STRUCTURAL CALCULATIONS

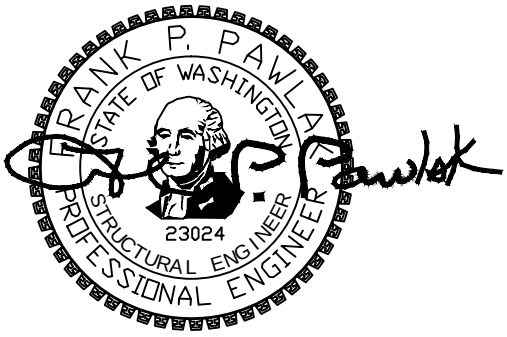
9820 SE 35th Place Remodel

Mercer Island, Washington

PROJECT NO.: 20-129

DATE: November 4, 2020

11/4/2020



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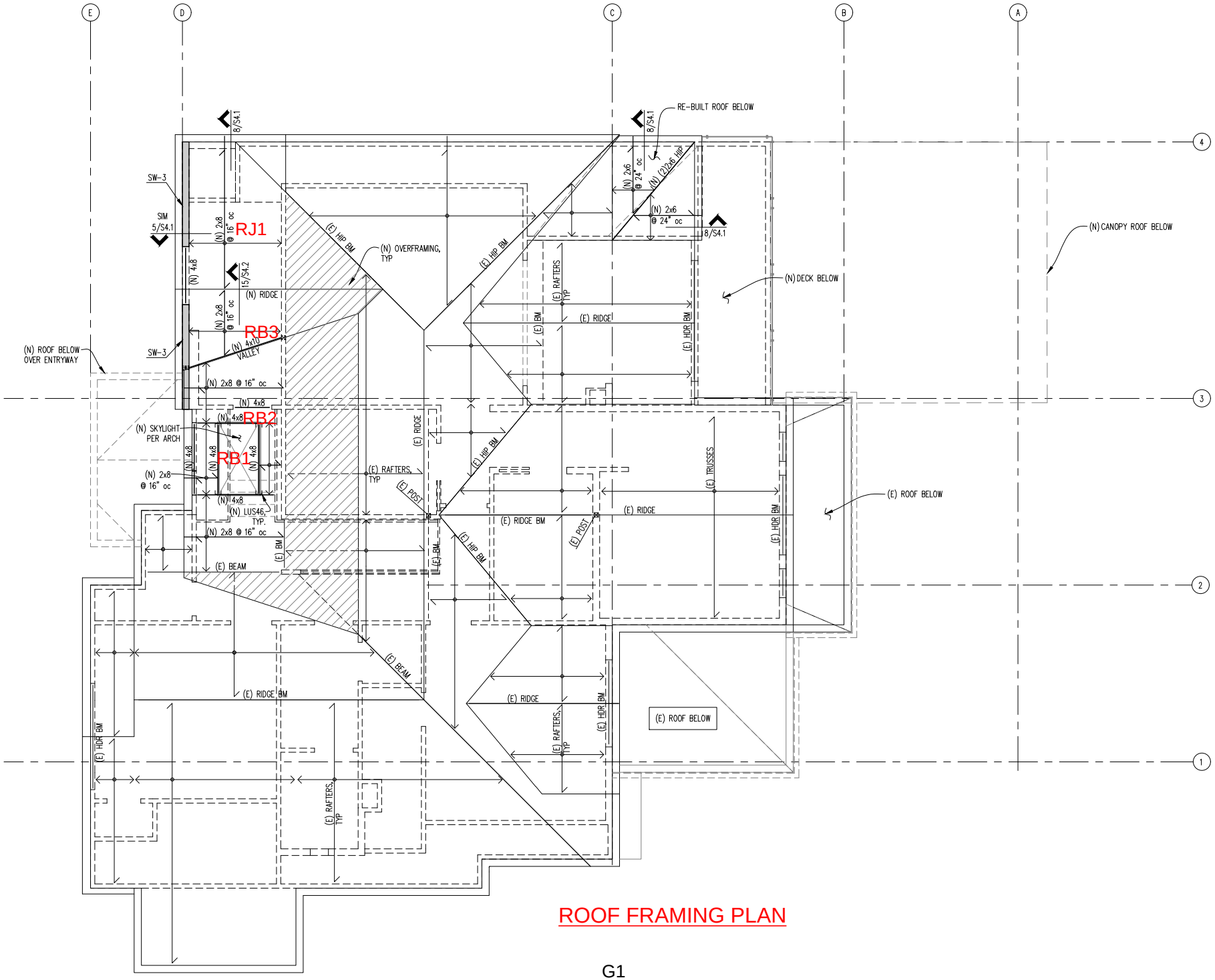


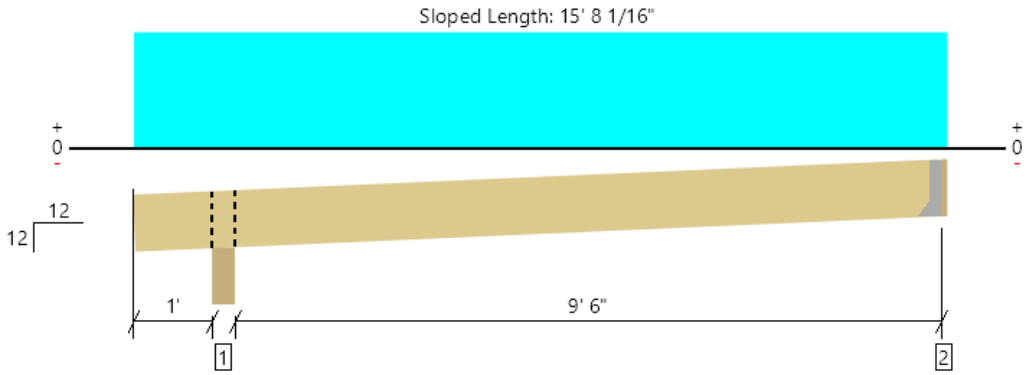
ROOF FRAMING PLAN

FORTE WEB

MEMBER REPORT

PASSED

Roof, Roof: Joist RJ1
1 piece(s) 2 x 8 Hem-Fir No. 2 @ 24" OC



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

Member Length : 16' 1 1/4"

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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	444 @ 10' 11 1/2"	911 (1.50")	Passed (49%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	405 @ 10' 6 3/8"	1251	Passed (32%)	1.15	1.0 D + 1.0 S (Alt Spans)
Moment (Ft-lbs)	1068 @ 6' 1 13/16"	1477	Passed (72%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.319 @ 6' 1 5/16"	0.688	Passed (L/517)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.585 @ 6' 1 3/8"	0.917	Passed (L/282)	--	1.0 D + 1.0 S (Alt Spans)

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 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	Total	
1 - Beveled Plate - SPF	5.50"	5.50"	1.50"	262	309	571	Blocking
2 - Hanger on 7 1/4" HF beam	1.50"	Hanger[1]	1.50"	207	248	455	See note [1]

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' o/c	
Bottom Edge (Lu)	15' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 11' 1"	24"	15.0	25.0	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
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	G2

Weyerhaeuser

10/22/2020 8:47:55 PM UTC
ForteWEB v3.0, Engine: V8.1.4.2, Data: V8.0.0.0
File Name: 20-129 9820 SE 35th Place Remodel

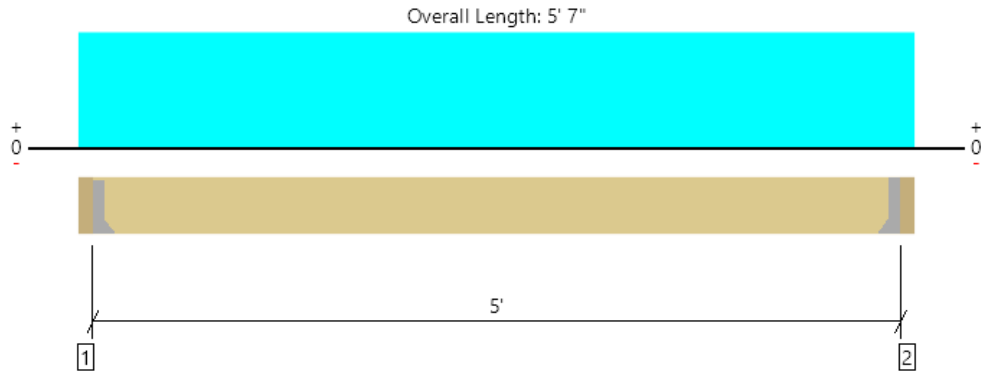
FORTE WEB

MEMBER REPORT

PASSED

Roof, Roof Beam RB1

1 piece(s) 4 x 8 Hem-Fir 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)	266 @ 3 1/2"	2126 (1.50")	Passed (13%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	202 @ 10 3/4"	2918	Passed (7%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	333 @ 2' 9 1/2"	3247	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.006 @ 2' 9 1/2"	0.167	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.010 @ 2' 9 1/2"	0.250	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Drop 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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 7 1/4" HF beam	3.50"	Hanger[1]	1.50"	121	174	295	See note [1]
2 - Hanger on 7 1/4" HF beam	3.50"	Hanger[1]	1.50"	121	174	295	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

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

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS46	2.00"	N/A	4-10dx1.5	4-10d	
2 - Face Mount Hanger	LUS46	2.00"	N/A	4-10dx1.5	4-10d	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 5' 3 1/2"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 5' 7" (Front)	2' 6"	15.0	25.0	Default Load

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ForteWEB Software Operator	Job Notes
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Weyerhaeuser

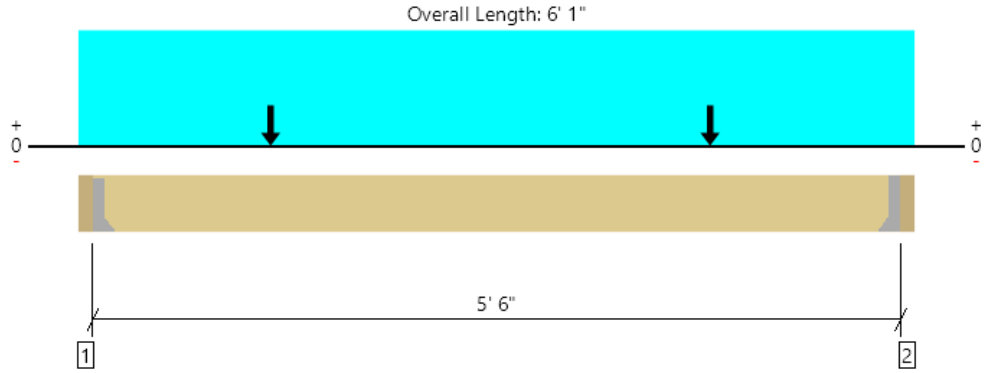
10/22/2020 8:54:05 PM UTC

ForteWEB v3.0, Engine: V8.1.4.2, Data: V8.0.0.0

File Name: 20-129 9820 SE 35th Place Remodel

Roof, Roof Beam RB2

1 piece(s) 4 x 8 Hem-Fir 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)	464 @ 3 1/2"	2126 (1.50")	Passed (22%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	428 @ 10 3/4"	2918	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	595 @ 3' 1 3/8"	3247	Passed (18%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.014 @ 3' 9/16"	0.183	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.024 @ 3' 9/16"	0.275	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Drop 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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 7 1/4" HF beam	3.50"	Hanger[1]	1.50"	201	278	479	See note [1]
2 - Hanger on 7 1/4" HF beam	3.50"	Hanger[1]	1.50"	198	273	471	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

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

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS46	2.00"	N/A	4-10dx1.5	4-10d	
2 - Face Mount Hanger	LUS46	2.00"	N/A	4-10dx1.5	4-10d	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 5' 9 1/2"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 6' 1" (Front)	1' 4"	15.0	25.0	Default Load
2 - Point (lb)	1' 6" (Front)	N/A	121	174	Linked from: Roof Beam RB1, Support 1
3 - Point (lb)	4' 6" (Front)	N/A	121	174	Linked from: Roof Beam RB1, Support 1

ForteWEB Software Operator

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Job Notes

G4

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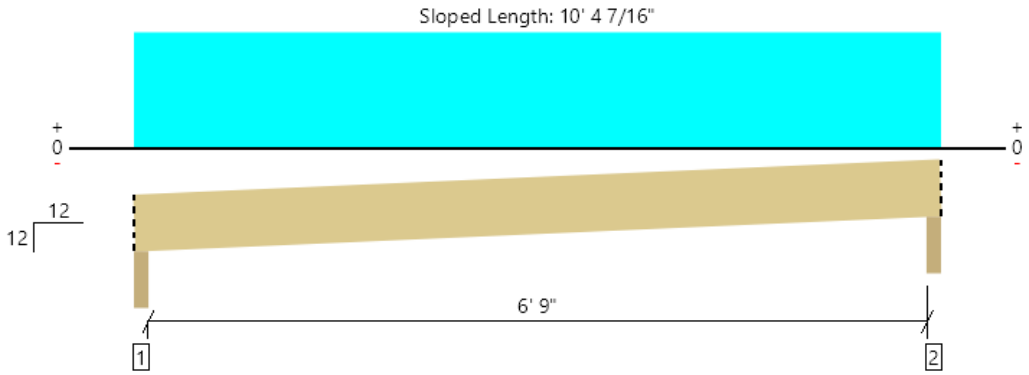
Roof, Roof Valley Beam RB3

1 piece(s) 4 x 10 Hem-Fir No. 2



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

Member Length : 11' 1 11/16"

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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	720 @ 2"	4961 (3.50")	Passed (15%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	556 @ 10 1/16"	3723	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1203 @ 3' 8"	4879	Passed (25%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.036 @ 3' 8"	0.495	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.071 @ 3' 8"	0.660	Passed (L/999+)	--	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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beveled Plate - SPF	3.50"	3.50"	1.50"	354	367	721	Blocking
2 - Beveled Plate - SPF	3.50"	3.50"	1.50"	354	367	721	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 7' 4"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 7' 4"	4'	15.0	25.0	Default Load

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ForteWEB Software Operator

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Job Notes

G6

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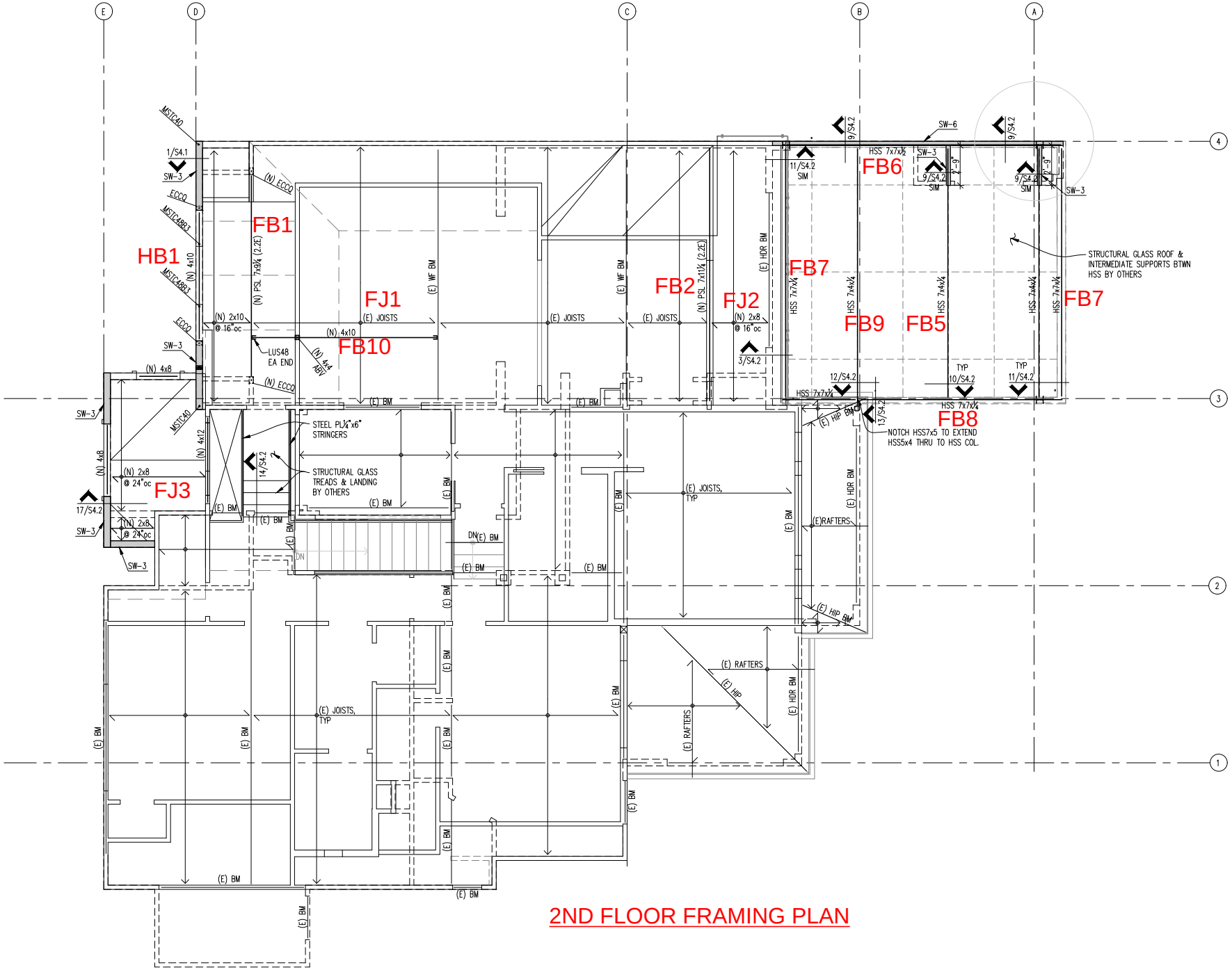


2ND FLOOR FRAMING PLAN

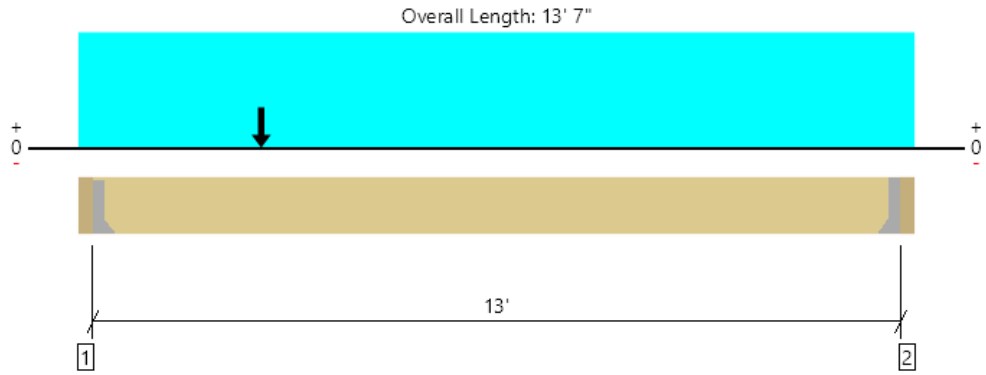
FORTE WEB

MEMBER REPORT

PASSED

2nd Floor, Floor: Joist FJ1

1 piece(s) 2 x 10 Hem-Fir No. 1 @ 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)	688 @ 3 1/2"	911 (1.50")	Passed (76%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	632 @ 1' 3/4"	1388	Passed (46%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1932 @ 6' 3/8"	2199	Passed (88%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.284 @ 6' 7 3/4"	0.325	Passed (L/550)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.402 @ 6' 7 9/16"	0.650	Passed (L/388)	--	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	Total	
1 - Hanger on 9 1/4" GLB beam	3.50"	Hanger[1]	1.50"	215	494	709	See note [1]
2 - Hanger on 9 1/4" GLB beam	3.50"	Hanger[1]	1.50"	157	397	554	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 5" o/c	
Bottom Edge (Lu)	13' o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS28	1.75"	N/A	6-10dx1.5	3-10d	
2 - Face Mount Hanger	LUS28	1.75"	N/A	6-10dx1.5	3-10d	

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

Vertical Loads	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 13' 7"	16"	15.0	40.0	Default Load
2 - Point (lb)	3'	N/A	100	167	

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ForteWEB Software Operator	Job Notes
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	G8

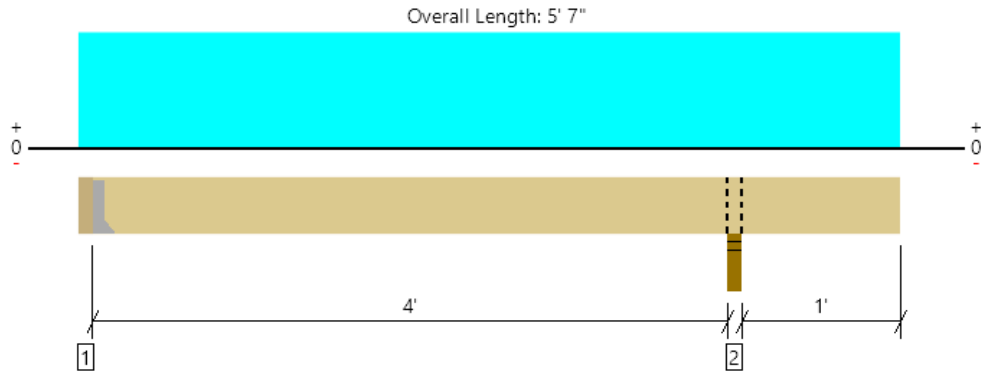
Weyerhaeuser

10/27/2020 1:00:47 AM UTC

ForteWEB v3.0, Engine: V8.1.4.2, Data: V8.0.0.0

File Name: 20-129 9820 SE 35th Place Remodel

2nd Floor, Floor: Joist FJ2
1 piece(s) 2 x 6 Hem-Fir No. 1 @ 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)	212 @ 3 1/2"	911 (1.50")	Passed (23%)	--	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	169 @ 3' 10"	825	Passed (21%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	216 @ 2' 3 15/16"	919	Passed (23%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.017 @ 2' 4 3/8"	0.104	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.021 @ 2' 4 1/4"	0.207	Passed (L/999+)	--	1.0 D + 1.0 L (Alt 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).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- 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	Total	
1 - Hanger on 5 1/2" GLB beam	3.50"	Hanger[1]	1.50"	53	189	242	See note [1]
2 - Stud wall - HF	3.50"	3.50"	1.50"	81	270	351	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 4" o/c	
Bottom Edge (Lu)	5' 4" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LU26	1.50"	N/A	6-10dx1.5	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)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 5' 7"	16"	18.0	60.0	Default Load

Weyerhaeuser Notes

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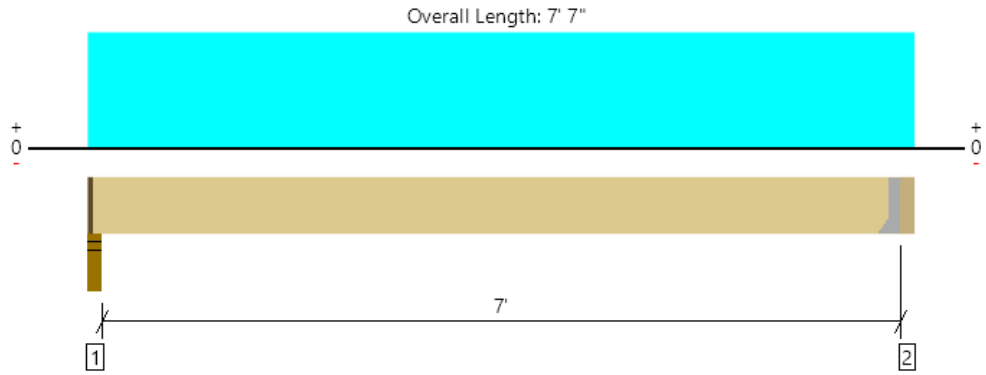
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	G9

Weyerhaeuser

2nd Floor, Floor: Joist FJ3
1 piece(s) 2 x 8 Hem-Fir No. 1 @ 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)	283 @ 7' 3 1/2"	911 (1.50")	Passed (31%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	235 @ 6' 8 1/4"	1251	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	502 @ 3' 9"	1694	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.040 @ 3' 9"	0.177	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.063 @ 3' 9"	0.354	Passed (L/999+)	--	1.0 D + 1.0 S (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	Snow	Total	
1 - Stud wall - HF	3.50"	2.25"	1.50"	113	187	300	1 1/4" Rim Board
2 - Hanger on 7 1/4" HF beam	3.50"	Hanger[1]	1.50"	115	192	307	See note [1]

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

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

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LU26	1.50"	N/A	6-10dx1.5	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 7' 7"	24"	15.0	25.0	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
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	

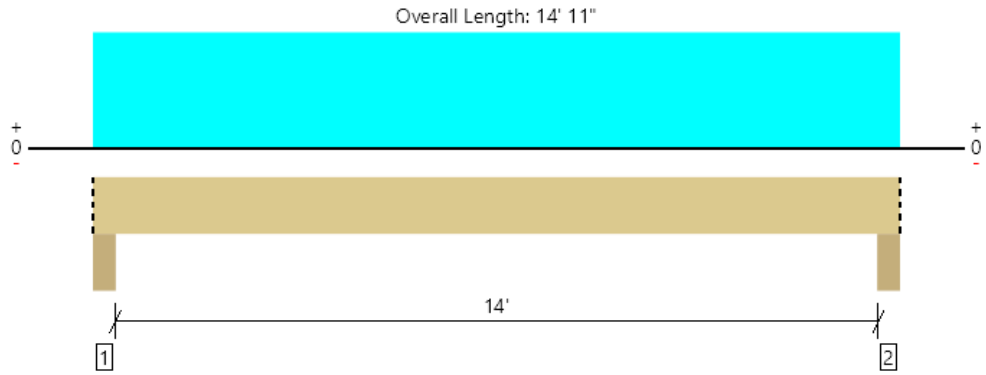
G10

Weyerhaeuser

10/27/2020 1:00:56 AM UTC
ForteWEB v3.0, Engine: V8.1.4.2, Data: V8.0.0.0
File Name: 20-129 9820 SE 35th Place Remodel

2nd Floor, Floor Beam FB1

1 piece(s) 7" x 9 1/4" 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)	4095 @ 4"	24063 (5.50")	Passed (17%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	3334 @ 1' 2 3/4"	12518	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	13586 @ 7' 5 1/2"	24831	Passed (55%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.319 @ 7' 5 1/2"	0.475	Passed (L/537)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.524 @ 7' 5 1/2"	0.712	Passed (L/326)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Drop 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.
- 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	Total	
1 - Column - DF	5.50"	5.50"	1.50"	1605	2387	932	4924	Blocking
2 - Column - DF	5.50"	5.50"	1.50"	1605	2387	932	4924	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' 11" o/c	
Bottom Edge (Lu)	14' 11" 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' 11"	N/A	20.2	--	--	
1 - Uniform (PSF)	0 to 14' 11" (Front)	8'	15.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 14' 11" (Front)	5'	15.0	-	25.0	Default Load

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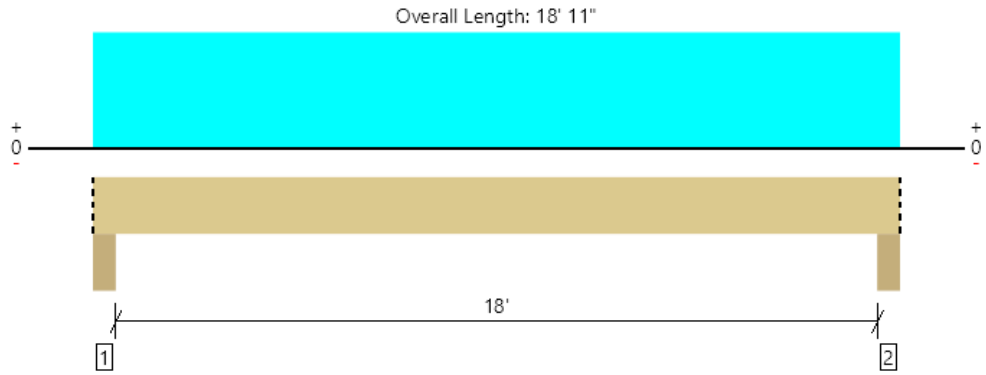
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	

2nd Floor, Floor Beam FB2

1 piece(s) 7" x 11 1/4" 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)	4688 @ 4"	24063 (5.50")	Passed (19%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3996 @ 1' 4 3/4"	15225	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	20634 @ 9' 5 1/2"	35940	Passed (57%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.512 @ 9' 5 1/2"	0.608	Passed (L/428)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.704 @ 9' 5 1/2"	0.913	Passed (L/311)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Drop 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.
- 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	Total	
1 - Column - DF	5.50"	5.50"	1.50"	1283	3405	473	5161	Blocking
2 - Column - DF	5.50"	5.50"	1.50"	1283	3405	473	5161	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	18' 11" o/c	
Bottom Edge (Lu)	18' 11" 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 18' 11"	N/A	24.6	--	--	
1 - Uniform (PSF)	0 to 18' 11" (Front)	3'	15.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 18' 11" (Front)	2'	18.0	60.0	-	Default Load
3 - Uniform (PSF)	0 to 18' 11" (Front)	2'	15.0	60.0	25.0	Default Load

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

ForteWEB Software Operator	Job Notes
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	

G12

Weyerhaeuser

Gravity Beam Design

FB5

RAM SBeam v5.0

11/03/20 13:55:26

STEEL CODE: AISC 360-05 ASD

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (17.50,0.00)

Beam Size (User Selected) = HSS7X4X1/4 Fy = 46.0 ksi

Total Beam Length (ft) = 17.50

Mp (kip-ft) = 41.40

Top flange not braced by decking.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.016	0.000
	17.500	0.016	0.000
2	0.000	0.130	0.163
	17.500	0.130	0.163

SHEAR: Max Va (DL+LL) = 2.71 kips Vn/1.67 = 53.91 kips

MOMENTS:

Span	Cond	LoadCombo	Ma kip-ft	@ ft	Lb ft	Cb	Ω	Mn / Ω kip-ft
Center	Max +	DL+LL	11.8	8.8	17.5	1.14	1.67	24.79
Controlling		DL+LL	11.8	8.8	17.5	1.14	1.67	24.79

REACTIONS (kips):

	Left	**Right**
DL reaction	1.28	1.28
Max +LL reaction	1.43	1.43
Max +total reaction	2.71	2.71

DEFLECTIONS:

Dead load (in)	at	8.75 ft	=	-0.349	L/D =	602
Live load (in)	at	8.75 ft	=	-0.389	L/D =	540
Net Total load (in)	at	8.75 ft	=	-0.738	L/D =	285

Gravity Beam Design

FB6

RAM SBeam v5.0

11/03/20 14:23:14

STEEL CODE: AISC 360-05 ASD

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (19.50,0.00)

Beam Size (User Selected) = HSS7X7X1/2 Fy = 46.0 ksi
Total Beam Length (ft) = 19.50
Cantilever on right (ft) = 1.50
Mp (kip-ft) = 106.95
Top flange not braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
5.000	1.24	1.35	No	No
11.000	1.28	1.43	No	No
19.500	0.62	0.55	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.039	0.000
	18.000	0.039	0.000
2	0.000	0.040	0.050
	18.000	0.040	0.050
3	18.000	0.039	0.000
	19.500	0.039	0.000
4	18.000	0.040	0.050
	19.500	0.040	0.050

SHEAR: Max Va (DL+LL) = 4.03 kips Vn/1.67 = 107.59 kips

MOMENTS:

Span	Cond	LoadCombo	Ma kip-ft	@ ft	Lb ft	Cb	Ω	Mn / Ω kip-ft
Center	Max +	DL+LL	21.0	11.0	18.0	1.15	1.67	64.04
	Max -	DL+LL	-1.9	18.0	18.0	1.15	1.67	64.04
Right	Max -	DL+LL	-1.9	18.0	1.5	1.00	1.67	64.04
Controlling		DL+LL	21.0	11.0	18.0	1.15	1.67	64.04

REACTIONS (kips):

	Left	**Right**
DL reaction	2.05	2.64
Max +LL reaction	1.98	2.37
Max -LL reaction	-0.05	0.00
Max +total reaction	4.03	5.01

DEFLECTIONS:

Center span:

Dead load (in)	at	8.91 ft	=	-0.256	L/D =	844
Live load (in)	at	8.91 ft	=	-0.261	L/D =	827
Net Total load (in)	at	8.91 ft	=	-0.517	L/D =	418

Right cantilever:

Dead load (in)	=	0.063	L/D	=	576
Pos Live load (in)	=	-0.006	L/D	=	5667
Neg Live load (in)	=	0.067	L/D	=	537
Neg Total load (in)	=	0.130	L/D	=	278

Gravity Beam Design

FB7

RAM SBeam v5.0

11/03/20 14:05:53

STEEL CODE: AISC 360-05 ASD

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (17.50,0.00)

Beam Size (User Selected) = HSS7X7X1/4 Fy = 46.0 ksi

Total Beam Length (ft) = 17.50

Mp (kip-ft) = 59.42

Top flange not braced by decking.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.021	0.000
	17.500	0.021	0.000
2	0.000	0.050	0.063
	17.500	0.050	0.063

SHEAR: Max Va (DL+LL) = 1.17 kips Vn/1.67 = 53.91 kips

MOMENTS:

Span	Cond	LoadCombo	Ma kip-ft	@ ft	Lb ft	Cb	Ω	Mn / Ω kip-ft
Center	Max +	DL+LL	5.1	8.8	17.5	1.14	1.67	35.58
Controlling		DL+LL	5.1	8.8	17.5	1.14	1.67	35.58

REACTIONS (kips):

	Left	**Right**
DL reaction	0.62	0.62
Max +LL reaction	0.55	0.55
Max +total reaction	1.17	1.17

DEFLECTIONS:

Dead load (in)	at	8.75 ft	=	-0.111	L/D =	1890
Live load (in)	at	8.75 ft	=	-0.099	L/D =	2130
Net Total load (in)	at	8.75 ft	=	-0.210	L/D =	1001

Gravity Beam Design

FB8

RAM SBeam v5.0

11/03/20 14:09:36

STEEL CODE: AISC 360-05 ASD

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (13.50,0.00)

Beam Size (User Selected) = HSS7X7X1/4 Fy = 46.0 ksi
Total Beam Length (ft) = 13.50
Cantilever on right (ft) = 1.50
Mp (kip-ft) = 59.42
Top flange not braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
6.000	1.28	1.43	No	No
13.500	0.62	0.55	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.021	0.000
	12.000	0.021	0.000
2	0.000	0.040	0.050
	12.000	0.040	0.050
3	12.000	0.021	0.000
	13.500	0.021	0.000
4	12.000	0.040	0.050
	13.500	0.040	0.050

SHEAR: Max Va (DL+LL) = 2.18 kips Vn/1.67 = 53.91 kips

MOMENTS:

Span	Cond	LoadCombo	Ma kip-ft	@ ft	Lb ft	Cb	Ω	Mn / Ω kip-ft
Center	Max +	DL+LL	9.6	6.0	12.0	1.29	1.67	35.58
	Max -	DL+LL	-1.9	12.0	12.0	1.36	1.67	35.58
Right	Max -	DL+LL	-1.9	12.0	1.5	1.00	1.67	35.58
Controlling		DL+LL	9.6	6.0	12.0	1.29	1.67	35.58

REACTIONS (kips):

	Left	**Right**
DL reaction	0.92	1.80
Max +LL reaction	1.01	1.71
Max -LL reaction	-0.07	0.00
Max +total reaction	1.94	3.51

DEFLECTIONS:

Center span:

Dead load (in)	at	5.94 ft	=	-0.069	L/D =	2097
Live load (in)	at	5.94 ft	=	-0.083	L/D =	1730
Net Total load (in)	at	5.94 ft	=	-0.152	L/D =	948

Right cantilever:

Dead load (in)	=	0.022	L/D	=	1639
Pos Live load (in)	=	-0.008	L/D	=	4731
Neg Live load (in)	=	0.032	L/D	=	1137
Neg Total load (in)	=	0.054	L/D	=	671

Gravity Beam Design

FB9

RAM SBeam v5.0

11/03/20 14:16:55

STEEL CODE: AISC 360-05 ASD

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (18.00,0.00)

Beam Size (User Selected) = HSS7X4X1/4 Fy = 46.0 ksi

Total Beam Length (ft) = 18.00

Mp (kip-ft) = 41.40

Top flange not braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
1.000	0.92	1.00	No	No
1.000	1.00	1.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.016	0.000
	18.000	0.016	0.000
2	0.000	0.110	0.138
	18.000	0.110	0.138

SHEAR: Max Va (DL+LL) = 6.08 kips Vn/1.67 = 53.91 kips

MOMENTS:

Span	Cond	LoadCombo	Ma kip-ft	@ ft	Lb ft	Cb	Ω	Mn / Ω kip-ft
Center	Max +	DL+LL	12.8	8.2	18.0	1.12	1.67	24.79
Controlling		DL+LL	12.8	8.2	18.0	1.12	1.67	24.79

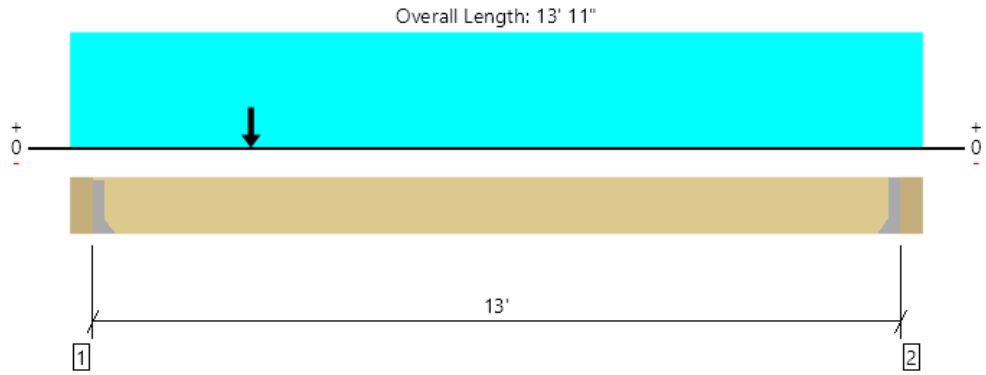
REACTIONS (kips):

	Left	**Right**
DL reaction	2.95	1.24
Max +LL reaction	3.13	1.35
Max +total reaction	6.08	2.60

DEFLECTIONS:

Dead load (in)	at	8.73 ft	=	-0.413	L/D =	523
Live load (in)	at	8.73 ft	=	-0.448	L/D =	483
Net Total load (in)	at	8.73 ft	=	-0.861	L/D =	251

2nd Floor, Floor Beam FB10
1 piece(s) 4 x 10 Hem-Fir 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)	950 @ 5 1/2"	2126 (1.50")	Passed (45%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	897 @ 1' 2 3/4"	3723	Passed (24%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	2202 @ 6' 1 5/16"	4242	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.126 @ 6' 8 3/8"	0.433	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.239 @ 6' 7 11/16"	0.650	Passed (L/653)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Drop 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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Hanger on 9 1/4" PSL beam	5.50"	Hanger[1]	1.50"	477	371	295	1143	See note [1]
2 - Hanger on 9 1/4" DF beam	5.50"	Hanger[1]	1.50"	262	371	72	705	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

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

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS48	2.00"	N/A	6-10dx1.5	4-10d	
2 - Face Mount Hanger	LUS48	2.00"	N/A	6-10dx1.5	4-10d	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 13' 5 1/2"	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 13' 11" (Front)	1' 4"	15.0	40.0	-	Default Load
2 - Point (lb)	3' (Top)	N/A	354	-	367	Linked from: Roof Valley Beam RB3, Support 2

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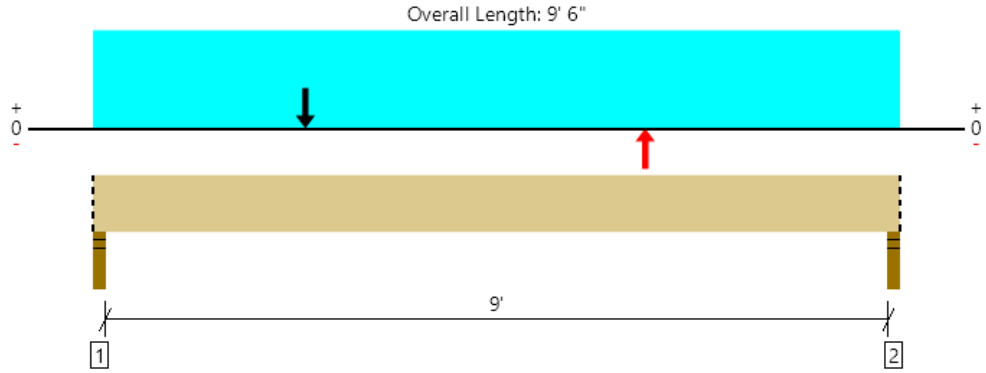
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	G20

Weyerhaeuser

2nd Floor, Header Beam HB1

1 piece(s) 4 x 10 Hem-Fir 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)	1061 @ 1 1/2"	4253 (3.00")	Passed (25%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	892 @ 1' 1/4"	5180	Passed (17%)	1.60	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	1585 @ 4' 9"	4242	Passed (37%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.062 @ 5' 4 9/16"	0.308	Passed (L/999+)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.099 @ 5' 2 1/8"	0.463	Passed (L/999+)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Drop 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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Total	
1 - Stud wall - HF	3.00"	3.00"	1.50"	324	380	237	522/-522	1463/-522	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	324	380	238	522/-522	1464/-522	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' 6" o/c	
Bottom Edge (Lu)	9' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 9' 6"	N/A	8.2	--	--	--	
1 - Uniform (PSF)	0 to 9' 6" (Front)	2'	15.0	40.0	-	-	Default Load
2 - Uniform (PSF)	0 to 9' 6" (Front)	2'	15.0	-	25.0	-	Default Load
3 - Point (lb)	2' 6" (Front)	N/A	-	-	-	1207	
4 - Point (lb)	6' 6" (Front)	N/A	-	-	-	-1207	

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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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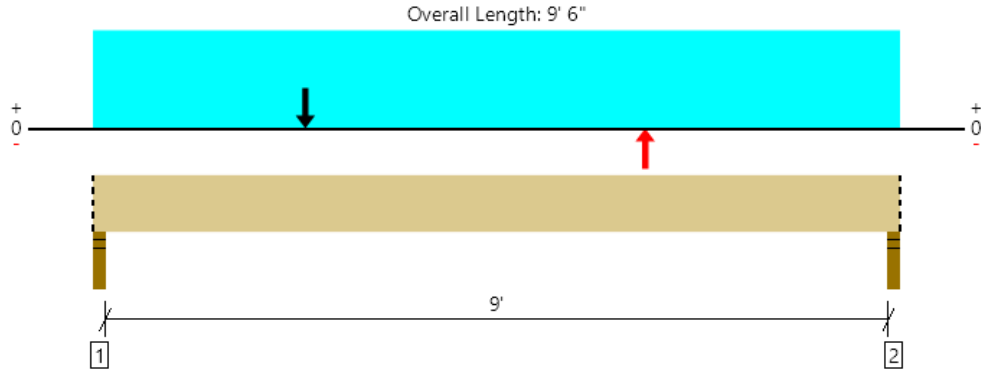
Weyerhaeuser

2nd Floor, Header Beam HB1 w/omega
1 piece(s) 4 x 10 Hem-Fir 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)	1472 @ 1 1/2"	4253 (3.00")	Passed (35%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1352 @ 2' 6"	5180	Passed (26%)	1.60	1.0 D - 0.7 E (All Spans)
Moment (Ft-lbs)	3488 @ 6' 6"	6788	Passed (51%)	1.60	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.077 @ 5' 9 1/2"	0.308	Passed (L/999+)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.113 @ 5' 6 5/8"	0.463	Passed (L/983)	--	1.0 D - 0.525 E + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Drop 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.
- -719 lbs uplift at support located at 1 1/2". Strapping or other restraint may be required.
- -719 lbs uplift at support located at 9' 4 1/2". Strapping or other restraint may be required.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Total	
1 - Stud wall - HF	3.00"	3.00"	1.50"	324	380	237	1305/-1305	2246/-1305	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	324	380	238	1305/-1305	2247/-1305	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' 6" o/c	
Bottom Edge (Lu)	9' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 9' 6"	N/A	8.2	--	--	--	
1 - Uniform (PSF)	0 to 9' 6" (Front)	2'	15.0	40.0	-	-	Default Load
2 - Uniform (PSF)	0 to 9' 6" (Front)	2'	15.0	-	25.0	-	Default Load
3 - Point (lb)	2' 6" (Front)	N/A	-	-	-	3018	
4 - Point (lb)	6' 6" (Front)	N/A	-	-	-	-3018	

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ForteWEB Software Operator	Job Notes
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G22

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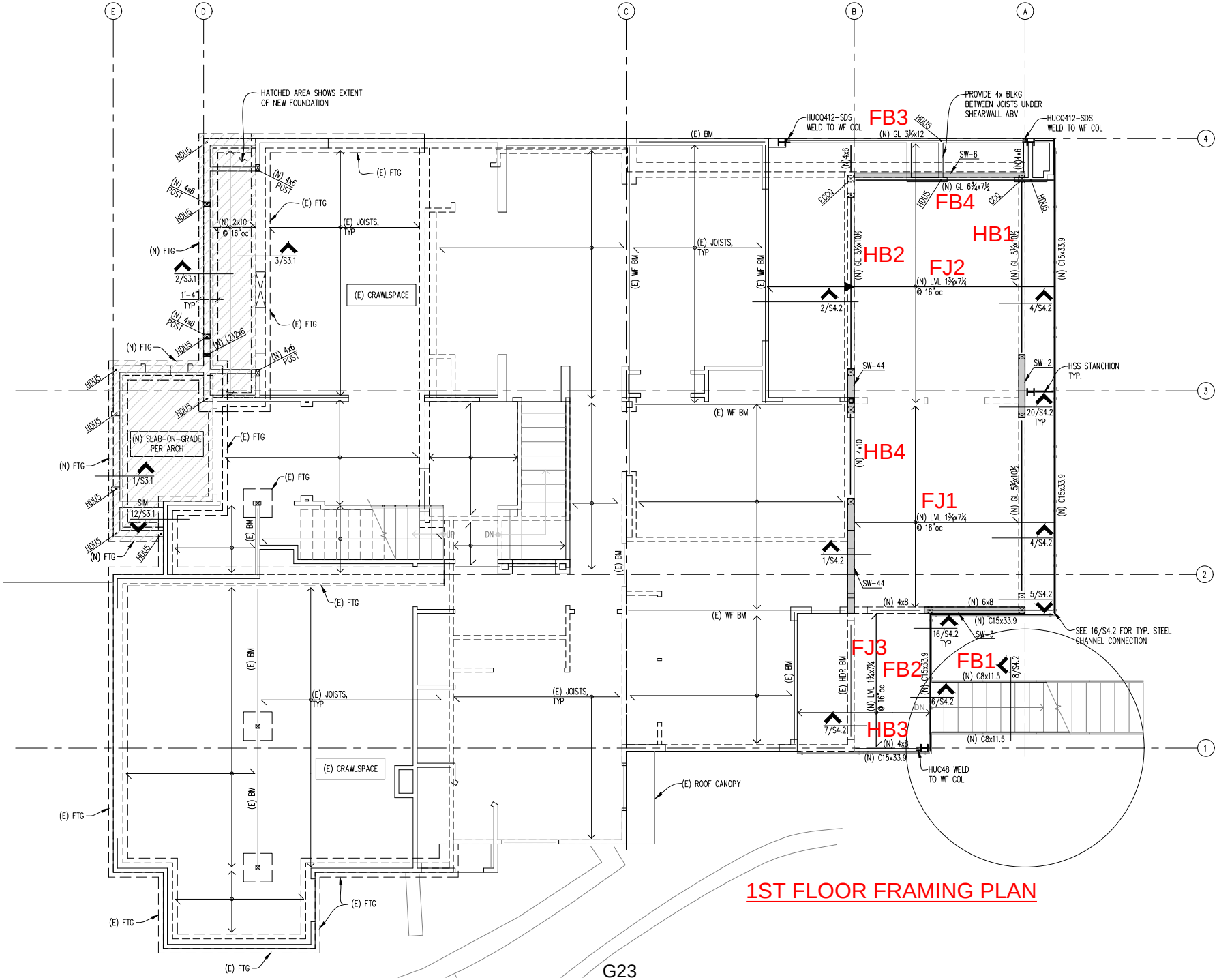
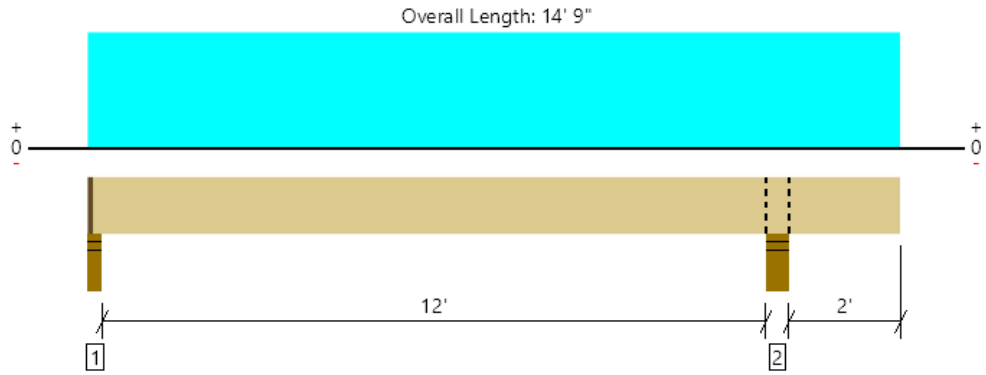

HATCHED AREA SHOWS EXTENT OF NEW FOUNDATION
(E) FTG
(N) 4x6 POST
(N) 2x10 @ 16"oc
(E) JOISTS, TYP
(E) CRAWLSPACE
(N) FTG
(N) 12x6
(N) SLAB-ON-GRADE PER ARCH
(E) BM
(E) WF BM
(E) ROOF CANOPY
HDU5
HUCQ412-SDS WELD TO WF COL
PROVIDE 4x BLKG BETWEEN JOISTS UNDER SHEARWALL ABV
(N) GL 3½x12
(N) GL 6¾x7½
(N) GL 5¼x10½
(N) LVL 1¾x7¼ @ 16"oc
(N) 4x10
(N) 4x8
(N) 6x8
(N) C15x33.9
(N) C8x11.5
(N) LVL 1¾x7¼ @ 16"oc
(N) 4x6
HUC48 WELD TO WF COL
SW-6
SW-44
SW-2
SW-3
HSS STANCHION TYP.
SEE 16/S4.2 FOR TYP. STEEL CHANNEL CONNECTION
FB3
FB4
HB1
HB2
FJ2
HB4
FJ1
FJ3
FB2
FB1
HB3
1ST FLOOR FRAMING PLAN

1st Floor, Floor: Joist FJ1

1 piece(s) 1 3/4" x 7 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)	662 @ 2 1/2"	1595 (2.25")	Passed (42%)	--	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	589 @ 11' 8 1/4"	2411	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1988 @ 6' 3 3/4"	3700	Passed (54%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.331 @ 6' 4 3/8"	0.410	Passed (L/446)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.433 @ 6' 4 3/16"	0.616	Passed (L/341)	--	1.0 D + 1.0 L (Alt 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/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240). Upward deflection on right cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 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	Total	
1 - Stud wall - HF	3.50"	2.25"	1.50"	164	509/-8	673/-8	1 1/4" Rim Board
2 - Stud wall - HF	5.50"	5.50"	1.50"	229	687	916	Blocking

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 2" o/c	
Bottom Edge (Lu)	14' 8" 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 14' 9"	16"	20.0	60.0	Default Load

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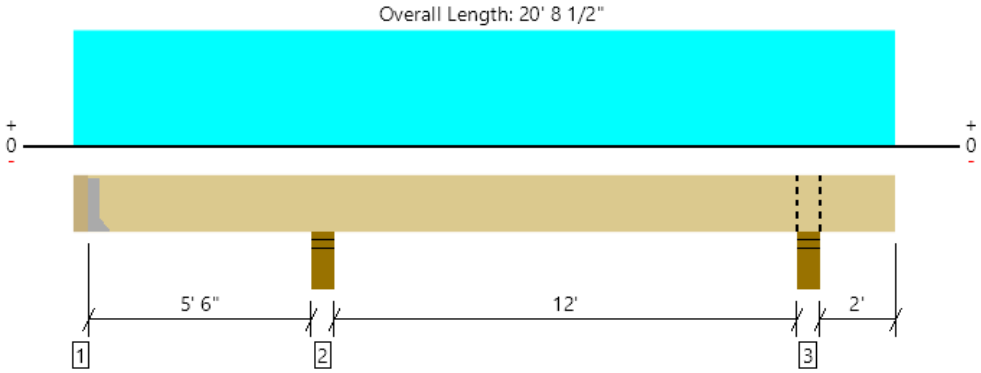
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	

G24

Weyerhaeuser

1st Floor, Floor: Joist FJ2
1 piece(s) 1 3/4" x 7 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)	1438 @ 6' 1/4"	4091 (5.50")	Passed (35%)	--	1.0 D + 1.0 L (Adj Spans)
Shear (lbs)	735 @ 6' 10 1/4"	2411	Passed (31%)	1.00	1.0 D + 1.0 L (Adj Spans)
Moment (Ft-lbs)	-1624 @ 6' 1/4"	3700	Passed (44%)	1.00	1.0 D + 1.0 L (Adj Spans)
Live Load Defl. (in)	0.212 @ 12' 9 1/8"	0.415	Passed (L/706)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.287 @ 12' 9 1/16"	0.623	Passed (L/520)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	43	40	Passed	--	--

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 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	Total	
1 - Hanger on 7 1/4" HF beam	3.50"	Hanger[1]	1.50"	25	246/-162	271/-162	See note [1]
2 - Stud wall - SPF	5.50"	5.50"	1.93"	413	1025	1438	None
3 - Stud wall - HF	5.50"	5.50"	1.50"	252	613	865	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	19' 10" o/c	
Bottom Edge (Lu)	17' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HU1.81/5	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)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 20' 8 1/2"	16"	25.0	60.0	Default Load

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Job Notes

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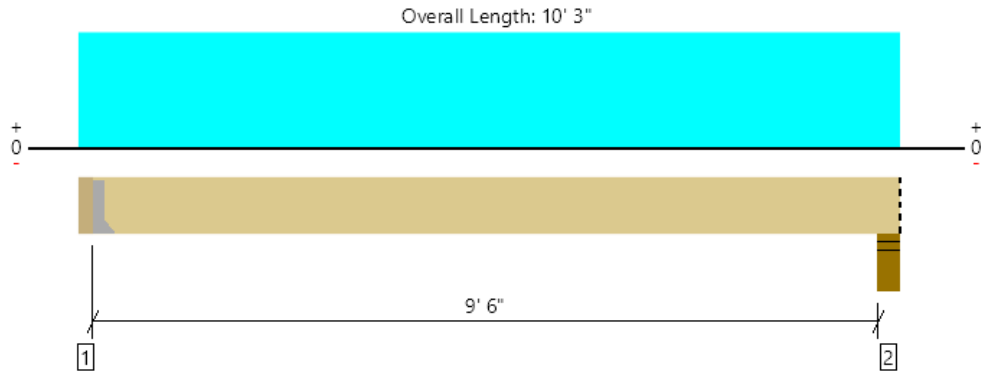
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

1st Floor, Floor: Joist FJ3

1 piece(s) 1 3/4" x 7 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)	511 @ 3 1/2"	1969 (1.50")	Passed (26%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	447 @ 10 3/4"	2411	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1225 @ 5' 1"	3700	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.125 @ 5' 1"	0.319	Passed (L/922)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.166 @ 5' 1"	0.479	Passed (L/691)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	52	40	Passed	--	--

System : Floor
Member Type : Joist
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.
- 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	Total	
1 - Hanger on 7 1/4" HF beam	3.50"	Hanger[1]	1.50"	136	407	543	See note [1]
2 - Stud wall - HF	5.50"	5.50"	1.50"	138	413	551	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HU1.81/5	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)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 10' 3"	16"	20.0	60.0	Default Load

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Weyerhaeuser

Gravity Beam Design

FB1

RAM SBeam v5.0

10/16/20 17:16:49

STEEL CODE: AISC 360-05 ASD

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (15.00,0.00)

Beam Size (User Selected) = C8X11.5 Fy = 36.0 ksi

Total Beam Length (ft) = 15.00

Mp (kip-ft) = 28.89

Top flange not braced by decking.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.011	0.000
	15.000	0.011	0.000
2	0.000	0.080	0.120
	15.000	0.080	0.120

SHEAR: Max Va (DL+LL) = 1.59 kips Vn/1.67 = 22.76 kips

MOMENTS:

Span	Cond	LoadCombo	Ma kip-ft	@ ft	Lb ft	Cb	Ω	Mn / Ω kip-ft
Center	Max +	DL+LL	5.9	7.5	15.0	1.14	1.67	7.71
Controlling		DL+LL	5.9	7.5	15.0	1.14	1.67	7.71

REACTIONS (kips):

	Left	**Right**
DL reaction	0.69	0.69
Max +LL reaction	0.90	0.90
Max +total reaction	1.59	1.59

DEFLECTIONS:

Dead load (in)	at	7.50 ft	=	-0.111	L/D =	1628
Live load (in)	at	7.50 ft	=	-0.145	L/D =	1241
Net Total load (in)	at	7.50 ft	=	-0.256	L/D =	704

Exterior stair top stringer connection

Main Member: Angle of Load to Grain	90
Side Member Type	Steel
Side Member Thickness	1/4 in.
Side Member: Angle of Load to Grain	0
Fastener Diameter	1 in.
Load Duration Factor	C_D = 1.0
Wet Service Factor	C_M = 1.0
Temperature Factor	C_t = 1.0

Calculate Connection Capacity

Connection Yield Mode Descriptions | Limits of Use

Diaphragm Factor Help | Load Duration Factor Help | Technical Help

Show Printable View

Connection Yield Modes

Im	1575 lbs.
Is	4350 lbs.
II	802 lbs.
IIIm	1475 lbs.
IIIs	1501 lbs.
IV	2028 lbs.

Adjusted ASD Capacity	**802 lbs.**

- Bolt bending yield strength of 45,000 psi is assumed.
- The Adjusted ASD Capacity is only applicable for bolts with adequate end distance, edge distance and spacing per N
- ASTM A36 Steel is assumed for steel side members 1/4 in. thick, and ASTM A653 Grade 33 Steel is assumed for ste than 1/4 in. thick.

The Connection Calculator was designed and created by Cameron Knudson, Michael Dodson and David Pollock at Washing Support for development of the Connection Calculator was provided by American Wood Council.

Gravity Beam Design

FB2

RAM SBeam v5.0

10/27/20 10:12:44

STEEL CODE: AISC 360-05 ASD

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (9.50,0.00)

Beam Size (User Selected) = C15X33.9 Fy = 36.0 ksi

Total Beam Length (ft) = 9.50

Mp (kip-ft) = 152.40

Top flange not braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
3.500	0.70	0.90	No	No
6.000	0.70	0.90	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.034	0.000
	9.500	0.034	0.000
2	0.000	0.025	0.060
	9.500	0.025	0.060

SHEAR: Max Va (DL+LL) = 2.17 kips Vn/1.67 = 77.60 kips

MOMENTS:

Span	Cond	LoadCombo	Ma kip-ft	@ ft	Lb ft	Cb	Ω	Mn / Ω kip-ft
Center	Max +	DL+LL	6.9	4.8	9.5	1.17	1.67	82.92
Controlling		DL+LL	6.9	4.8	9.5	1.17	1.67	82.92

REACTIONS (kips):

	Left	**Right**
DL reaction	0.98	0.98
Max +LL reaction	1.18	1.18
Max +total reaction	2.17	2.17

DEFLECTIONS:

Dead load (in)	at	4.75 ft	=	-0.005	L/D =	20855
Live load (in)	at	4.75 ft	=	-0.007	L/D =	16992
Net Total load (in)	at	4.75 ft	=	-0.012	L/D =	9363

FORTE WEB

MEMBER REPORT

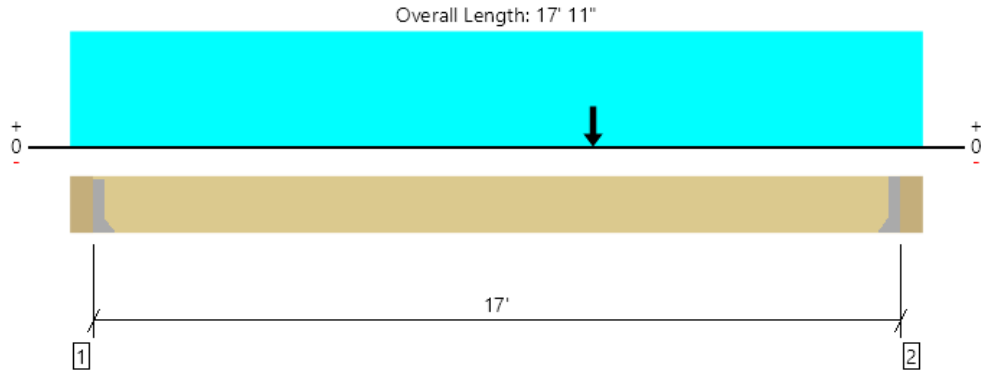
FAILED

1st Floor, Floor Beam FB3

1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam

HANGERS WELDED TO WF COLUMNS, OK

An excessive uplift of -1289 lbs at support located at 17' 5 1/2" failed this product.



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)	1789 @ 17' 5 1/2"	3413 (1.50")	Passed (52%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1740 @ 16' 5 1/2"	11872	Passed (15%)	1.60	1.0 D + 0.7 E (All Spans)
Pos Moment (Ft-lbs)	10730 @ 11'	26880	Passed (40%)	1.60	1.0 D + 0.7 E (All Spans)
Neg Moment (Ft-lbs)	-8812 @ 11'	20720	Passed (43%)	1.60	0.6 D - 0.7 E (All Spans)
Live Load Defl. (in)	-0.430 @ 9' 6 3/16"	0.567	Passed (L/475)	--	0.6 D - 0.7 E (All Spans)
Total Load Defl. (in)	0.502 @ 9' 5 5/16"	0.850	Passed (L/406)	--	1.0 D + 0.7 E (All Spans)

System : Floor
Member Type : Drop 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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 17'.
- Critical negative moment adjusted by a volume factor of 1.00 that was calculated using length L = 17'.
- -718 lbs uplift at support located at 5 1/2". Strapping or other restraint may be required.
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Seismic	Total	
1 - Hanger on 12" DF beam	5.50"	Hanger[1]	1.50"	311	538	1292/-1292	2141/-1292	See note [1]
2 - Hanger on 12" DF beam	5.50"	Hanger[1]	1.50"	311	538	2108/-2108	2957/-2108	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

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

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HUCQ410-SDS	3.00"	N/A	12-SDS25212	6-SDS25212	
2 - Face Mount Hanger	HUCQ410-SDS	3.00"	N/A	12-SDS25212	6-SDS25212	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	5 1/2" to 17' 5 1/2"	N/A	10.2	--	--	
1 - Uniform (PSF)	0 to 17' 11" (Front)	1'	25.0	60.0	-	Default Load
2 - Point (lb)	11' (Front)	N/A	-	-	3400	

ForteWEB Software Operator	Job Notes
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	

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11/4/2020 12:09:32 AM UTC
ForteWEB v3.0, Engine: V8.1.4.2, Data: V8.0.0.0
File Name: 20-129 9820 SE 35th Place Remodel

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

FORTE WEB

MEMBER REPORT

FAILED

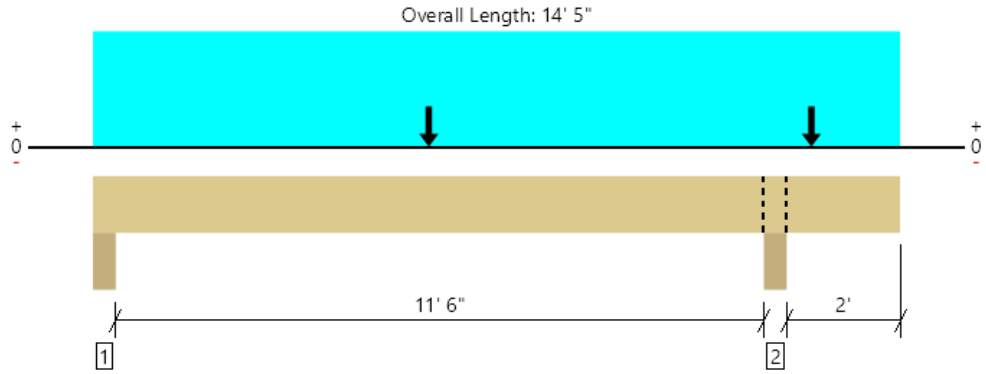
CCQ CAPS PROVIDED, OK

1st Floor, Floor Beam FB4

1 piece(s) 6 3/4" x 7 1/2" 24F-V8 DF Glulam

An excessive uplift of -1077 lbs at support located at 4" failed this product.

An excessive uplift of -3418 lbs at support located at 12' 2 1/4" failed this product.



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)	4029 @ 12' 2 1/4"	24131 (5.50")	Passed (17%)	--	1.0 D + 0.7 E (All Spans)
Shear (lbs)	1649 @ 13' 1/2"	14310	Passed (12%)	1.60	1.0 D + 0.7 E (All Spans)
Pos Moment (Ft-lbs)	7786 @ 6'	20250	Passed (38%)	1.60	1.0 D + 0.7 E (Alt Spans)
Neg Moment (Ft-lbs)	-6592 @ 6'	20250	Passed (33%)	1.60	0.6 D - 0.7 E (Alt Spans)
Live Load Defl. (in)	0.185 @ 14' 5"	0.200	Passed (2L/288)	--	0.6 D - 0.7 E (Alt Spans)
Total Load Defl. (in)	0.171 @ 14' 5"	0.223	Passed (2L/312)	--	0.6 D - 0.7 E (Alt Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 11' 9 5/16".
- Critical negative moment adjusted by a volume factor of 1.00 that was calculated using length L = 14' 1".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Seismic	Total	
1 - Column - DF	5.50"	5.50"	1.50"	276	501/-17	1775/-1775	2552/-1792	None
2 - Column - DF	5.50"	5.50"	1.50"	382	669	5211/-5211	6262/-5211	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' 5" o/c	
Bottom Edge (Lu)	14' 5" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 14' 5"	N/A	12.3	--	--	
1 - Uniform (PSF)	0 to 14' 5" (Front)	1' 4"	25.0	60.0	-	Default Load
2 - Point (lb)	6' (Front)	N/A	-	-	3400	
3 - Point (lb)	12' 10" (Front)	N/A	-	-	3400	

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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
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	G33

Weyerhaeuser

11/4/2020 12:22:20 AM UTC

ForteWEB v3.0, Engine: V8.1.4.2, Data: V8.0.0.0

File Name: 20-129 9820 SE 35th Place Remodel

FORTE WEB

MEMBER REPORT

FAILED

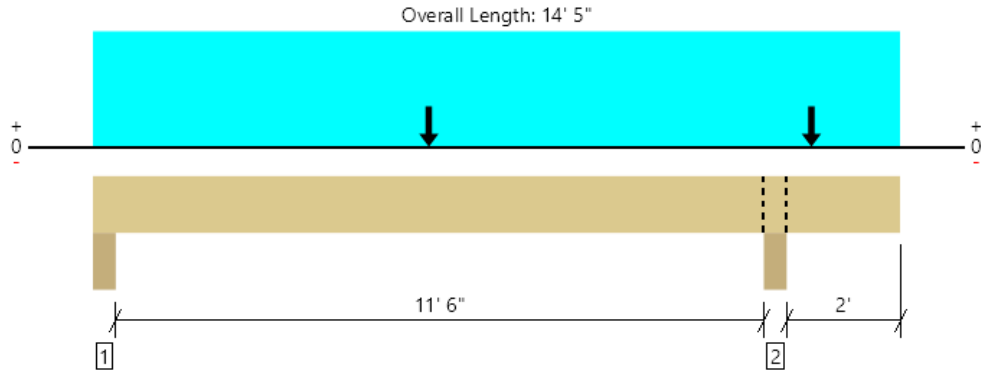
1st Floor, Floor Beam FB4 W/OMEGA

1 piece(s) 6 3/4" x 7 1/2" 24F-V8 DF Glulam

OVERSTRENGTH FACTOR APPLIED, OK

An excessive uplift of -2940 lbs at support located at 4" failed this product.

An excessive uplift of -8889 lbs at support located at 12' 2 1/4" failed this product.



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)	9500 @ 12' 2 1/4"	24131 (5.50")	Passed (39%)	--	1.0 D + 0.7 E (All Spans)
Shear (lbs)	4029 @ 13' 1/2"	14310	Passed (28%)	1.60	1.0 D + 0.7 E (All Spans)
Pos Moment (Ft-lbs)	18345 @ 6'	20250	Passed (91%)	1.60	1.0 D + 0.7 E (Alt Spans)
Neg Moment (Ft-lbs)	-17152 @ 6'	20250	Passed (85%)	1.60	0.6 D - 0.7 E (Alt Spans)
Live Load Defl. (in)	0.463 @ 14' 5"	0.200	Failed (2L/116)	--	0.6 D - 0.7 E (Alt Spans)
Total Load Defl. (in)	0.449 @ 14' 5"	0.223	Failed (2L/120)	--	0.6 D - 0.7 E (Alt Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/0.2") 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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 11' 9 13/16".
- Critical negative moment adjusted by a volume factor of 1.00 that was calculated using length L = 14' 1".
- Upward deflection on right cantilever exceeds 0.4".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Seismic	Total	
1 - Column - DF	5.50"	5.50"	1.50"	276	501/-17	4437/-4437	5214/-4454	None
2 - Column - DF	5.50"	5.50"	2.17"	382	669	13026/-13026	14077/-13026	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' 5" o/c	
Bottom Edge (Lu)	14' 5" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 14' 5"	N/A	12.3	--	--	
1 - Uniform (PSF)	0 to 14' 5" (Front)	1' 4"	25.0	60.0	-	Default Load
2 - Point (lb)	6' (Front)	N/A	-	-	8500	
3 - Point (lb)	12' 10" (Front)	N/A	-	-	8500	

ForteWEB Software Operator	Job Notes
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	

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11/4/2020 12:22:56 AM UTC

ForteWEB v3.0, Engine: V8.1.4.2, Data: V8.0.0.0

File Name: 20-129 9820 SE 35th Place Remodel

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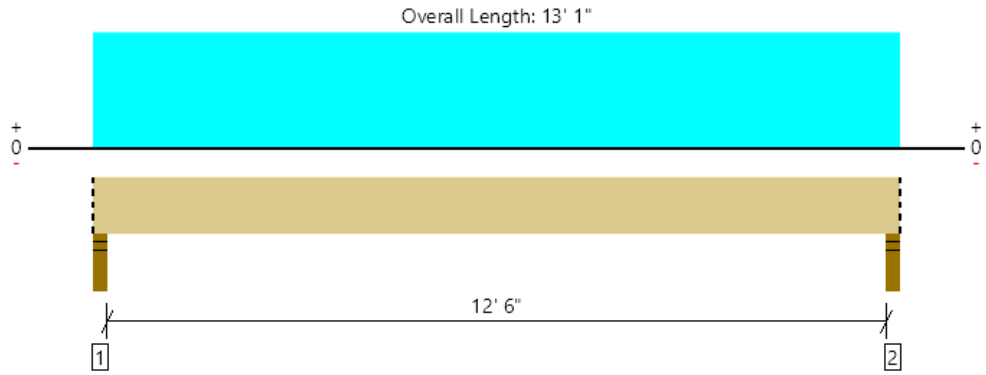
1st Floor, Header Beam HB1

1 piece(s) 5 1/4" x 9 1/2" 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)	4747 @ 2"	7809 (3.50")	Passed (61%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	3797 @ 1' 1"	9643	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	14135 @ 6' 6 1/2"	19585	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.428 @ 6' 6 1/2"	0.425	Passed (L/357)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.609 @ 6' 6 1/2"	0.637	Passed (L/251)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Drop 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	Total	
1 - Stud wall - SPF	3.50"	3.50"	2.13"	1410	3140	1308	5858	Blocking
2 - Stud wall - SPF	3.50"	3.50"	2.13"	1410	3140	1308	5858	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' 1" o/c	
Bottom Edge (Lu)	13' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13' 1"	N/A	15.6	--	--	
1 - Uniform (PSF)	0 to 13' 1" (Front)	8'	25.0	60.0	25.0	Default Load

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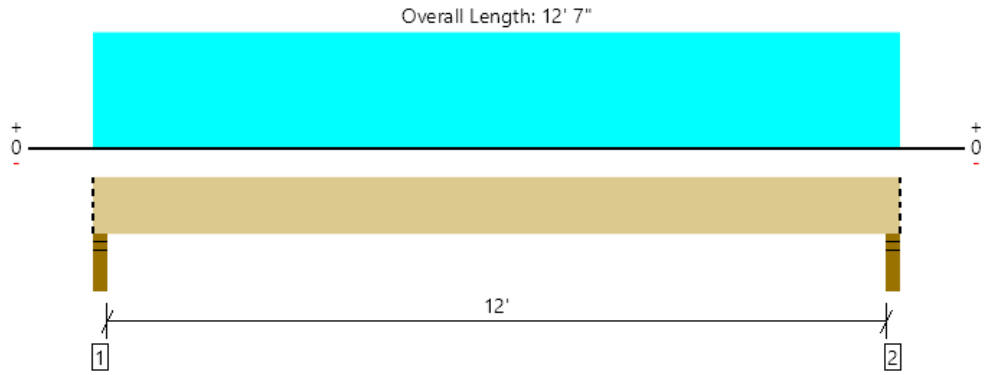
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	

1st Floor, Header Beam HB2

1 piece(s) 5 1/2" x 10 1/2" 24F-V8 DF Glulam



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)	5114 @ 2"	7796 (3.50")	Passed (66%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	3993 @ 1' 2"	10203	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	14613 @ 6' 3 1/2"	20213	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.304 @ 6' 3 1/2"	0.408	Passed (L/483)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.431 @ 6' 3 1/2"	0.613	Passed (L/341)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Drop 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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 12' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	2.30"	1504	3398	1416	6318	Blocking
2 - Stud wall - HF	3.50"	3.50"	2.30"	1504	3398	1416	6318	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' 7" o/c	
Bottom Edge (Lu)	12' 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 12' 7"	N/A	14.0	--	--	
1 - Uniform (PSF)	0 to 12' 7" (Front)	9'	25.0	60.0	25.0	Default Load

Weyerhaeuser Notes

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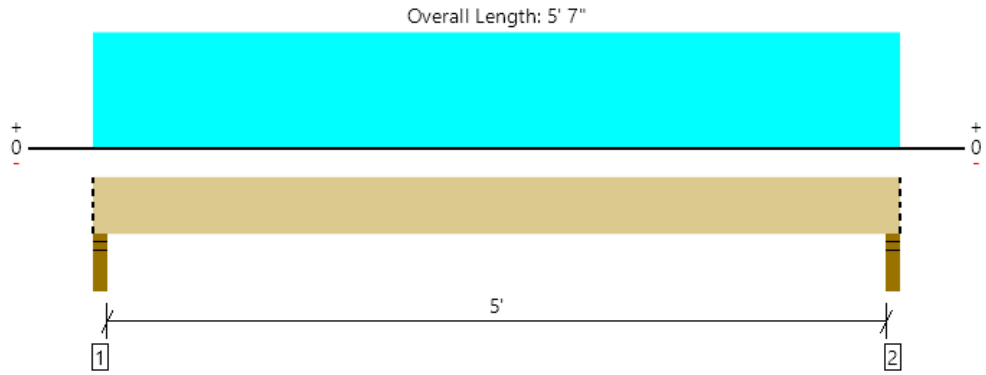
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Asrade Mengstu Fossatti Pawlak Structural Engineers (206) 456-3071 amengstu@fossatti.com	

G37

Weyerhaeuser

1st Floor, Header Beam HB3
1 piece(s) 4 x 8 Hem-Fir 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)	1133 @ 2"	4961 (3.50")	Passed (23%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	737 @ 10 3/4"	2538	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1340 @ 2' 9 1/2"	2823	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.034 @ 2' 9 1/2"	0.175	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.048 @ 2' 9 1/2"	0.262	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Drop 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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	1.50"	332	754	314	1400	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	332	754	314	1400	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' 7" o/c	
Bottom Edge (Lu)	5' 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 5' 7"	N/A	6.4	--	--	
1 - Uniform (PSF)	0 to 5' 7" (Front)	4' 6"	25.0	60.0	25.0	Default Load

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

ForteWEB Software Operator

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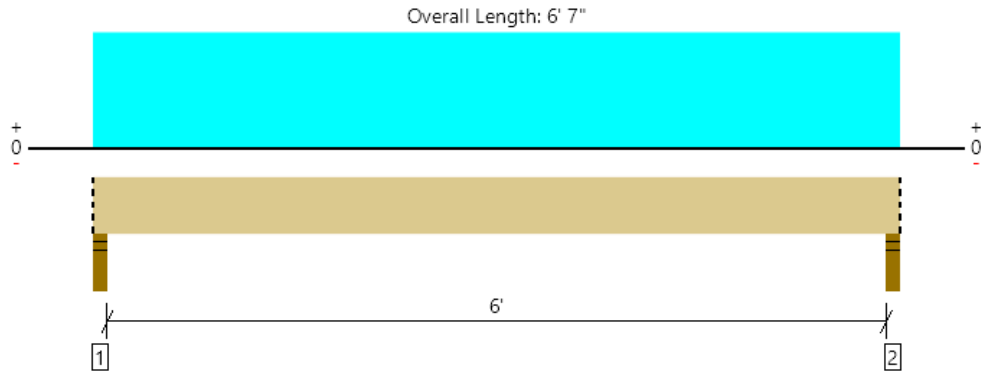
Job Notes

G38

Weyerhaeuser

1st Floor, Header Beam HB4

1 piece(s) 4 x 10 Hem-Fir 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)	3195 @ 2"	4961 (3.50")	Passed (64%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1958 @ 1' 3/4"	3238	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4288 @ 3' 3 1/2"	4242	Passed (101%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.088 @ 3' 3 1/2"	0.208	Passed (L/849)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.111 @ 3' 3 1/2"	0.313	Passed (L/675)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Drop 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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	2.25"	652	2238	1152	4042	Blocking
2 - Stud wall - HF	3.50"	3.50"	2.25"	652	2238	1152	4042	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	8.2	--	--	
1 - Uniform (PSF)	0 to 6' 7" (Front)	6'	25.0	60.0	25.0	Default Load
2 - Uniform (PSF)	0 to 6' 7" (Front)	8'	5.0	40.0	25.0	Default Load

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ForteWEB Software Operator	Job Notes
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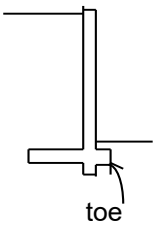
RETAINING WALL DESIGN PROGRAM

Project: 9820 SE 35th PL
Architect: Medici
Description: 6' Foundation Wall w/ EQ 8H

Design Parameters:

Surcharge on wall =	48	psf
Soil fluid density =	35	pcf
Friction coefficient =	0.35	
Soil unit weight =	120	pcf
Concrete unit weight =	150	pcf
Passive resistance =	250	pcf
Allowable bearing =	1,500	psf
Dead load on wall =	188	plf
Live load on wall =	313	plf
Concrete Strength =	2.5	ksi



Retaining wall dimensions:

Height (bof to top) =	5.5	ft
Soil depth over pad at toe =	0.5	ft
Stem thickness =	0.67	ft
Toe projection =	2	
Footing width =	3	ft
Pad thickness =	1	ft
Key depth =	0	ft

Summary:

Safety Factors:	Sliding	Overturn	P toe (psf)	P heel (psf)
Dead Only:	0.9	1.6	1,170	-
Dead + Live:	1.1	2.1	1,049	85

Element weights and moments:

Moments: ft-lbs (Rt hand rule)

ELEMENT	Wt,plf	d,ft	@toe	@ pad cl
Stem	452	2.335	1,056	378
Pad	450	1.5	675	0
Key	0	2.335	0	0
Soil,heel	178.2	2.835	505	238
Soil,toe	120	1	120	-60
Dead load	188	2.335	439	157
Live load	313	2.335	731	261
Sum: D	1,388		2,795	713
Sum: D+L	1,701		3,526	974

Sliding:

Vsoil = (1/2)(soil fluid)(Height)^2 + (Height)(Surcharge) = 793 lbs

Vresist:	Dead only	Dead + Live
P*Frict	486 lbs	596 lbs
Passive	250 lbs	250 lbs
Vres sum	736 lbs	846 lbs
Safety: (OK > 1.5)	0.9	1.1

Overturning:

Mot = (.167)(soil fluid)(Height)^3 + (.5)(surcharge)(height)^2 = -1,697 ft-lb

Mresist:	Dead only	Dead + Live
@ toe	2,795 ft-lbs	3,526 ft-lbs
Safety: (OK > 1.5)	1.6	2.1

Soil pressure: (P/A+M/S) 0 < OK < Pallow

	Dead only	Dead + Live
P = Weight on ftg =	1,388 lbs	1,701 lbs
M = Mot + Mrescgftg =	-984 ft-lbs	-723 ft-lbs
e = M/P =	-0.71 feet	-0.42 feet
A = Footing area =	2.37 sf	3.00 sf
S = ftg sect modulus =	0.94 ft^3	1.50 ft^3
P(toe) =	1,170 psf	1,049 psf
P(heel) =	- psf	85 psf

Reinforcing steel:

Element	Mu, in-k/ft	a, in	As, in2/ft
Wall:	20.8	0.14	0.06
Key:	0.0	0.00	0.00

9820 SE 35th PL - MERCER ISLAND

LATERAL ANALYSIS

→ REVISE LATERAL ANALYSIS @ NORTH-WEST ADDITION ON 2 LEVELS
→ PROVIDE LATERAL ANALYSIS AT EAST ADDITION @ BASEMENT & FIRST FLOOR

NORTH-WEST ADDITION - conservatively apply half of building load on new shearwalls.

WIND: $V=110$mph, Exp. 'C', $K_{zt}=1.0$

* WIND IN N-S DIRECTION:
UPPER FL. = $7.8\text{psf} \times 629\text{s.f.}/2 = 2{,}453\#$
MAIN FL = $8.5' \times 23' \times 15.8/2 = 1{,}545\#$
TOTAL = $3{,}998\#$

SEISMIC: SEISMIC LOAD:
ROOF & 2nd FL DL = $\left[(2087\times12 + 52'\times5'\times8\times2)/2\right]/1000 = 14.6\text{k}$

1st FLOOR DL = $(2307\times15 + (51+53)\times2\times8\times10')/2\times1000 = 25.6\text{k}$
TOTAL = 40.2k

From attached calculations, $V=0.129W = 5.2\text{k}$
→ SEISMIC GOVERNS

2nd FL:
SHEARWALLS: $v = 2600\#/7' = 371$ plf → USE SW-3

HOLDOWNS: $371\times3.5'\times6.5'/7' = 1207\#$ → USE MSTC40 STRAPS

1st FL:
SW: $v = 5200/16' = 325$ plf → USE SW-3 → $1.25 - 0.125h/b = 0.875$
$325/0.875 = 371$ plf

HLDNS: $325\times3.5\times10.5/3.5 = 3413\#$ → USE HDU5

FOSSATTI PAWLAK
STRUCTURAL ENGINEERS

LATERAL ANALYSIS (SUBJECT)		20-129 (PROJECT NO.)
9820 SE 35th PL - MERCER ISLAND (PROJECT)		10/15/20 (DATE)
CHEN (CLIENT)	AM (DESIGN)	(SHEET NO.)

EAST ADDITION

WIND: $V = 110$ mph, Exp. 'C', $K_{zt} = 1.0$

* WIND IN N-S DIRECTION:
  1st FLOOR $= 124 \times 16.4 = 2{,}034$ #
  BASEMENT $= 176 \times 15.8 = 2{,}781$ #
  TOTAL $= 4{,}815$ #

* WIND IN E-W DIRECTION:
  1st FLOOR $= 35 \times 16.4 = 574$ #
  BASEMENT $= 272 \times 15.8 = 4{,}298$ #
  TOTAL $= 4{,}872$ #

SEISMIC: 1st FL DL $= 362 \times 30 + 29' \times 5.5' \times 10$ psf $= 12{,}455$ #

BASEMENT DL $= 656 \times 25 + (12+32) \times 2 \times 5' \times 10 = 20{,}800$ #
TOTAL $= 33.3$k

From attached calculation, $V = 0.129W = 4.3$k
→ WIND GOVERNS BOTH DIRECTIONS

1st FLOOR: N-S: SW: $2034/(2.75 \times 2) = 370$ plf → $1.25 - 0.125 \times 9.25/2.75 = 0.83$
→ $370/0.83 = 446$ plf → SW3
HDN: $2.75 \times 370 \times 9.25/2.75 = 3423$ # → HDU5

E-W: SW: $1613/20' = 81$ plf → SW6

BASEMENT: E-W: N: SW: $(4872/2)/12' = 203$ plf → SW6
HDN: $203 \times 12 \times 9'/11.5 = 1906$ # → HDU2
S: SW: $(4872/2)/7' = 348$ plf → SW3
HDN: $348 \times 7 \times 9/6.5 = 3373$ # → HDU5

N-S: E: SW: $(4815/2)/4.5' = 535$ plf → SW2
HDN: $(535 \times 4.5 \times 9 - 0.6 \times 8 \times 30 \times 4.5^2/2)/4 = 5052$ # → HDU8
W: SW: $v = (4815/2 + 4000)/(8'+3') = 583$ plf → $1.25 - 0.125 \times 9/5 = 0.875$
→ $583/0.875 = 666$ plf → SW44
HDN: $(583 \times 3 \times 9 - 0.6 \times 13.5 \times 20 \times 3^2/2)/2.5 = 6005$ # → HDU8
$(583 \times 8 \times 9 - 0.6 \times 13.5 \times 20 \times 8^2/2)/7.5 = 4906$ # → HDU8

FOSSATTI PAWLAK
STRUCTURAL ENGINEERS

LATERAL ANALYSIS (SUBJECT)		20-129 (PROJECT NO.)
9820 SE 35th PL - MERCER ISLAND (PROJECT)		10/15/20 (DATE)
CHEN (CLIENT)	AM (DESIGN)	(SHEET NO.)

Fossatti Pawlak Structural Engineers
1735 Westlake Ave N, #205
Seattle, WA 98109
(206) 456-3071

Code Search

Code: ASCE 7 - 10

Occupancy:

Occupancy Group = R Residential

Risk Category & Importance Factors:

Risk Category =	II	
Wind factor =	1.00	use 0.60 NOTE: Output will be nominal wind pressures
Snow factor =	1.00	
Seismic factor =	1.00	

Type of Construction:

Fire Rating:

Roof =	0.0 hr
Floor =	0.0 hr

Building Geometry:

Roof angle (θ)	12.00 / 12	45.0 deg
Building length (L)	64.0 ft	
Least width (B)	51.0 ft	
Mean Roof Ht (h)	32.0 ft	
Parapet ht above grd	0.0 ft	
Minimum parapet ht	0.0 ft	

Live Loads:

Roof

0 to 200 sf:	12 psf
200 to 600 sf:	14.4 - 0.012Area, but not less than 12 psf
over 600 sf:	12 psf

Floor:

Typical Floor	50 psf
Partitions	15 psf
Corridors above first floor	80 psf
Lobbies & first floor corridors	100 psf
Balconies (1.5 times live load)	75 psf

Fossatti Pawlak Structural Engineers
1735 Westlake Ave N, #205
Seattle, WA 98109
(206) 456-3071

JOB TITLE 9820 SE 35th Place

JOB NO. 20-129 **SHEET NO.**
CALCULATED BY AM **DATE** 10/15/20
CHECKED BY FPP **DATE**

Wind Loads : ASCE 7- 10

Ultimate Wind Speed	110 mph
Nominal Wind Speed	85.2 mph
Risk Category	II
Exposure Category	C
Enclosure Classif.	Enclosed Building
Internal pressure	+/-0.18
Directionality (Kd)	0.85
Kh case 1	0.996
Kh case 2	0.996
Type of roof	Monoslope

Monosloped roof must be <= 30 deg.

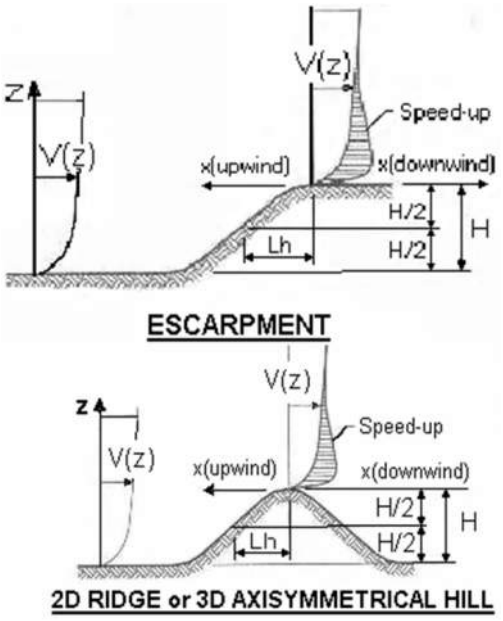
Topographic Factor (Kzt)

Topography		Flat
Hill Height	(H)	336.0 ft
Half Hill Length (Lh)		1200.0 ft
Actual H/Lh	=	0.28
Use H/Lh	=	0.28
Modified Lh	=	1200.0 ft
From top of crest: x =		480.0 ft
Bldg up/down wind?		downwind

H/Lh= 0.28	K_1 =	0.000
x/Lh = 0.40	K_2 =	0.733
z/Lh = 0.03	K_3 =	1.000

At Mean Roof Ht:

$Kzt = (1+K_1K_2K_3)^2$ = 1.00



Gust Effect Factor

h =	32.0 ft
B =	51.0 ft
/z (0.6h) =	19.2 ft

Flexible structure if natural frequency < 1 Hz (T > 1 second).
However, if building h/B < 4 then probably rigid structure (rule of thumb).
h/B = 0.63 Rigid structure

G = 0.85 Using rigid structure default

Rigid Structure

$\bar{e}$ =	0.20
ℓ =	500 ft
z_{min} =	15 ft
c =	0.20
g_Q, g_v =	3.4
L_z =	448.7 ft
Q =	0.91
I_z =	0.22
G =	0.88 use G = 0.85

Flexible or Dynamically Sensitive Structure

Natural Frequency (η_1) =	0.0 Hz				
Damping ratio (β) =	0				
/b =	0.65				
/α =	0.15				
Vz =	96.5				
N_1 =	0.00				
R_n =	0.000				
R_h =	28.282	η =	0.000	h =	32.0 ft
R_B =	28.282	η =	0.000		
R_L =	28.282	η =	0.000		
g_R =	0.000				
R =	0.000				
G =	0.000				

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Seattle, WA 98109
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JOB TITLE 9820 SE 35th Place
JOB NO. 20-129 **SHEET NO.**
CALCULATED BY AM **DATE** 10/15/20
CHECKED BY FPP **DATE**

Enclosure Classification

Test for Enclosed Building: A building that does not qualify as open or partially enclosed.

Test for Open Building: All walls are at least 80% open.
Ao ≥ 0.8Ag

Test for Partially Enclosed Building:

	Input			Test	
Ao	0.0	sf	Ao ≥ 1.1Aoi	YES	
Ag	0.0	sf	Ao > 4' or 0.01Ag	NO	
Aoi	0.0	sf	Aoi / Agi ≤ 0.20	NO	Building is NOT
Agi	0.0	sf			Partially Enclosed

Conditions to qualify as Partially Enclosed Building. Must satisfy all of the following:
Ao ≥ 1.1Aoi
Ao > smaller of 4' or 0.01 Ag
Aoi / Agi ≤ 0.20
Where:
Ao = the total area of openings in a wall that receives positive external pressure.
Ag = the gross area of that wall in which Ao is identified.
Aoi = the sum of the areas of openings in the building envelope (walls and roof) not including Ao.
Agi = the sum of the gross surface areas of the building envelope (walls and roof) not including Ag.

Reduction Factor for large volume partially enclosed buildings (Ri) :

If the partially enclosed building contains a single room that is unpartitioned , the internal pressure coefficient may be multiplied by the reduction factor Ri.

Total area of all wall & roof openings (Aog): 0 sf
Unpartitioned internal volume (Vi) : 0 cf
Ri = 1.00

Altitude adjustment to constant 0.00256 (caution - see code) :

Altitude = 0 feet Average Air Density = 0.0765 lbm/ft^3
Constant = 0.00256

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JOB TITLE 9820 SE 35th Place
JOB NO. 20-129 SHEET NO.
CALCULATED BY AM DATE 10/15/20
CHECKED BY FPP DATE

Wind Loads - MWFRS all h (Enclosed/partially enclosed only)

Kh (case 2) =	1.00	h =	32.0 ft	GCpi =	+/-0.18
Base pressure (q_h) =	**15.7 psf**	ridge ht =	44.8 ft	G =	0.85
Roof Angle (θ) =	45.0 deg	L =	64.0 ft	qi = qh	
Roof tributary area - (h/2)*L:	1024 sf	B =	51.0 ft		
(h/2)*B:	816 sf				

Nominal Wind Surface Pressures (psf)

	Wind Normal to Ridge				Wind Parallel to Ridge				
	B/L = 0.80		h/L = 0.63			L/B = 1.25		h/L = 0.50	
Surface	Cp	q_hGC_p	w/+q_iGC_{pi}	w/-q_hGC_{pi}	Dist.*	Cp	q_hGC_p	w/ +q_iGC_{pi}	w/ -q_hGC_{pi}
Windward Wall (WW)	0.80	10.7	see table below			0.80	10.7	see table below	
Leeward Wall (LW)	-0.50	-6.7	-9.5	-3.9		-0.45	-6.0	-8.8	-3.2
Side Wall (SW)	-0.70	-9.4	-12.2	-6.5		-0.70	-9.4	-12.2	-6.5
Leeward Roof (LR)	-0.60	-8.0	-10.9	-5.2		Included in windward roof			
Windward Roof neg press.	0.00	0.0	-2.8	2.8	0 to h/2*	-0.90	-12.0	-14.9	-9.2
Windward Roof pos press.	0.37	5.0	2.2	7.8	h/2 to h*	-0.90	-12.0	-14.9	-9.2
					h to 2h*	-0.50	-6.7	-9.5	-3.9

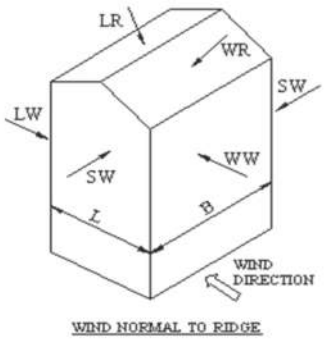
*Horizontal distance from windward edge

For monoslope roofs, entire roof surface is either windward or leeward surface.

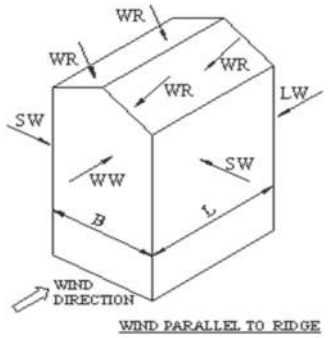
NOTE: The code requires the MWFRS be designed for minimum ultimate force of 16 psf multiplied by the wall area plus an 8 psf force applied to the vertical projection of the roof.

Windward Wall Pressures at "z" (psf)

	z	Kz	Kzt	Windward Wall q_zGC_p	Windward Wall w/+q_iGC_{pi}	Windward Wall w/-q_hGC_{pi}	Combined WW + LW Normal to Ridge	Combined WW + LW Parallel to Ridge
	0 to 15'	0.85	1.00	9.1	6.3	12.0	15.8	15.1
	20.0 ft	0.90	1.00	9.7	6.9	12.5	16.4	15.7
	25.0 ft	0.95	1.00	10.2	7.3	13.0	16.8	16.2
	30.0 ft	0.98	1.00	10.6	7.7	13.4	17.2	16.6
h=	32.0 ft	1.00	1.00	10.7	7.9	13.5	17.4	16.7
ridge =	44.8 ft	1.07	1.00	11.5	8.6	14.3	18.2	17.5

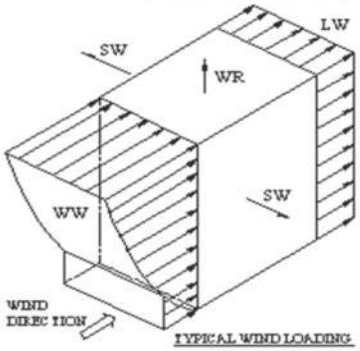


WIND NORMAL TO RIDGE



WIND PARALLEL TO RIDGE

NOTE:
See figure in ASCE7 for the application of full and partial loading of the above wind pressures. There are 4 different loading cases.



TYPICAL WIND LOADING

Parapet

z	Kz	Kzt	qp (psf)
0.0 ft	0.85	1.00	0.0

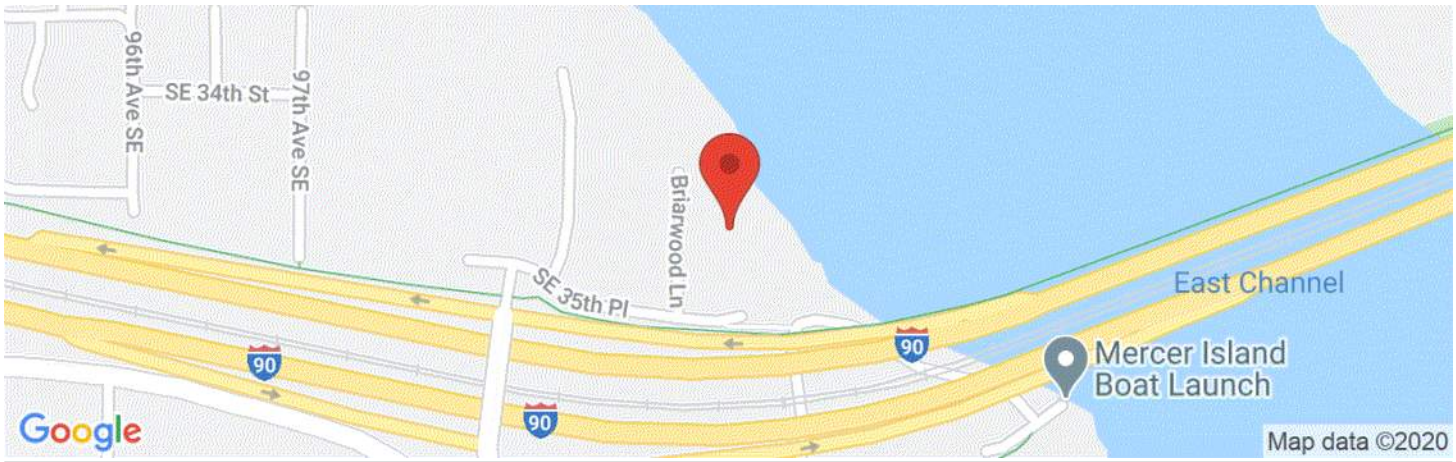
Windward parapet: 0.0 psf (GCpn = +1.5)
Leeward parapet: 0.0 psf (GCpn = -1.0)

Windward roof overhangs (add to windward roof pressure) : 10.7 psf (upward)

9820 SE 35th Pl, Mercer Island

9820 SE 35th Pl, Mercer Island, WA 98040, USA

Latitude, Longitude: 47.5790361, -122.2051467



Date	10/15/2020, 4:48:38 PM
Design Code Reference Document	IBC-2015
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.382	MCE_R ground motion. (for 0.2 second period)
S_1	0.531	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.382	Site-modified spectral acceleration value
S_{M1}	0.796	Site-modified spectral acceleration value
S_{DS}	0.921	Numeric seismic design value at 0.2 second SA
S_{D1}	0.531	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	1.5	Site amplification factor at 1.0 second
PGA	0.568	MCE_G peak ground acceleration
F_{PGA}	1	Site amplification factor at PGA
PGA_M	0.568	Site modified peak ground acceleration
T_L	6	Long-period transition period in seconds
SsRT	1.382	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.438	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	3.091	Factored deterministic acceleration value. (0.2 second)
S1RT	0.531	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.567	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	1.289	Factored deterministic acceleration value. (1.0 second)
PGAd	1.192	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.961	Mapped value of the risk coefficient at short periods

Type	Value	Description
C_{R1}	0.935	Mapped value of the risk coefficient at a period of 1 s

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SEISMIC BASE SHEAR: ASCE 7-10

9820 SE 35th Place, Mercer Island

Occupancy Category	1
Site Class =	D
Lat.	47.579
Long.	-122.205
Ss =	138.2 % g
S1 =	53.1 % g
Seismic Design Category (SDC) =	D
Fa =	1.00
Fv =	1.5
Sds =	0.921
Sd1 =	0.531

Occupancy Category	
I & II (1)	Ordinary Buildings
III (2)	High Occupancy Buildings
IV (3)	Hazardous/Essential Bldgs

scratch work

Fa upper =	1
Fa lower =	1
Fv upper =	1.5
Fv lower =	1.5
Sms =Fa*Ss =	1.38
Sm1 = Fv*S1 =	0.7965
SDC Sds =	D
SDC Sd1 =	D

Fa	Ss < 0.25	Ss = 0.5	Ss = 0.75	Ss = 1	Ss > 1.25
A	0.8	0.8	0.8	0.8	0.8
B	1	1	1	1	1
C	1.2	1.2	1.1	1	1
D	1.6	1.4	1.2	1.1	1
E	2.5	1.7	1.2	0.9	0.9
F	**a**	**a**	**a**	**a**	**a**

Fv	S1 < 0.1	S1 = 0.2	S1 = 0.3	S1 = 0.4	S1 > 0.5
A	0.8	0.8	0.8	0.8	0.8
B	1	1	1	1	1
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	**a**	**a**	**a**	**a**	**a**

Vmin = 0.044*Sds W = 0.04

V = Sds* I / R W = 0.14

Vmax = Sd1*I / R*T W = 0.40

T exponen	Ct	
0.75	0.02	default
0.75	0.03	Ecc Braced Frames
0.8	0.016	Concrete Moment Frames
0.9	0.028	Steel Moment Frames

Where: Sds = 0.921, Sd1 = 0.531, I = 1, R = 6.5 (WOOD SW)

T expo' = 0.75, Ct = 0.02, Hn = 22, T = 0.203, Total W = 40.2 kips

Common Values	R	omega	
Wood SW	6.5	3	bearing wall system
Special Conc SW	5	2.5	bearing wall system
Special CMU SW	5	2.5	bearing wall system
Steel OMRF	3.5	3	building frame system
Steel SMRF	8	3	building frame system
Steel OBF	5	2	building frame system
Steel SBF	6	2	building frame system
Cant Col			building frame system

Therefore:

V.ult= 0.142 W V= 5.7 kips

V.service= 0.099 W V= 4.0 kips

E = ρ Eh + Ev

where ρ = 1.0 or 1.3

ρ.y.= 1.3

ρ.x= 1.3

INCREASE SEISMIC

V.ult= 0.184 W V= 7.4 kips

V.service= 0.129 W V= 5.2 kips

Note: IBC Ax and r are evaluated at each floor

Therefore: **pEx = 7.4** kips **pEy = 7.4** kips

pEx = 5.2 kips **pEy = 5.2** kips

static distribution is relative to building period: T = 0.203 sec ------> linear distribution ----> xponent)= 1.00

SEISMIC DISTRIBUTION: X-Direction

level	W (kips)	h (ft)	Wh^k (kip-ft)	$Wh^k / \Sigma Wh^k$	STRENGTH / LRFD story shear (kips)	STRENGTH / LRFD Σ (kips)	ALLOW. STRESS DESIGN story shear (kips)	ALLOW. STRESS DESIGN Σ (kips)	Scaled Seismic	Fx (kips)	Diaphragm Scaled Seismic
Roof	14.6	19	277	0.50	3.7	3.7	2.6	2.6	0.049	0.7	0.049
2nd Floor	25.6	11	282	0.50	3.7	7.4	2.6	5.2	0.029	0.7	0.029
Σ	40.2		559	1	7.4		5.2			1.4	
							.7E		.7E	.7E	.7E

SEISMIC DISTRIBUTION: Y-Direction

level	W (kips)	h (ft)	Wh^k (kip-ft)	$Wh^k / \Sigma Wh^k$	STRENGTH / LRFD story shear (kips)	STRENGTH / LRFD Σ (kips)	ALLOW. STRESS DESIGN story shear (kips)	ALLOW. STRESS DESIGN Σ (kips)	Scaled Seismic	Fx (kips)	Diaphragm Scaled Seismic
Roof	14.6	19	277	0.50	3.7	3.7	2.6	2.6	0.049	0.7	0.049
2nd Floor	25.6	11	282	0.50	3.7	7.4	2.6	5.2	0.029	0.7	0.029
Σ	40.2		559	1	7.4		5.2			1.4	
							.7E		.7E	.7E	.7E

GARAGE LATERAL ANALYSIS

WIND ANALYSIS:

→ WIND IN N-S DIRECTION:

$$\text{ROOF} = 230 \text{ s.f.} \times 16 \text{ psf} = 3{,}680 \#$$

→ WIND IN E-W DIRECTION:

$$\text{ROOF} = 7.8 \text{ psf} \times 262 + 16 \times 94.4 = 3{,}554 \#$$

SEISMIC ANALYSIS:

→ $\text{ROOF DL} = 625 \times 15 \text{ psf} + (24+24) \times 2 \times 8 \times 4.5'$

$= 9375 + 3456 = 12{,}831 \#$

→ $V = 0.129W = 1{,}655 \#$

↳ WIND GOVERNS BOTH DIRECTIONS

9820 SE 35th PL - MERCER ISLAND																					
V in N-S	Roof																				
	shear (k) =	3.68	(Wind)																		
Wall	TW (ft)	V (k)	L (ft)	**v (plf)**	SW Type	h (ft)	Mot (k-ft)		TW (ft)	DLroof (psf)	Wfl (plf)		DLwall (psf)	Wwall (plf)		Mr (k-ft)	0.6Mr (k-ft)	FS	**T (lbs)**	Holdowns	Wall
W	12	1.84	24	**77**	SW6	8.75	16.1		12.5	15	187.5		8	70		74	44	2.76	**0**	N/A	W
E	12	1.84	15.5	**119**	SW6	8.75	16.1		12.5	15	187.5		8	70		31	19	1.15	**0**	N/A	E
	24																				

9820 SE 35th PL - MERCER ISLAND																						
V in E-W	Roof																					
	shear (k) =	3.55	(Wind)																			
Wall	TW (ft)	V (k)	L (ft)	**v (plf)**	SW Type	h (ft)	Mot (k-ft)		TW (ft)	DLroof (psf)	Wfl (plf)		DLwall (psf)	Wwall (plf)		Mr (k-ft)	.6Mr (k-ft)	FS	**T (lbs)**	Holdowns	Wall
N	12	1.78	7	**254**	SW4*																N
S	12	1.78	24	**74**	SW6	4.5	8.0		3	15	45		8	36		23	14	1.75	**0**	N/A	S
	24																				
* Shearwall capacity reduced by 1.25-0.125h/b																						

Holdowns																	
V in E-W	Roof																
Wall	L (ft)	h (ft)	Mot (k-ft)		TW (ft)	DLfloor (psf)	Wfl (plf)		DLwall (psf)	Wwall (plf)		Mr (k-ft)	.6Mr (k-ft)	FS	**T (lbs)**	Holdowns	Wall
v=	254	plf															
N1	3.5	8.75	7.77		3	15	45		8	70		1	0.4	0.05	**2098**	HDU2	N1
N2	3.5	8.75	7.77		3	15	45		8	70		1	0.4	0.05	**2098**	HDU2	N2

Company:	Fossatti Pawlak Structural Engineers	Page:	1
Specifier:	Asrade Mengstu PE	Project:	6 Etruria Apartments
Address:	1735 Westlake Ave N, Ste 205	Sub-Project I Pos. No.:	Holdown Anchors
Phone I Fax:	206-641-1336 |	Date:	10/20/2020
E-Mail:	amengstu@fossatti.com		

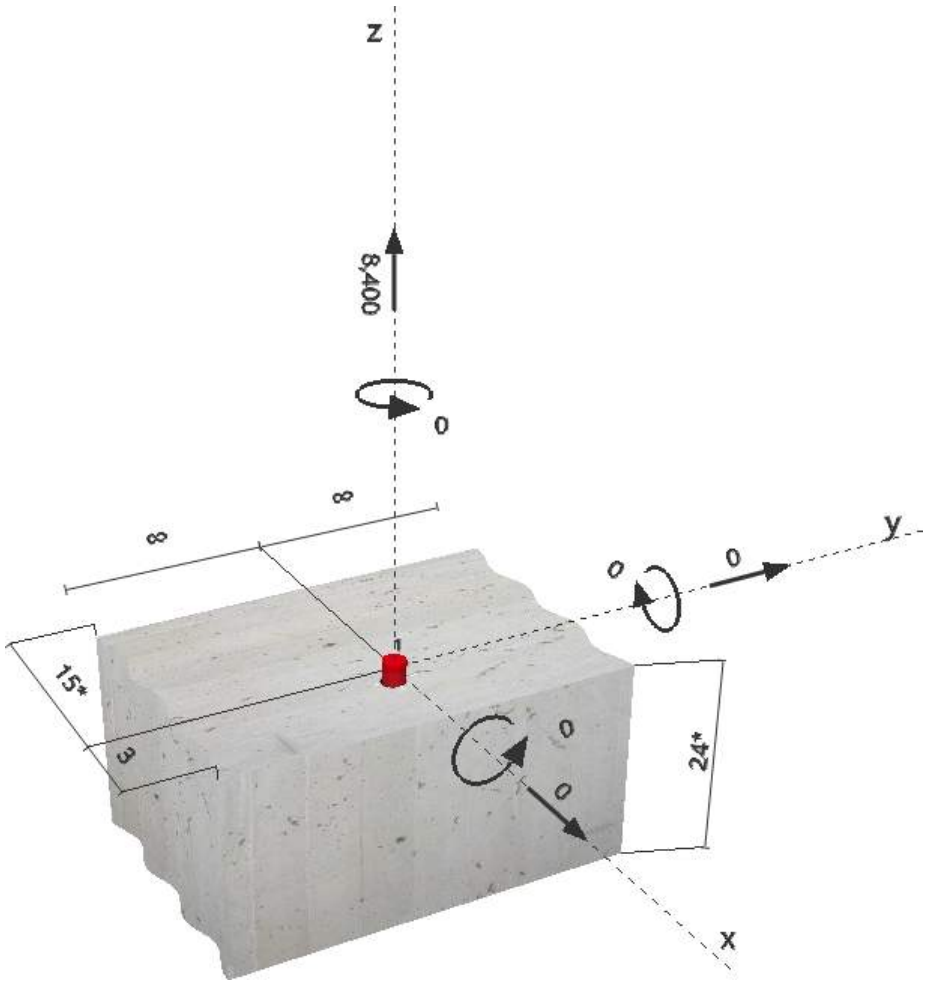
Specifier's comments: HDU8 Calculations @ (E) footings

1 Input data

Anchor type and diameter:	**HIT-RE 500 V3 + HAS-E 7/8**
Effective embedment depth:	$h_{ef,opti}$ = 15.748 in. ($h_{ef,limit}$ = 17.500 in.)
Material:	5.8
Evaluation Service Report:	ESR-3814
Issued I Valid:	1/1/2019 | 1/1/2021
Proof:	Design method ACI 318-14 / Chem
Stand-off installation:	- (Recommended plate thickness: not calculated)
Profile:	
Base material:	cracked concrete, 2500, f_c' = 2,500 psi; h = 24.000 in., Temp. short/long: 32/32 °F
Installation:	**hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: condition A, shear: condition A; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	Tension load: yes (17.2.3.4.3 (b)) Shear load: yes (17.2.3.5.3 (a))

R - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [lb, in.lb]



Company: Fossatti Pawlak Structural Engineers
Specifier: Asrade Mengstu PE
Address: 1735 Westlake Ave N, Ste 205
Phone I Fax: 206-641-1336 |
E-Mail: amengstu@fossatti.com

2 Load case/Resulting anchor forces

Load case: Design loads

Anchor reactions [lb]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	8,400	0	0	0

max. concrete compressive strain: - [‰]
max. concrete compressive stress: - [psi]
resulting tension force in (x/y)=(0.000/0.000): 0 [lb]
resulting compression force in (x/y)=(0.000/0.000): 0 [lb]

3 Tension load

	Load N_{ua} [lb]	Capacity ϕN_n [lb]	Utilization $\beta_N = N_{ua}/\phi N_n$	Status
Steel Strength*	8,400	21,755	39	OK
Bond Strength**	8,400	12,716	67	OK
Sustained Tension Load Bond Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Strength**	8,400	8,402	100	OK

* anchor having the highest loading **anchor group (anchors in tension)

3.1 Steel Strength

N_{sa} [lb]	ϕ	ϕN_{sa} [lb]	N_{ua} [lb]
33,470	0.650	21,755	8,400

3.2 Bond Strength

A_{Na} [in.^{2}]	A_{Na0} [in.^{2}]	c_{Na} [in.]	$c_{a,min}$ [in.]	c_{ac} [in.]
352.59	562.84	11.862	3.000	37.574

$\alpha_{overhead}$	$\tau_{k,uncr}$ [psi]	$\tau_{k,cr}$ [psi]
1.000	2,040	1,240

$e_{c1,N}$ [in.]	$\psi_{ec1,Na}$	$e_{c2,N}$ [in.]	$\psi_{ec2,Na}$	$\psi_{ed,Na}$	$\psi_{cp,Na}$	$\alpha_{N,seis}$
0.000	1.000	0.000	1.000	0.776	1.000	1.000

λ_a	N_{ba} [lb]	ϕ	$\phi_{seismic}$	$\phi_{nonductile}$	ϕN_{ag} [lb]	N_{ua} [lb]
1.000	53,666	0.650	0.750	1.000	12,716	8,400

3.3 Concrete Breakout Strength

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$c_{a,min}$ [in.]	c_{ac} [in.]	$\psi_{c,N}$
850.18	2,230.89	3.000	37.574	1.000

$e_{c1,N}$ [in.]	$\psi_{ec1,N}$	$e_{c2,N}$ [in.]	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	k_{cr}
0.000	1.000	0.000	1.000	0.738	1.000	17

λ_a	N_b [lb]	ϕ	$\phi_{seismic}$	ϕN_{cbg} [lb]	N_{ua} [lb]
1.000	53,100	0.750	0.750	8,402	8,400

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Phone I Fax:	206-641-1336 |	Date:	10/20/2020
E-Mail:	amengstu@fossatti.com		

4 Shear load

	Load V_{ua} [lb]	Capacity ϕV_n [lb]	Utilization $\beta_V = V_{ua}/\phi V_n$	Status
Steel Strength*	N/A	N/A	N/A	N/A
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength (Bond Strength controls)*	N/A	N/A	N/A	N/A
Concrete edge failure in direction **	N/A	N/A	N/A	N/A

* anchor having the highest loading **anchor group (relevant anchors)

5 Warnings

- The anchor design methods in PROFIS Anchor require rigid anchor plates per current regulations (ETAG 001/Annex C, EOTA TR029, etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Anchor calculates the minimum required anchor plate thickness with FEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Anchor. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- Condition A applies when supplementary reinforcement is used. The Φ factor is increased for non-steel Design Strengths except Pullout Strength and Pryout strength. Condition B applies when supplementary reinforcement is not used and for Pullout Strength and Pryout Strength. Refer to your local standard.
- Design Strengths of adhesive anchor systems are influenced by the cleaning method. Refer to the INSTRUCTIONS FOR USE given in the Evaluation Service Report for cleaning and installation instructions
- Checking the transfer of loads into the base material and the shear resistance are required in accordance with ACI 318 or the relevant standard!
- An anchor design approach for structures assigned to Seismic Design Category C, D, E or F is given in ACI 318-14, Chapter 17, Section 17.2.3.4.3 (a) that requires the governing design strength of an anchor or group of anchors be limited by ductile steel failure. If this is NOT the case, the connection design (tension) shall satisfy the provisions of Section 17.2.3.4.3 (b), Section 17.2.3.4.3 (c), or Section 17.2.3.4.3 (d). The connection design (shear) shall satisfy the provisions of Section 17.2.3.5.3 (a), Section 17.2.3.5.3 (b), or Section 17.2.3.5.3 (c).
- Section 17.2.3.4.3 (b) / Section 17.2.3.5.3 (a) require the attachment the anchors are connecting to the structure be designed to undergo ductile yielding at a load level corresponding to anchor forces no greater than the controlling design strength. Section 17.2.3.4.3 (c) / Section 17.2.3.5.3 (b) waive the ductility requirements and require the anchors to be designed for the maximum tension / shear that can be transmitted to the anchors by a non-yielding attachment. Section 17.2.3.4.3 (d) / Section 17.2.3.5.3 (c) waive the ductility requirements and require the design strength of the anchors to equal or exceed the maximum tension / shear obtained from design load combinations that include E, with E increased by ω_0.
- Installation of Hilti adhesive anchor systems shall be performed by personnel trained to install Hilti adhesive anchors. Reference ACI 318-14, Section 17.8.1.

Fastening meets the design criteria!

Company:	Fossatti Pawlak Structural Engineers	Page:	4
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Address:	1735 Westlake Ave N, Ste 205	Sub-Project I Pos. No.:	Holdown Anchors
Phone I Fax:	206-641-1336 |	Date:	10/20/2020
E-Mail:	amengstu@fossatti.com		

6 Installation data

Anchor plate, steel: -
Profile: -
Hole diameter in the fixture: -
Plate thickness (input): -
Recommended plate thickness: -
Drilling method: Hammer drilled
Cleaning: Compressed air cleaning of the drilled hole according to instructions for use is required

Anchor type and diameter: HIT-RE 500 V3 + HAS-E 7/8
Installation torque: 756.000 in.lb
Hole diameter in the base material: 1.000 in.
Hole depth in the base material: 15.748 in.
Minimum thickness of the base material: 17.748 in.

6.1 Recommended accessories

Drilling	Cleaning	Setting
• Suitable Rotary Hammer • Properly sized drill bit	• Compressed air with required accessories to blow from the bottom of the hole • Proper diameter wire brush	• Dispenser including cassette and mixer • Torque wrench

Coordinates Anchor in.

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	0.000	0.000	15.000	3.000	-	-

7 Remarks; Your Cooperation Duties

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