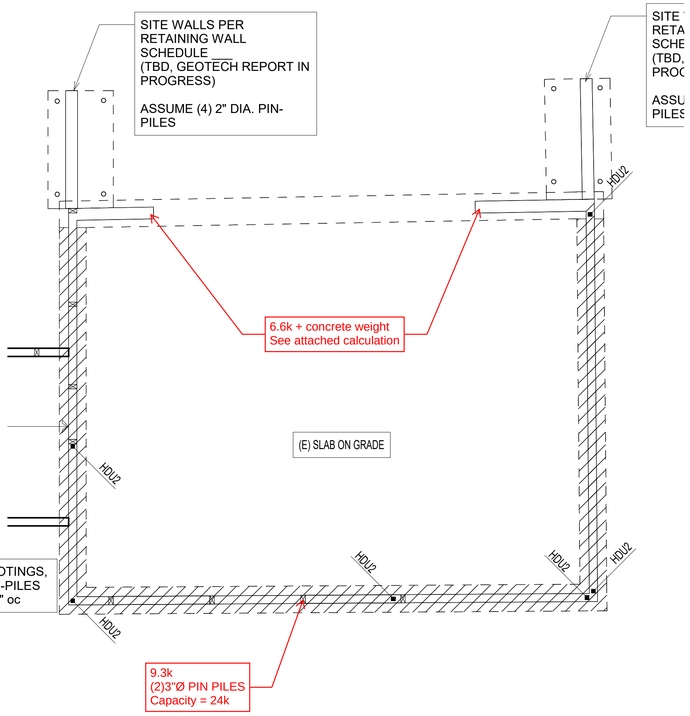
- Per designer input, the tensile component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor tensile force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.5.2 for tension need not be satisfied – designer to verify.

- Per designer input, the shear component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor shear force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.6.2 for shear need not be satisfied – designer to verify.

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

Assume all existing footings are 12" wide x 8" deep





1 Foundation Plan
1/4" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION

ECTYPOS
ARCHITECTURE

4212 W. Mercer Way
Mercer Island, WA
98040
t. (206) 232-9147
f. (206) 275-0312

CQN CARTER QUINN NORLIN
STRUCTURAL ENGINEERING

NESTLER-SPARE RESIDENCE
Remodel/Addition
8265 SE 61ST ST
Mercer Island, WA 98040

Date:

Scale:

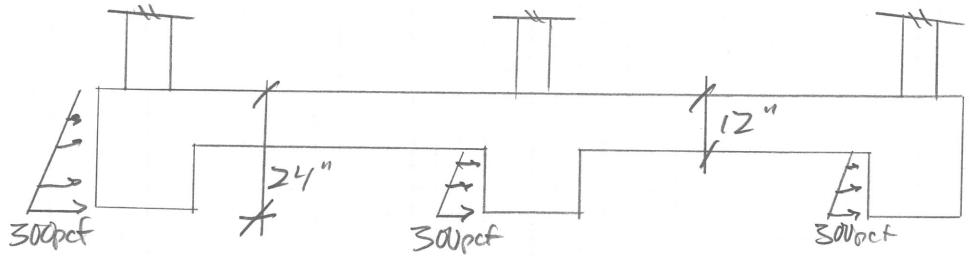
Sheet: Foundation Plan

S2.0

MOMENT FRAME FOUNDATIONS

- TOTAL LATERAL SHEAR = 23.4k (ULT.)
- 9.6k UPLIFT @ END COLUMNS
  - ADD HELICAL PILE DIRECTLY BELOW COLUMN

- FOR LATERAL FORCE, REDUCE BY PASSIVE PRESSURE



ELEVATION

TOTAL FORCE RESISTED BY PASSIVE PRESSURE:

$$\tfrac{1}{2}(300_{pcf})(2')(2')(4') + 2\left[\left(\tfrac{1}{2}(300_{pcf})(2')(2')(4')\right) - \left(\tfrac{1}{2}(300_{pcf})(1')(1')(4')\right)\right]$$

$= 6k$

- FACTORED LATERAL FORCE RESISTED BY PILES

$(23.4k - 6k) \times 0.7 = 12.2k$

(13) PILES BATTERED EACH DIRECTION

CQN
CARTER QUINN NORLIN
STRUCTURAL ENGINEERING

▶ 2033 Sixth Avenue #995 Seattle, WA 98121 206-264-7784 www.CQN-SE.com

PROJECT: NESTLEN SPA DATE: 2/5/24

DESIGNER: SN SHEET #:

Project Title:
Engineer:
Project ID:
Project Descr:

Wall Footing

Project File: Nestler Spare.ec6

DESCRIPTION: Garage Wall Footings

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2021

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	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
AutoCalc Footing Weight as DL :		Yes

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	300 pcf
Soil/Concrete Friction Coeff.	=	0.0

Increases based on footing Depth

Reference Depth below Surface	=	ft
Allow. Pressure Increase per foot of depth	=	ksf
when base footing is below	=	ft

Increases based on footing Width

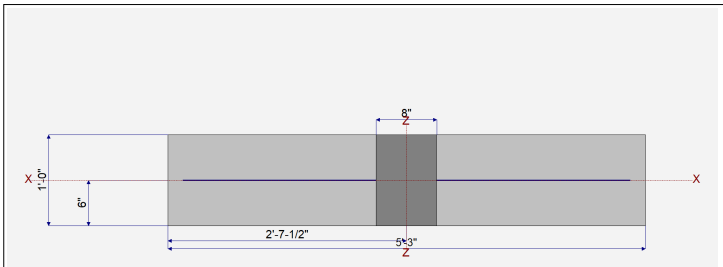
Allow. Pressure Increase per foot of width	=	ksf
when footing is wider than	=	ft

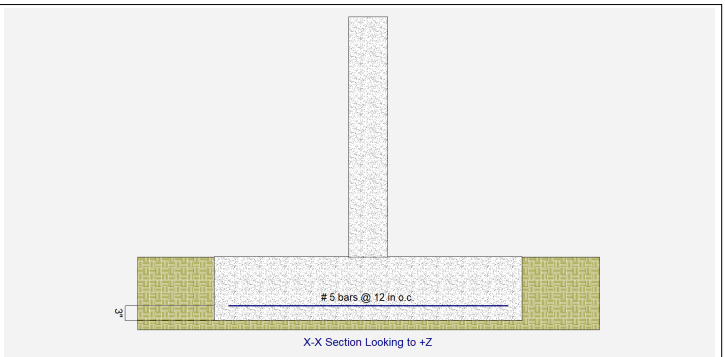
Adjusted Allowable Bearing Pressure = 2.0 ksf

Dimensions

Footing Width	=	5.250 ft	Footing Thickness	=	13.0 in	Bars along X-X Axis	
Wall Thickness	=	8.0 in	Rebar Centerline to Edge of Concrete...			Bar spacing	= 12.00
Wall center offset from center of footing	=	0 in	at Bottom of footing	=	3.0 in	Reinforcing Bar Size	= # 5

Reinforcing





Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	1.30							k
OB : Overburden	=								ksf
V-x	=						0.5080		k
M-zz	=						3.30		k-ft

Vx applied = in above top of footing

Project Title:
Engineer:
Project ID:
Project Descr:

Wall Footing

Project File: Nestler Spare.ec6

DESCRIPTION: Garage Wall Footings

DESIGN SUMMARY

Design OK

	Factor of Safety	Item	Applied	Capacity	Governing Load Combination
PASS	1.242	Overturning - Z-Z	2.695 k-ft	3.346 k-ft	+0.60D+0.70E
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift

	Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.8310	Soil Bearing	1.662 ksf	2.0 ksf	+0.60D+0.70E
PASS	0.2390	Z Flexure (+X)	3.213 k-ft	13.441 k-ft	+0.90D+E
PASS	0.0	Z Flexure (-X)	0.0 k-ft	13.441 k-ft	No Moment
PASS	0.09254	1-way Shear (+X)	6.941 psi	75.0 psi	+1.40D
PASS	0.09254	1-way Shear (-X)	6.941 psi	75.0 psi	+1.40D

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Actual Soil Bearing Stress -X	Actual Soil Bearing Stress +X	Actual / Allowable Ratio
, D Only	2.0 ksf	0.0 in	0.4047 ksf	0.4047 ksf	0.202
, +D+0.70E	2.0 ksf	15.222 in	0.0 ksf	1.044 ksf	0.522
, +D+0.5250E	2.0 ksf	11.417 in	0.0 ksf	0.8461 ksf	0.423
, +0.60D	2.0 ksf	0.0 in	0.2428 ksf	0.2428 ksf	0.121
, +0.60D+0.70E	2.0 ksf	25.371 in	0.0 ksf	1.662 ksf	0.831

Overturning Stability

Units : k-ft

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
, D Only	None	0.0 k-ft	Infinity	OK
, +D+0.70E	2.695 k-ft	5.577 k-ft	2.069	OK
, +D+0.5250E	2.021 k-ft	5.577 k-ft	2.759	OK
, +0.60D	None	0.0 k-ft	Infinity	OK
, +0.60D+0.70E	2.695 k-ft	3.346 k-ft	1.242	OK

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio	Status
, D Only	0.0 k	0.0 k	No Sliding	OK
, +D+0.70E	0.3556 k	0.0 k	No Sliding	OK
, +D+0.5250E	0.2667 k	0.0 k	No Sliding	OK
, +0.60D	0.0 k	0.0 k	No Sliding	OK
, +0.60D+0.70E	0.3556 k	0.0 k	No Sliding	OK

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
, +1.40D	1.488	-X	Bottom	0.2808	Min Temp %	0.31	13.441	OK
, +1.40D	1.488	+X	Bottom	0.2808	Min Temp %	0.31	13.441	OK
, +1.20D	1.275	-X	Bottom	0.2808	Min Temp %	0.31	13.441	OK
, +1.20D	1.275	+X	Bottom	0.2808	Min Temp %	0.31	13.441	OK
, +1.20D+E	0.004376	-X	Bottom	0.2808	Min Temp %	0.31	13.441	OK
, +1.20D+E	3.089	+X	Bottom	0.2808	Min Temp %	0.31	13.441	OK
, +0.90D	0.9564	-X	Bottom	0.2808	Min Temp %	0.31	13.441	OK
, +0.90D	0.9564	+X	Bottom	0.2808	Min Temp %	0.31	13.441	OK
, +0.90D+E	0	-X	Bottom	0.2808	Min Temp %	0.31	13.441	OK
, +0.90D+E	3.213	+X	Bottom	0.2808	Min Temp %	0.31	13.441	OK

One Way Shear

Units : k

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	6.941 psi	6.941 psi	6.941 psi	75 psi	0.09254	OK
+1.20D	5.949 psi	5.949 psi	5.949 psi	75 psi	0.07932	OK
+1.20D+E	5.949 psi	5.949 psi	5.949 psi	75 psi	0.07932	OK
+0.90D	4.462 psi	4.462 psi	4.462 psi	75 psi	0.05949	OK
+0.90D+E	4.462 psi	4.462 psi	4.462 psi	75 psi	0.05949	OK

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 8'-0" Tall Retaining Wall

Code Reference

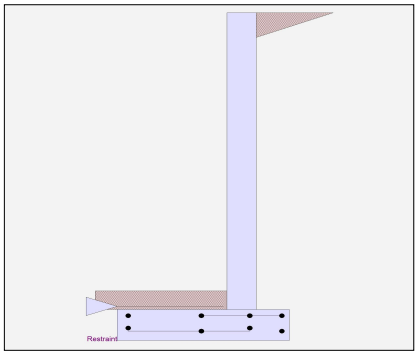
Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Retained Height	=	8.00 ft
Wall height above soil	=	0.00 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	6.00 in
Water table above bottom of footing	=	0.0 ft

Soil Data

Allow Soil Bearing	=	2,000.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	10.0 psf/ft
	=	
Passive Pressure	=	300.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing||Soil Friction	=	0.000
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Lateral Load Applied to Stem

Lateral Load	=	39.0 #/ft
...Height to Top	=	8.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Seismic (E) (Strength Level)
Wind on Exposed Stem (Strength Level)	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 8'-0" Tall Retaining Wall

Design Summary

Wall Stability Ratios

Overturning	=	2.60	OK
Slab Resists All Sliding !			
Global Stability	=	4.41	

Total Bearing Load	=	2,087	lbs
...resultant ecc.	=	3.20	in
Eccentricity within middle third			
Soil Pressure @ Toe	=	751	psf OK
Soil Pressure @ Heel	=	315	psf OK
Allowable	=	2,000	psf
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	1,051	psf
ACI Factored @ Heel	=	441	psf
Footing Shear @ Toe	=	16.6	psi OK
Footing Shear @ Heel	=	5.9	psi OK
Allowable	=	82.2	psi

Sliding Calcs

Lateral Sliding Force	=	608.5	lbs

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Bottom		
		Stem OK		
Design Height Above Ftg	ft =	0.00		
Wall Material Above "Ht"	=	Concrete		
Design Method	=	SD	SD	SD
Thickness	=	8.00		
Rebar Size	=	# 4		
Rebar Spacing	=	12.00		
Rebar Placed at	=	Edge		

Design Data

fb/FB + fa/Fa	=	**0.482**
Total Force @ Section		
Service Level	lbs =	
Strength Level	lbs =	824.0
Moment....Actual		
Service Level	ft-# =	
Strength Level	ft-# =	2,613.3
Moment.....Allowable	=	5,412.6
Shear.....Actual		
Service Level	psi =	
Strength Level	psi =	11.0
Shear.....Allowable	psi =	75.0
Anet (Masonry)	in2 =	
Wall Weight	psf =	100.0
Rebar Depth 'd'	in =	6.25

Masonry Data

f'm	psi =	
Fs	psi =	
Solid Grouting	=	
Modular Ratio 'n'	=	
Equiv. Solid Thick.	=	
Masonry Block Type	=	
Masonry Design Method	=	ASD

Concrete Data

f'c	psi =	2,500.0
Fy	psi =	60,000.0

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 8'-0" Tall Retaining Wall

Concrete Stem Rebar Area Details

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.0979 in2/ft		
(4/3) * As :	0.1305 in2/ft	Min Stem T&S Reinf Area 1.536 in2	
200bd/fy : 200(12)(6.25)/60000 :	0.25 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in2/ft	Horizontal Reinforcing Options :	
	==========	One layer of :	Two layers of :
Required Area :	0.1728 in2/ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.2 in2/ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.8467 in2/ft	#6@ 27.50 in	#6@ 55.00 in

Footing Data

Toe Width	=	2.50 ft
Heel Width	=	1.42
Total Footing Width	=	3.92
Footing Thickness	=	10.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft

f'c = 3,000 psi Fy = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	1,051	441	psf
Mu' : Upward	=	2,878	135	ft-#
Mu' : Downward	=	675	339	ft-#
Mu: Design	=	2,203 OK	204	ft-# OK
phiMn	=	7,036	8,116	ft-#
Actual 1-Way Shear	=	16.58	5.89	psi
Allow 1-Way Shear	=	82.16	82.16	psi

Toe Reinforcing = # 4 @ 10.00 in
Heel Reinforcing = # 4 @ 10.00 in
Key Reinforcing = None Spec'd
Footing Torsion, Tu = 0.00 ft-lbs
Footing Allow. Torsion, phi Tu = 0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 11.11 in, #5@ 17.22 in, #6@ 24.44 in, #7@ 33.33 in, #8@ 43.88 in, #9@ 55.55 in, #10@ 70.55 in

Heel: #4@ 11.11 in, #5@ 17.22 in, #6@ 24.44 in, #7@ 33.33 in, #8@ 43.88 in, #9@ 55.55 in, #10@ 70.55 in

Key: No key defined

Min footing T&S reinf Area 0.85 in2
Min footing T&S reinf Area per foot 0.22 in2 /ft

If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 11.11 in	#4@ 22.22 in
#5@ 17.22 in	#5@ 34.44 in
#6@ 24.44 in	#6@ 48.89 in

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 8'-0" Tall Retaining Wall

Summary of Overturning & Resisting Forces & Moments

Item		.....OVERTURNING..... Force lbs	Distance ft	Moment ft-#		.....RESISTING..... Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)		390.1	2.94	1,148.7	Soil Over HL (ab. water tbl)	660.3	3.54	2,338.6
HL Act Pres (be water tbl)					Soil Over HL (bel. water tbl)		3.54	2,338.6
Hydrostatic Force					Water Table			
Buoyant Force	=				Sloped Soil Over Heel	=		
Surcharge over Heel	=				Surcharge Over Heel	=		
Surcharge Over Toe	=				Adjacent Footing Load	=		
Adjacent Footing Load	=				Axial Dead Load on Stem	=		
Added Lateral Load	=	218.4	4.83	1,055.6	* Axial Live Load on Stem	=		
Load @ Stem Above Soil	=				Soil Over Toe	=	137.5	1.25	171.9
	=				Surcharge Over Toe	=			
					Stem Weight(s)	=	800.0	2.83	2,266.7
					Earth @ Stem Transitions	=			
					Footing Weight	=	489.6	1.96	958.9
					Key Weight	=			
					Vert. Component	=			
Total	=	608.5	**O.T.M.** =	2,204.3	**Total =**		2,087.4 lbs	**R.M.=**	5,736.1

Resisting/Overturning Ratio = **2.60**

Vertical Loads used for Soil Pressure = 2,087.4 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	300.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.035	in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

DESCRIPTION: 8'-0" Tall Retaining Wall

Rebar Lap & Embedment Lengths Information

Stem Design Segment: Bottom
Stem Design Height: 0.00 ft above top of footing

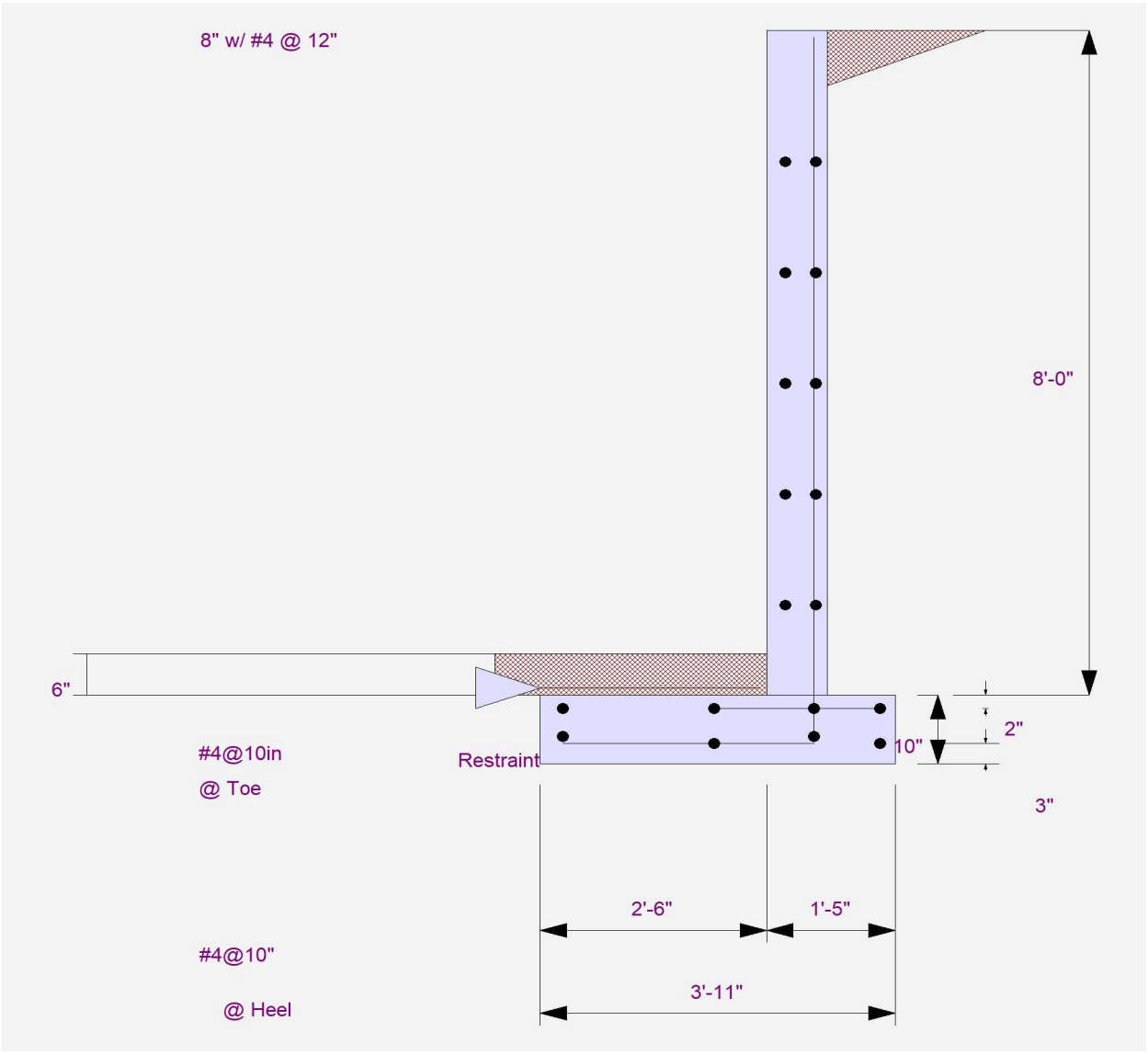
Lap Splice length for #4 bar specified in this stem design segment (25.4.2.3a) =	18.72 in
Development length for #4 bar specified in this stem design segment =	14.40 in
Hooked embedment length into footing for #4 bar specified in this stem design segment =	6.63 in
As Provided =	0.2000 in2/ft
As Required =	0.1728 in2/ft

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 8'-0" Tall Retaining Wall

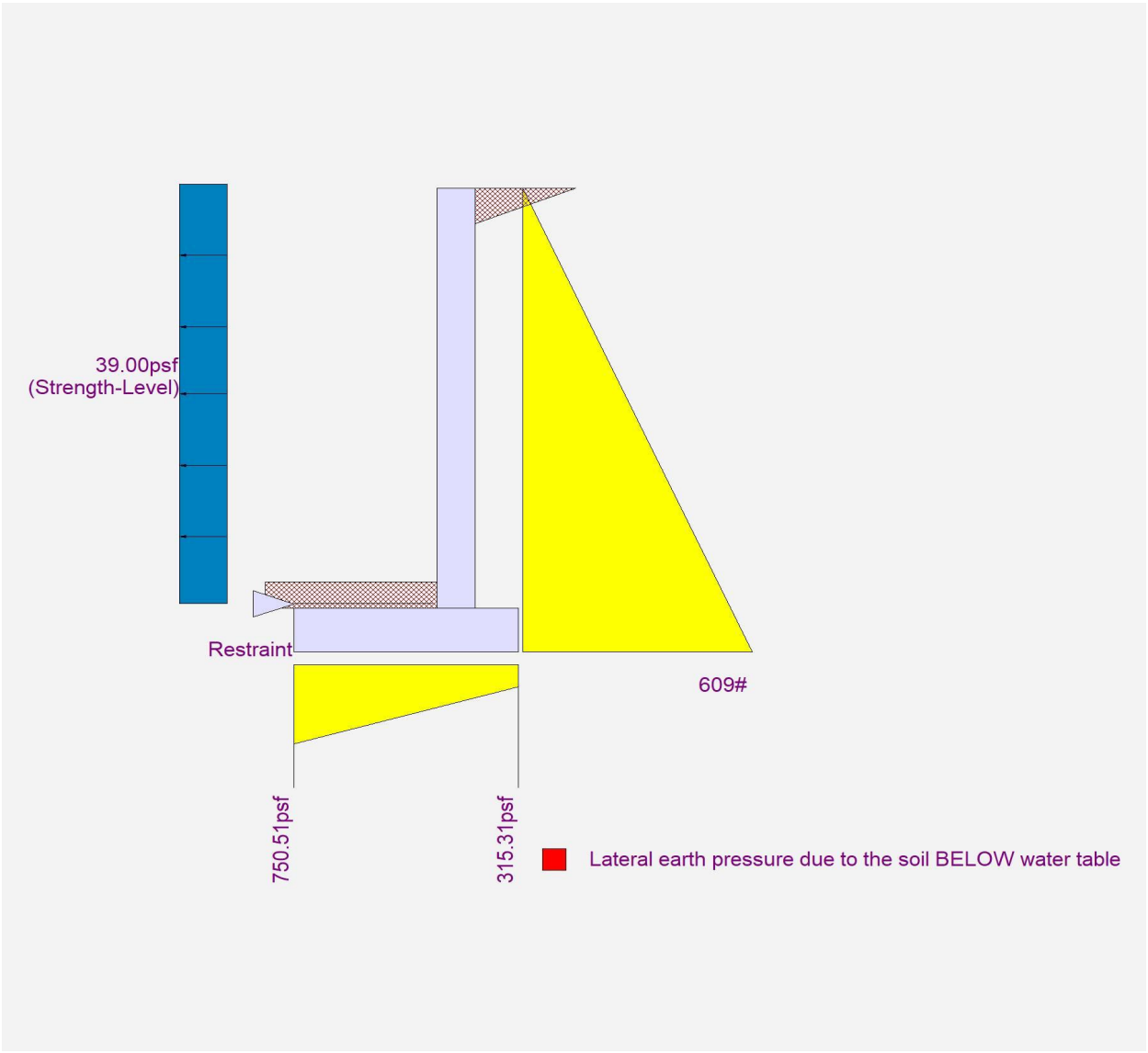


Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 8'-0" Tall Retaining Wall



Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 7'-0" Tall Retaining Wall

Code Reference

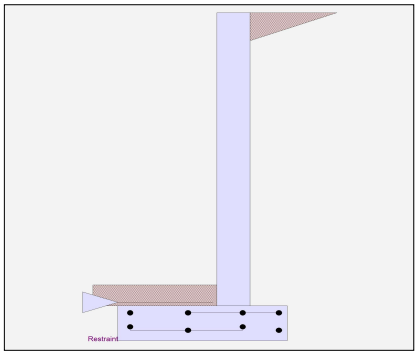
Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Retained Height	=	7.00 ft
Wall height above soil	=	0.00 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	6.00 in
Water table above bottom of footing	=	0.0 ft

Soil Data

Allow Soil Bearing	=	2,000.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	10.0 psf/ft
	=	
Passive Pressure	=	300.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing||Soil Friction	=	0.000
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Lateral Load Applied to Stem

Lateral Load	=	39.0 #/ft
...Height to Top	=	7.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Seismic (E) (Strength Level)
Wind on Exposed Stem (Strength Level)	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 7'-0" Tall Retaining Wall

Design Summary

Wall Stability Ratios

Overturning	=	2.60	OK
Slab Resists All Sliding !			
Global Stability	=	4.87	
Total Bearing Load	=	1,815 lbs	
...resultant ecc.	=	3.30 in	
Eccentricity within middle third			
Soil Pressure @ Toe	=	788 psf	OK
Soil Pressure @ Heel	=	274 psf	OK
Allowable	=	2,000 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	1,103 psf	
ACI Factored @ Heel	=	384 psf	
Footing Shear @ Toe	=	13.3 psi	OK
Footing Shear @ Heel	=	5.1 psi	OK
Allowable	=	82.2 psi	

Sliding Calcs

Lateral Sliding Force	=	497.9 lbs

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Bottom		
		Stem OK		
Design Height Above Ftg	ft =	0.00		
Wall Material Above "Ht"	=	Concrete		
Design Method	=	SD	SD	SD
Thickness	=	8.00		
Rebar Size	=	# 4		
Rebar Spacing	=	12.00		
Rebar Placed at	=	Edge		

Design Data

fb/FB + fa/Fa	=	**0.345**
Total Force @ Section		
Service Level	lbs =	
Strength Level	lbs =	665.0
Moment....Actual		
Service Level	ft-# =	
Strength Level	ft-# =	1,870.2
Moment.....Allowable	=	5,412.6
Shear.....Actual		
Service Level	psi =	
Strength Level	psi =	8.9
Shear.....Allowable	psi =	75.0
Anet (Masonry)	in2 =	
Wall Weight	psf =	100.0
Rebar Depth 'd'	in =	6.25

Masonry Data

f'm	psi =	
Fs	psi =	
Solid Grouting	=	
Modular Ratio 'n'	=	
Equiv. Solid Thick.	=	
Masonry Block Type	=	
Masonry Design Method	=	ASD

Concrete Data

f'c	psi =	2,500.0
Fy	psi =	60,000.0

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 7'-0" Tall Retaining Wall

Concrete Stem Rebar Area Details

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.0701 in2/ft		
(4/3) * As :	0.0934 in2/ft	Min Stem T&S Reinf Area 1.344 in2	
200bd/fy : 200(12)(6.25)/60000 :	0.25 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in2/ft	Horizontal Reinforcing Options :	
	==========	One layer of :	Two layers of :
Required Area :	0.1728 in2/ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.2 in2/ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.8467 in2/ft	#6@ 27.50 in	#6@ 55.00 in

Footing Data

Toe Width	=	2.00 ft
Heel Width	=	1.42
Total Footing Width	=	3.42
Footing Thickness	=	10.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft

f'c = 3,000 psi Fy = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	1,103	384	psf
Mu' : Upward	=	1,925	123	ft-#
Mu' : Downward	=	432	302	ft-#
Mu: Design	=	1,493 OK	179	ft-# OK
phiMn	=	7,036	8,116	ft-#
Actual 1-Way Shear	=	13.30	5.09	psi
Allow 1-Way Shear	=	82.16	82.16	psi

Toe Reinforcing = # 4 @ 10.00 in
Heel Reinforcing = # 4 @ 10.00 in
Key Reinforcing = None Spec'd
Footing Torsion, Tu = 0.00 ft-lbs
Footing Allow. Torsion, phi Tu = 0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 11.11 in, #5@ 17.22 in, #6@ 24.44 in, #7@ 33.33 in, #8@ 43.88 in, #9@ 55.55 in, #10@ 70.55 in

Heel: #4@ 11.11 in, #5@ 17.22 in, #6@ 24.44 in, #7@ 33.33 in, #8@ 43.88 in, #9@ 55.55 in, #10@ 70.55 in

Key: No key defined

Min footing T&S reinf Area 0.74 in2
Min footing T&S reinf Area per foot 0.22 in2 /ft

If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 11.11 in	#4@ 22.22 in
#5@ 17.22 in	#5@ 34.44 in
#6@ 24.44 in	#6@ 48.89 in

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 7'-0" Tall Retaining Wall

Summary of Overturning & Resisting Forces & Moments

Item	.....OVERTURNING..... Force lbs	Distance ft	Moment ft-#	.....RESISTING..... Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)	306.8	2.61	801.1	Soil Over HL (ab. water tbl)	577.8	3.04	1,757.4
HL Act Pres (be water tbl)				Soil Over HL (bel. water tbl)		3.04	1,757.4
Hydrostatic Force				Water Table			
Buoyant Force =				Sloped Soil Over Heel =			
Surcharge over Heel =				Surcharge Over Heel =			
Surcharge Over Toe =				Adjacent Footing Load =			
Adjacent Footing Load =				Axial Dead Load on Stem =			
Added Lateral Load =	191.1	4.33	828.1	* Axial Live Load on Stem =			
Load @ Stem Above Soil =				Soil Over Toe =	110.0	1.00	110.0
=				Surcharge Over Toe =			
				Stem Weight(s) =	700.0	2.33	1,633.3
				Earth @ Stem Transitions =			
				Footing Weight =	427.1	1.71	729.7
				Key Weight =			
				Vert. Component =			
Total =	497.9	**O.T.M.** =	1,629.2	**Total =**	1,814.9 lbs	**R.M.=**	4,230.5

Resisting/Overturning Ratio = **2.60**

Vertical Loads used for Soil Pressure = 1,814.9 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	300.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.037	in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

Cantilevered Retaining Wall

DESCRIPTION: 7'-0" Tall Retaining Wall

Rebar Lap & Embedment Lengths Information

Stem Design Segment: Bottom

Stem Design Height: 0.00 ft above top of footing

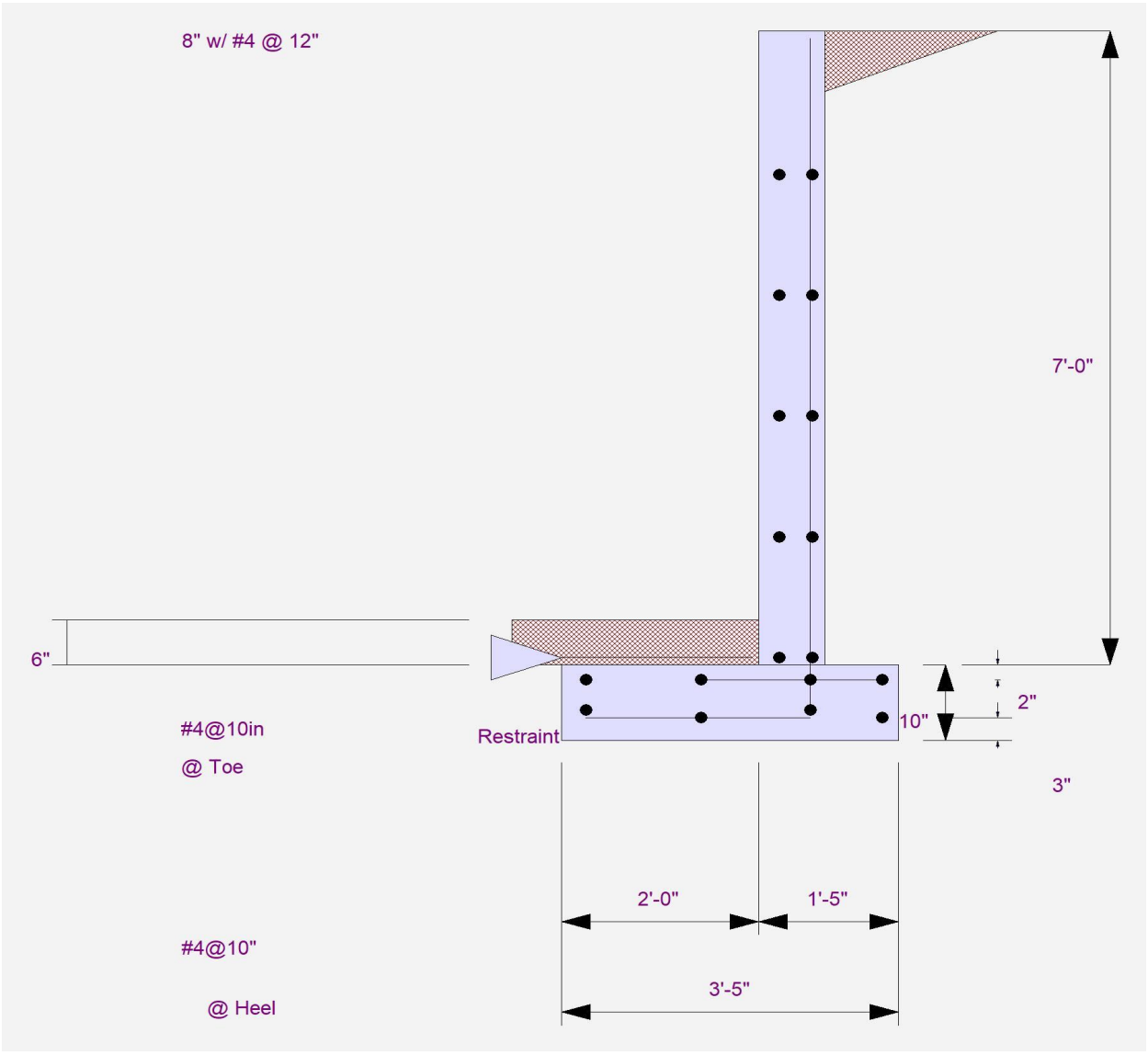
Lap Splice length for #4 bar specified in this stem design segment (25.4.2.3a) =	18.72 in
Development length for #4 bar specified in this stem design segment =	14.40 in
Hooked embedment length into footing for #4 bar specified in this stem design segment =	6.63 in
As Provided =	0.2000 in2/ft
As Required =	0.1728 in2/ft

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 7'-0" Tall Retaining Wall

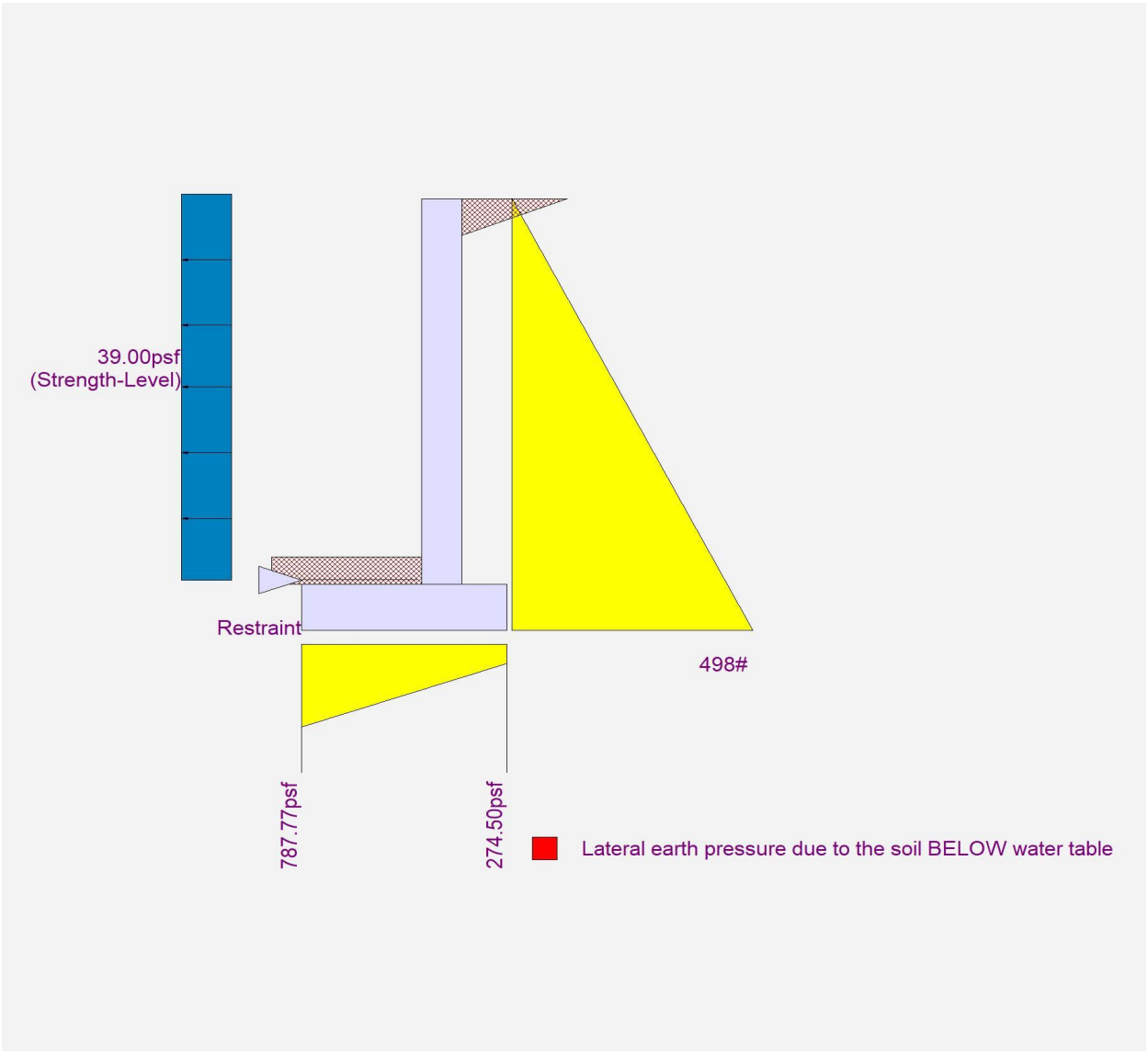


Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 7'-0" Tall Retaining Wall



Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 6'-0" Tall Retaining Wall

Code Reference

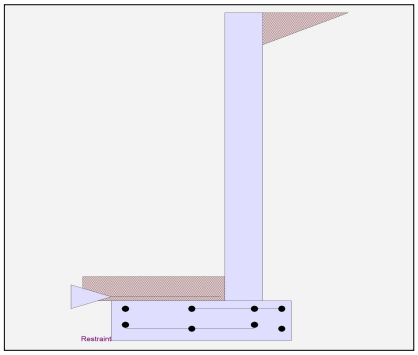
Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Retained Height	=	6.00 ft
Wall height above soil	=	0.00 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	6.00 in
Water table above bottom of footing	=	0.0 ft

Soil Data

Allow Soil Bearing	=	2,000.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	10.0 psf/ft
	=	
Passive Pressure	=	300.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing||Soil Friction	=	0.000
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Wind (W) (Strength Level)
Wind on Exposed Stem (Strength Level)	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 6'-0" Tall Retaining Wall

Design Summary

Wall Stability Ratios

Overturning	=	5.83	OK
Slab Resists All Sliding !			
Global Stability	=	5.19	
Total Bearing Load	=	1,436 lbs	
...resultant ecc.	=	2.46 in	
Eccentricity within middle third			
Soil Pressure @ Toe	=	277 psf	OK
Soil Pressure @ Heel	=	629 psf	OK
Allowable	=	2,000 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	388 psf	
ACI Factored @ Heel	=	881 psf	
Footing Shear @ Toe	=	4.9 psi	OK
Footing Shear @ Heel	=	0.6 psi	OK
Allowable	=	82.2 psi	

Sliding Calcs

Lateral Sliding Force	=	233.5 lbs

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Bottom		
		Stem OK		
Design Height Above Ftg	ft =	0.00		
Wall Material Above "Ht"	=	Concrete		
Design Method	=	SD	SD	SD
Thickness	=	8.00		
Rebar Size	=	# 4		
Rebar Spacing	=	12.00		
Rebar Placed at	=	Edge		

Design Data

fb/FB + fa/Fa	=	**0.106**
Total Force @ Section		
Service Level	lbs =	
Strength Level	lbs =	288.0
Moment....Actual		
Service Level	ft-# =	
Strength Level	ft-# =	576.0
Moment.....Allowable	=	5,412.6
Shear.....Actual		
Service Level	psi =	
Strength Level	psi =	3.8
Shear.....Allowable	psi =	75.0
Anet (Masonry)	in2 =	
Wall Weight	psf =	100.0
Rebar Depth 'd'	in =	6.25

Masonry Data

f'm	psi =	
Fs	psi =	
Solid Grouting	=	
Modular Ratio 'n'	=	
Equiv. Solid Thick.	=	
Masonry Block Type	=	
Masonry Design Method	=	ASD

Concrete Data

f'c	psi =	2,500.0
Fy	psi =	60,000.0

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 6'-0" Tall Retaining Wall

Concrete Stem Rebar Area Details

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.0216 in2/ft		
(4/3) * As :	0.0288 in2/ft	Min Stem T&S Reinf Area 1.152 in2	
200bd/fy : 200(12)(6.25)/60000 :	0.25 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in2/ft	Horizontal Reinforcing Options :	
	==========	One layer of :	Two layers of :
Required Area :	0.1728 in2/ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.2 in2/ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.8467 in2/ft	#6@ 27.50 in	#6@ 55.00 in

Footing Data

Toe Width	=	2.00 ft
Heel Width	=	1.17
Total Footing Width	=	3.17
Footing Thickness	=	10.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft

f'c = 3,000 psi Fy = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel
Factored Pressure	=	388	881 psf
Mu' : Upward	=	984	127 ft-#
Mu' : Downward	=	432	118 ft-#
Mu: Design	=	552 OK	-9 ft-#
phiMn	=	7,036	8,116 ft-#
Actual 1-Way Shear	=	4.93	0.55 psi
Allow 1-Way Shear	=	82.16	82.16 psi

Toe Reinforcing = # 4 @ 10.00 in
Heel Reinforcing = # 4 @ 10.00 in
Key Reinforcing = None Spec'd
Footing Torsion, Tu = 0.00 ft-lbs
Footing Allow. Torsion, phi Tu = 0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 11.11 in, #5@ 17.22 in, #6@ 24.44 in, #7@ 33.33 in, #8@ 43.88 in, #9@ 55.55 in, #10@ 70.55 in

Heel: #4@ 11.11 in, #5@ 17.22 in, #6@ 24.44 in, #7@ 33.33 in, #8@ 43.88 in, #9@ 55.55 in, #10@ 70.55 in

Key: No key defined

Min footing T&S reinf Area 0.68 in2
Min footing T&S reinf Area per foot 0.22 in2 /ft

If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 11.11 in	#4@ 22.22 in
#5@ 17.22 in	#5@ 34.44 in
#6@ 24.44 in	#6@ 48.89 in

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 6'-0" Tall Retaining Wall

Summary of Overturning & Resisting Forces & Moments

Item		.....OVERTURNING..... Force lbs	Distance ft	Moment ft-#		.....RESISTING..... Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)		233.5	2.28	531.8	Soil Over HL (ab. water tbl)	330.2	2.92	963.2
HL Act Pres (be water tbl)					Soil Over HL (bel. water tbl)		2.92	963.2
Hydrostatic Force					Water Table			
Buoyant Force	=				Sloped Soil Over Heel	=		
Surcharge over Heel	=				Surcharge Over Heel	=		
Surcharge Over Toe	=				Adjacent Footing Load	=		
Adjacent Footing Load	=				Axial Dead Load on Stem	=		
Added Lateral Load	=				* Axial Live Load on Stem	=		
Load @ Stem Above Soil	=				Soil Over Toe	=	110.0	1.00	110.0
	=				Surcharge Over Toe	=		
					Stem Weight(s)	=	600.0	2.33	1,400.0
					Earth @ Stem Transitions	=			
					Footing Weight	=	395.9	1.58	626.9
					Key Weight	=			
					Vert. Component	=			
Total	=	233.5	**O.T.M.** =	531.8	**Total =**		1,436.1 lbs	**R.M.=**	3,100.1

Resisting/Overturning Ratio = **5.83**

Vertical Loads used for Soil Pressure = 1,436.1 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	300.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.000	in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

Cantilevered Retaining Wall

DESCRIPTION: 6'-0" Tall Retaining Wall

Rebar Lap & Embedment Lengths Information

Stem Design Segment: Bottom

Stem Design Height: 0.00 ft above top of footing

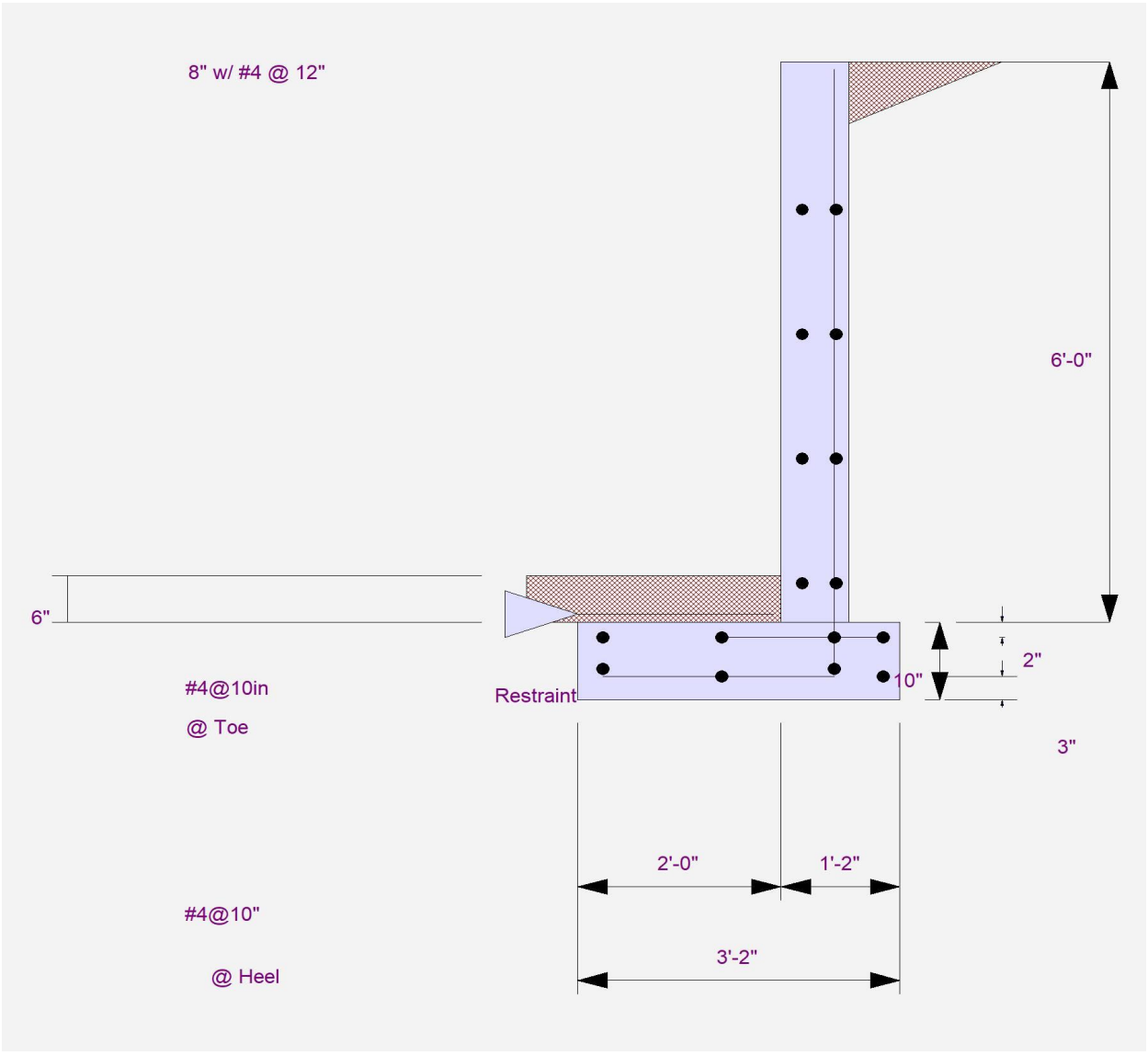
Lap Splice length for #4 bar specified in this stem design segment (25.4.2.3a) =	18.72 in
Development length for #4 bar specified in this stem design segment =	14.40 in
Hooked embedment length into footing for #4 bar specified in this stem design segment =	6.63 in
As Provided =	0.2000 in2/ft
As Required =	0.1728 in2/ft

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 6'-0" Tall Retaining Wall

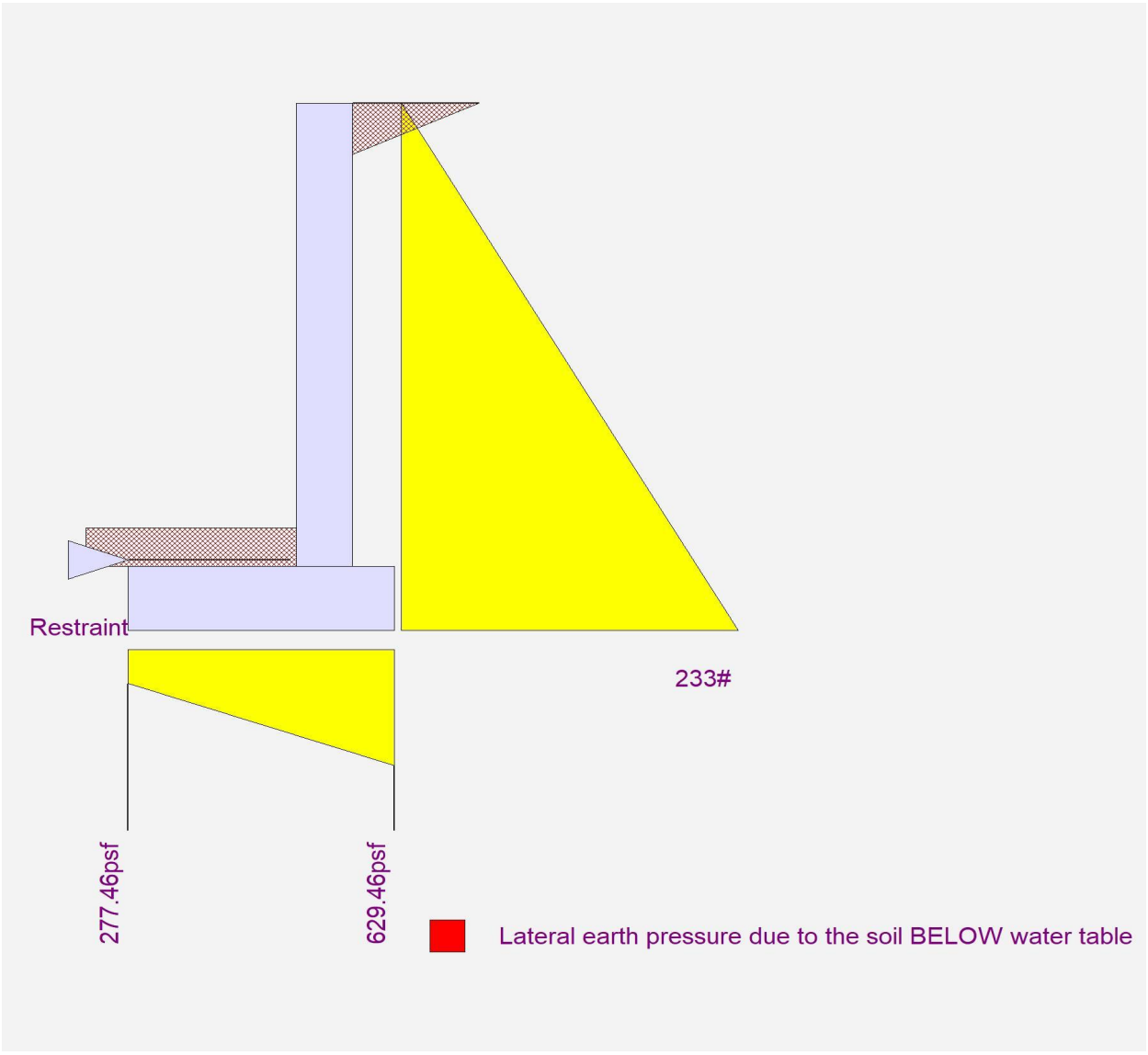


Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 6'-0" Tall Retaining Wall



Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 5'-0" Tall Retaining Wall

Code Reference

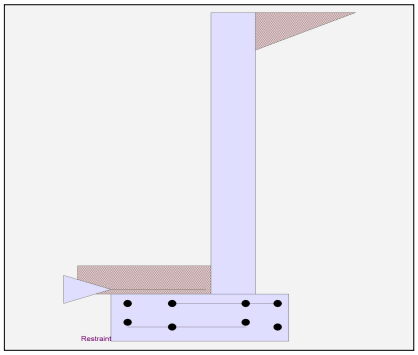
Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Retained Height	=	5.00 ft
Wall height above soil	=	0.00 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	6.00 in
Water table above bottom of footing	=	0.0 ft

Soil Data

Allow Soil Bearing	=	2,000.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	10.0 psf/ft
	=	
Passive Pressure	=	300.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing||Soil Friction	=	0.000
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Wind (W) (Strength Level)
Wind on Exposed Stem (Strength Level)	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 5'-0" Tall Retaining Wall

Design Summary

Wall Stability Ratios

Overturning	=	6.31	OK
Slab Resists All Sliding !			
Global Stability	=	5.80	
Total Bearing Load	=	1,191 lbs	
...resultant ecc.	=	1.70 in	
Eccentricity within middle third			
Soil Pressure @ Toe	=	304 psf	OK
Soil Pressure @ Heel	=	589 psf	OK
Allowable	=	2,000 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	426 psf	
ACI Factored @ Heel	=	825 psf	
Footing Shear @ Toe	=	3.2 psi	OK
Footing Shear @ Heel	=	0.1 psi	OK
Allowable	=	82.2 psi	

Sliding Calcs

Lateral Sliding Force	=	170.1 lbs

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Bottom		
		Stem OK		
Design Height Above Ftg	ft =	0.00		
Wall Material Above "Ht"	=	Concrete		
Design Method	=	SD	SD	SD
Thickness	=	8.00		
Rebar Size	=	# 4		
Rebar Spacing	=	12.00		
Rebar Placed at	=	Edge		
Design Data				
fb/FB + fa/Fa	=	**0.061**		
Total Force @ Section				
Service Level	lbs =			
Strength Level	lbs =	200.0		
Moment....Actual				
Service Level	ft-# =			
Strength Level	ft-# =	333.3		
Moment.....Allowable	=	5,412.6		
Shear.....Actual				
Service Level	psi =			
Strength Level	psi =	2.7		
Shear.....Allowable	psi =	75.0		
Anet (Masonry)	in2 =			
Wall Weight	psf =	100.0		
Rebar Depth 'd'	in =	6.25		

Masonry Data

f'm	psi =	
Fs	psi =	
Solid Grouting	=	
Modular Ratio 'n'	=	
Equiv. Solid Thick.	=	
Masonry Block Type	=	
Masonry Design Method	=	ASD

Concrete Data

f'c	psi =	2,500.0
Fy	psi =	60,000.0

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 5'-0" Tall Retaining Wall

Concrete Stem Rebar Area Details

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.0125 in2/ft		
(4/3) * As :	0.0167 in2/ft	Min Stem T&S Reinf Area 0.960 in2	
200bd/fy : 200(12)(6.25)/60000 :	0.25 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in2/ft	Horizontal Reinforcing Options :	
	==========	One layer of :	Two layers of :
Required Area :	0.1728 in2/ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.2 in2/ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.8467 in2/ft	#6@ 27.50 in	#6@ 55.00 in

Footing Data

Toe Width	=	1.50 ft
Heel Width	=	1.17
Total Footing Width	=	2.67
Footing Thickness	=	10.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft

f'c = 3,000 psi Fy = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel
Factored Pressure	=	426	825 psf
Mu' : Upward	=	563	113 ft-#
Mu' : Downward	=	243	101 ft-#
Mu: Design	=	320 OK	-11 ft-#
phiMn	=	7,036	8,116 ft-#
Actual 1-Way Shear	=	3.19	0.13 psi
Allow 1-Way Shear	=	82.16	82.16 psi

Toe Reinforcing = # 4 @ 10.00 in
Heel Reinforcing = # 4 @ 10.00 in
Key Reinforcing = None Spec'd
Footing Torsion, Tu = 0.00 ft-lbs
Footing Allow. Torsion, phi Tu = 0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 11.11 in, #5@ 17.22 in, #6@ 24.44 in, #7@ 33.33 in, #8@ 43.88 in, #9@ 55.55 in, #10@ 70.55 in

Heel: #4@ 11.11 in, #5@ 17.22 in, #6@ 24.44 in, #7@ 33.33 in, #8@ 43.88 in, #9@ 55.55 in, #10@ 70.55 in

Key: No key defined

Min footing T&S reinf Area 0.58 in2
Min footing T&S reinf Area per foot 0.22 in2 /ft

If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 11.11 in	#4@ 22.22 in
#5@ 17.22 in	#5@ 34.44 in
#6@ 24.44 in	#6@ 48.89 in

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 5'-0" Tall Retaining Wall

Summary of Overturning & Resisting Forces & Moments

Item	.....OVERTURNING..... Force lbs	Distance ft	Moment ft-#	.....RESISTING..... Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)	170.1	1.94	330.8			
HL Act Pres (be water tbl)						
Hydrostatic Force						
Buoyant Force =						
Surcharge over Heel =						
Surcharge Over Toe =						
Adjacent Footing Load =						
Added Lateral Load =						
Load @ Stem Above Soil =						
=						
				Soil Over HL (ab. water tbl)	275.2	2.42	665.1
				Soil Over HL (bel. water tbl)		2.42	665.1
				Water Table			
				Sloped Soil Over Heel =			
				Surcharge Over Heel =			
				Adjacent Footing Load =			
				Axial Dead Load on Stem =			
				* Axial Live Load on Stem =			
				Soil Over Toe =	82.5	0.75	61.9
				Surcharge Over Toe =			
				Stem Weight(s) =	500.0	1.83	916.7
				Earth @ Stem Transitions =			
				Footing Weight =	333.4	1.33	444.6
				Key Weight =			
				Vert. Component =			
Total =	170.1	**O.T.M.** =	330.8	**Total =**	1,191.1 lbs	**R.M.=**	2,088.2

Resisting/Overturning Ratio = **6.31**

Vertical Loads used for Soil Pressure = 1,191.1 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	300.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.000	in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

DESCRIPTION: 5'-0" Tall Retaining Wall

Rebar Lap & Embedment Lengths Information

Stem Design Segment: Bottom

Stem Design Height: 0.00 ft above top of footing

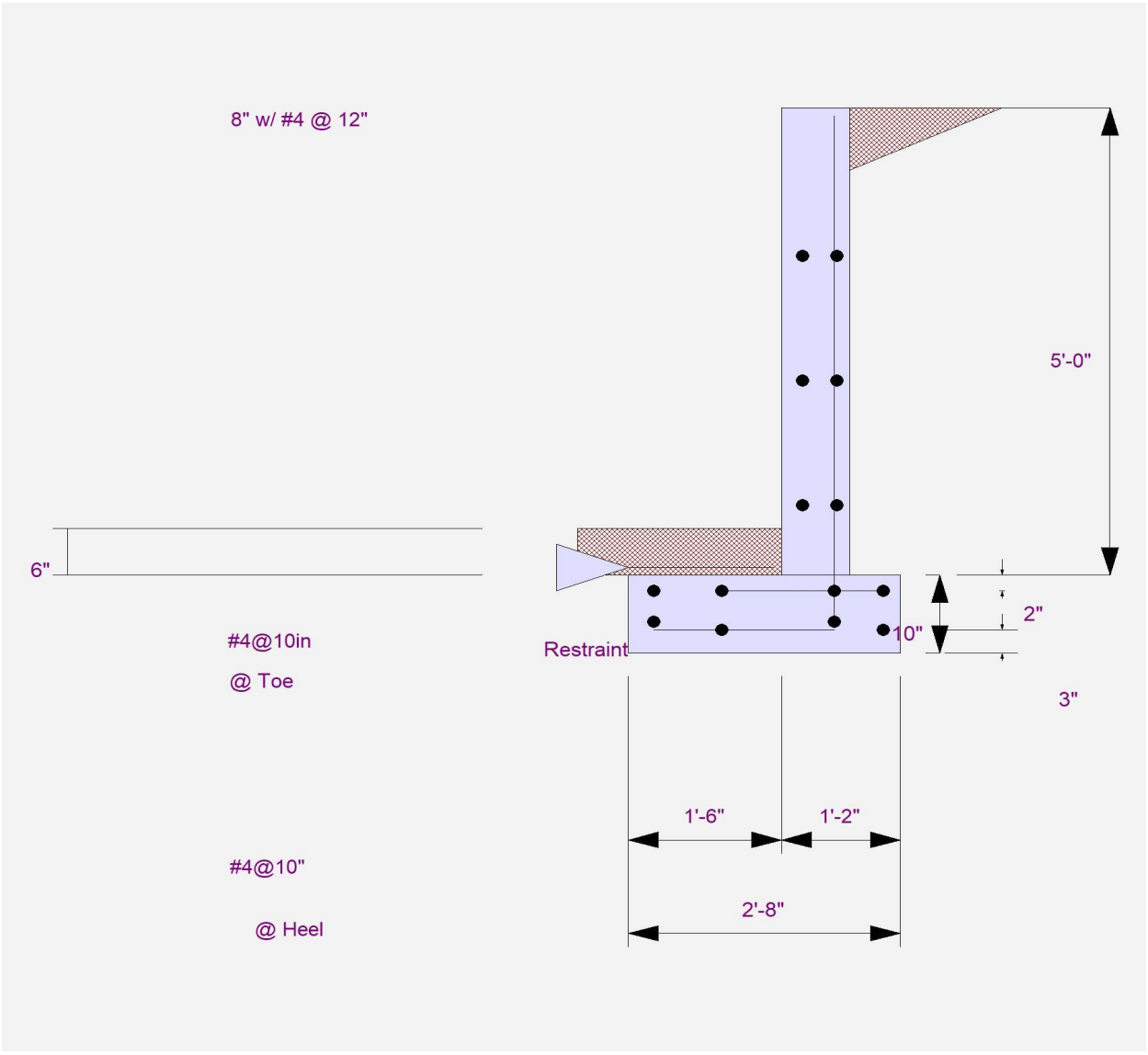
Lap Splice length for #4 bar specified in this stem design segment (25.4.2.3a) =	18.72 in
Development length for #4 bar specified in this stem design segment =	14.40 in
Hooked embedment length into footing for #4 bar specified in this stem design segment =	6.63 in
As Provided =	0.2000 in2/ft
As Required =	0.1728 in2/ft

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 5'-0" Tall Retaining Wall

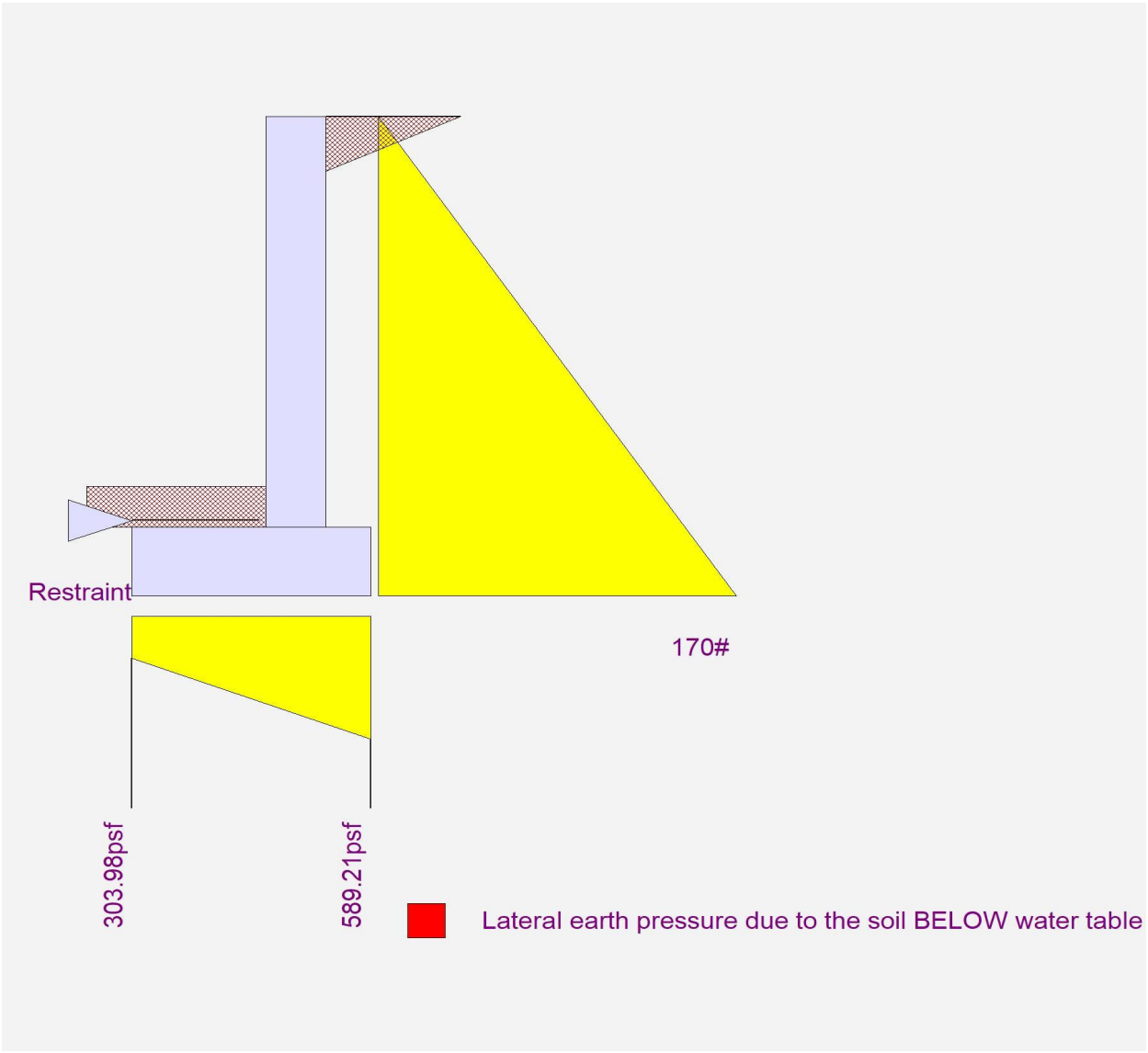


Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 5'-0" Tall Retaining Wall



Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 4'-0" Tall Retaining Wall

Code Reference

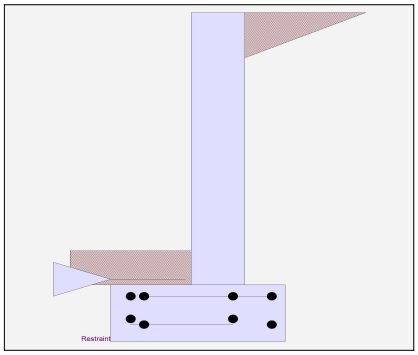
Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Retained Height	=	4.00 ft
Wall height above soil	=	0.00 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	6.00 in
Water table above bottom of footing	=	0.0 ft

Soil Data

Allow Soil Bearing	=	2,000.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	10.0 psf/ft
	=	
Passive Pressure	=	300.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing||Soil Friction	=	0.000
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Wind (W) (Strength Level)
Wind on Exposed Stem (Strength Level)	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 4'-0" Tall Retaining Wall

Design Summary

Wall Stability Ratios

Overturning	=	6.78	OK
Slab Resists All Sliding !			
Global Stability	=	6.72	
Total Bearing Load	=	946 lbs	
...resultant ecc.	=	0.80 in	
Eccentricity within middle third			
Soil Pressure @ Toe	=	356 psf	OK
Soil Pressure @ Heel	=	517 psf	OK
Allowable	=	2,000 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	498 psf	
ACI Factored @ Heel	=	724 psf	
Footing Shear @ Toe	=	1.7 psi	OK
Footing Shear @ Heel	=	0.1 psi	OK
Allowable	=	82.2 psi	

Sliding Calcs

Lateral Sliding Force	=	116.8 lbs

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Bottom		
		Stem OK		
Design Height Above Ftg	ft =	0.00		
Wall Material Above "Ht"	=	Concrete		
Design Method	=	SD	SD	SD
Thickness	=	8.00		
Rebar Size	=	# 4		
Rebar Spacing	=	12.00		
Rebar Placed at	=	Edge		
Design Data				
fb/FB + fa/Fa	=	**0.031**		
Total Force @ Section				
Service Level	lbs =			
Strength Level	lbs =	128.0		
Moment....Actual				
Service Level	ft-# =			
Strength Level	ft-# =	170.7		
Moment.....Allowable	=	5,412.6		
Shear.....Actual				
Service Level	psi =			
Strength Level	psi =	1.7		
Shear.....Allowable	psi =	75.0		
Anet (Masonry)	in2 =			
Wall Weight	psf =	100.0		
Rebar Depth 'd'	in =	6.25		

Masonry Data

f'm	psi =	
Fs	psi =	
Solid Grouting	=	
Modular Ratio 'n'	=	
Equiv. Solid Thick.	=	
Masonry Block Type	=	
Masonry Design Method	=	ASD

Concrete Data

f'c	psi =	2,500.0
Fy	psi =	60,000.0

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 4'-0" Tall Retaining Wall

Concrete Stem Rebar Area Details

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.0064 in2/ft		
(4/3) * As :	0.0085 in2/ft	Min Stem T&S Reinf Area 0.768 in2	
200bd/fy : 200(12)(6.25)/60000 :	0.25 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in2/ft	Horizontal Reinforcing Options :	
	==========	One layer of :	Two layers of :
Required Area :	0.1728 in2/ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.2 in2/ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.8467 in2/ft	#6@ 27.50 in	#6@ 55.00 in

Footing Data

Toe Width	=	1.00 ft
Heel Width	=	1.17
Total Footing Width	=	2.17
Footing Thickness	=	10.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft

f'c = 3,000 psi Fy = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel
Factored Pressure	=	498	724 psf
Mu' : Upward	=	267	93 ft-#
Mu' : Downward	=	108	85 ft-#
Mu: Design	=	159 OK	-8 ft-#
phiMn	=	7,036	8,116 ft-#
Actual 1-Way Shear	=	1.67	0.11 psi
Allow 1-Way Shear	=	82.16	82.16 psi

Toe Reinforcing = # 4 @ 10.00 in
Heel Reinforcing = # 4 @ 10.00 in
Key Reinforcing = None Spec'd
Footing Torsion, Tu = 0.00 ft-lbs
Footing Allow. Torsion, phi Tu = 0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 11.11 in, #5@ 17.22 in, #6@ 24.44 in, #7@ 33.33 in, #8@ 43.88 in, #9@ 55.55 in, #10@ 70.55 in

Heel: #4@ 11.11 in, #5@ 17.22 in, #6@ 24.44 in, #7@ 33.33 in, #8@ 43.88 in, #9@ 55.55 in, #10@ 70.55 in

Key: No key defined

Min footing T&S reinf Area 0.47 in2
Min footing T&S reinf Area per foot 0.22 in2 /ft

If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 11.11 in	#4@ 22.22 in
#5@ 17.22 in	#5@ 34.44 in
#6@ 24.44 in	#6@ 48.89 in

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 4'-0" Tall Retaining Wall

Summary of Overturning & Resisting Forces & Moments

Item	.....OVERTURNING..... Force lbs	Distance ft	Moment ft-#	.....RESISTING..... Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)	116.8	1.61	188.2			
HL Act Pres (be water tbl)						
Hydrostatic Force						
Buoyant Force =						
Surcharge over Heel =						
Surcharge Over Toe =						
Adjacent Footing Load =						
Added Lateral Load =						
Load @ Stem Above Soil =						
=						
				Soil Over HL (ab. water tbl)	220.1	1.92	422.0
				Soil Over HL (bel. water tbl)		1.92	422.0
				Water Table			
				Sloped Soil Over Heel =			
				Surcharge Over Heel =			
				Adjacent Footing Load =			
				Axial Dead Load on Stem =			
				* Axial Live Load on Stem =			
				Soil Over Toe =	55.0	0.50	27.5
				Surcharge Over Toe =			
				Stem Weight(s) =	400.0	1.33	533.3
				Earth @ Stem Transitions =			
				Footing Weight =	270.9	1.08	293.5
				Key Weight =			
				Vert. Component =			
Total =	116.8	**O.T.M.** =	188.2	**Total =**	946.0 lbs	**R.M.=**	1,276.3

Resisting/Overturning Ratio = **6.78**

Vertical Loads used for Soil Pressure = 946.0 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	300.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.000	in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

DESCRIPTION: 4'-0" Tall Retaining Wall

Rebar Lap & Embedment Lengths Information

Stem Design Segment: Bottom

Stem Design Height: 0.00 ft above top of footing

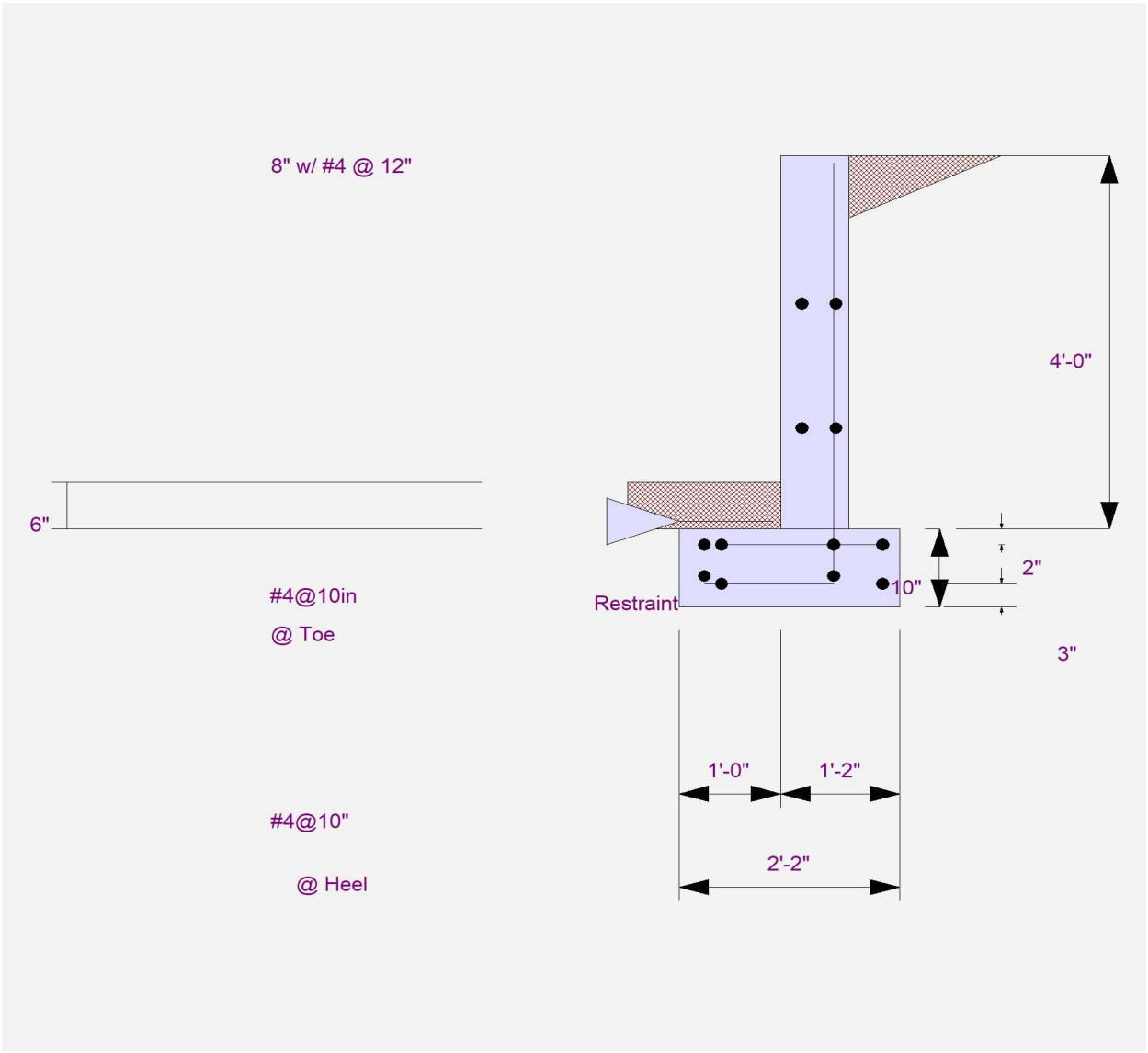
Lap Splice length for #4 bar specified in this stem design segment (25.4.2.3a) =	18.72 in
Development length for #4 bar specified in this stem design segment =	14.40 in
Hooked embedment length into footing for #4 bar specified in this stem design segment =	6.63 in
As Provided =	0.2000 in2/ft
As Required =	0.1728 in2/ft

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 4'-0" Tall Retaining Wall

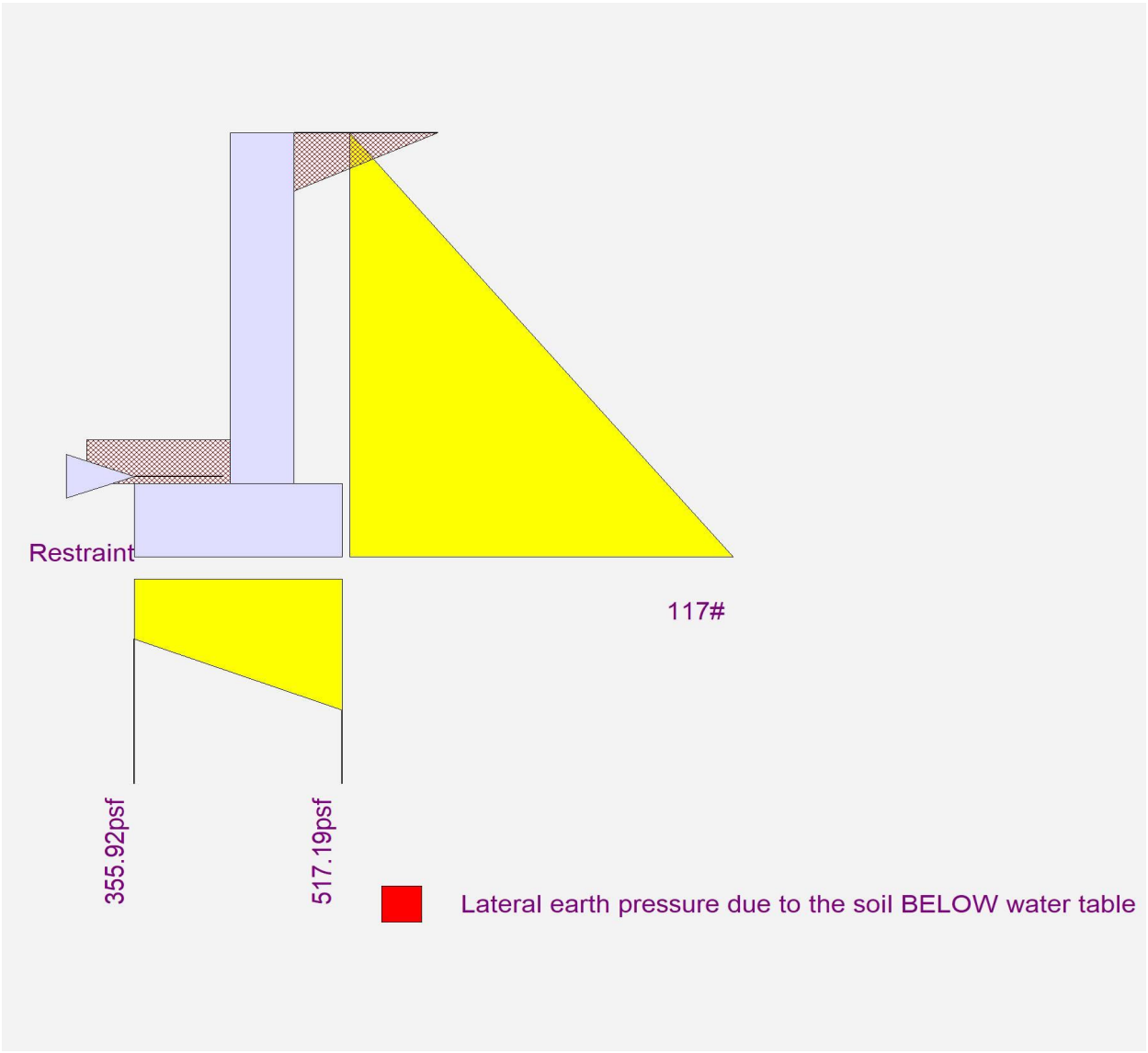


Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: Nestler Spare.ec6

DESCRIPTION: 4'-0" Tall Retaining Wall



Site Retaining Wall Pile Calculations

Wall Height	Overall FTG Width (in)	Lateral Reaction (lb)	Total Bearing Load (lb)	Eccentricity (in)	Toe Resultant	Heel Resultant	Pile spacing for vert. loads	Pile spacing for lat loads	Actual Pile Spacing (ft)
4	26	116.81	946.02	0.8005	502.14	443.88	15.9	17.1	8'-0"oc
5	32	170.14	1191.06	1.703	658.92	532.14	12.1	11.8	8'-0"oc
6	38	233.47	1436.1	2.458	810.94	625.16	9.9	8.6	8'-0"oc
7	44	498	1815	3.302	1043.71	771.29	7.7	4.0	4'-0"oc
8	50	609	2087.42	3.199	1177.26	910.16	6.8	3.3	3'-0"oc

Note: Pile Vertical Capacity = 8k
Pile Lateral Capacity = 1k