BYKONEN
CARTER
QUINN

STRUCTURAL
ENGINEERING

STRUCTURAL CALCULATIONS

Vaney Shinde Residence
4207 W Mercer Way,
Mercer Island, WA 98040

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

May 28, 2020

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

VANEY SHINDE - DESIGN CRITERIA

4207 WMERCER WAY 98040

SOIL PER GEOTECH

ALLOWABLE BEARING = 2500 PSF
PIN PILES TO ADDRESS DIFF. SETTLEMENT

GRAVITY ROOF DL = 15 PSF
SL = 25 PSF

FLOORS DL = 15 PSF
LL = 40 PSF

DECKS DL = 15 PSF
LL = 40 PSF

LATERAL SEISMIC : SITE CLASS = D
S_{DS} = 0.92
R = 6.5
C_S = 0.142

WIND : EXP C, K_{ZT} = 1.6

OTHER PER ATTACHED.

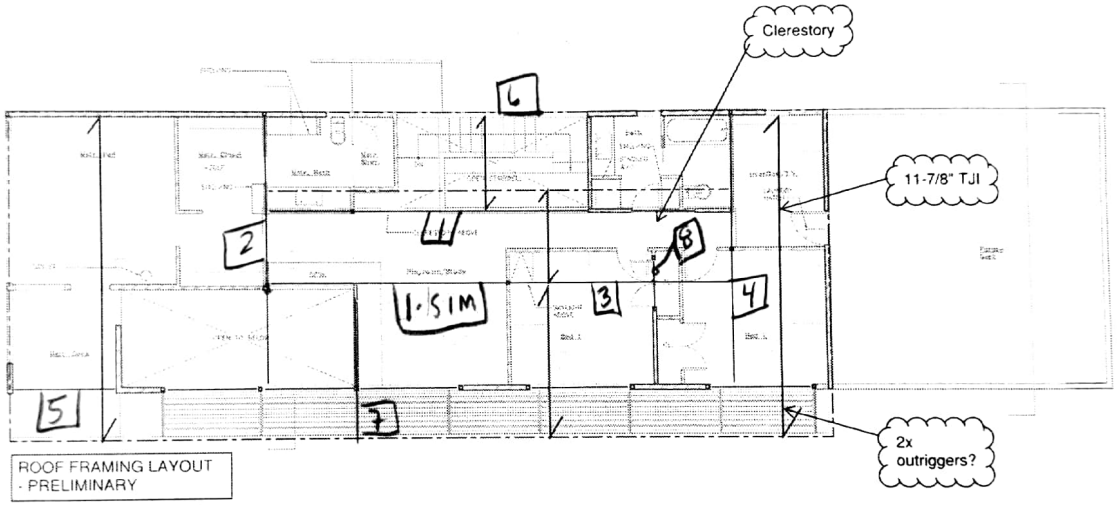
BYKONEN CARTER QUINN
STRUCTURAL ENGINEERING
▶ 2033 Sixth Avenue #995 Seattle, WA 98121 206-264-7784 www.BCQ-SE.com

PROJECT: VANEY SHINDE DATE: 5/28/20
DESIGNER: JAO SHEET #: 1/1

Roof framing key

ROOF FRAMING KEY

ROOF
DL= 15 PSF
SL= 25 PSF



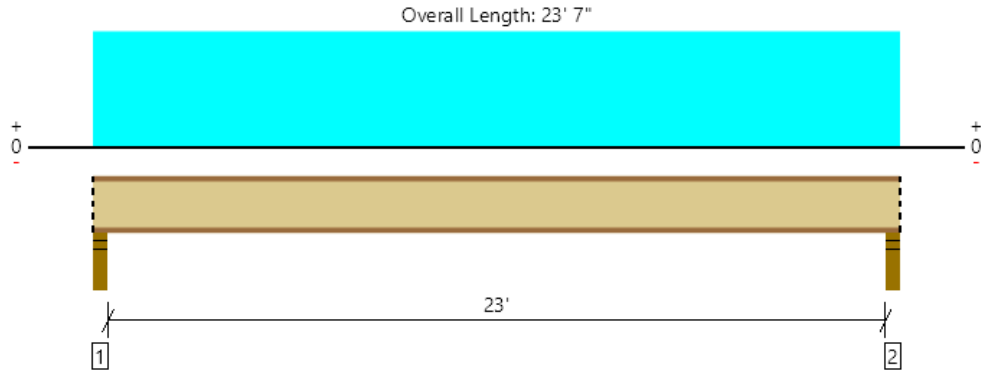
ROOF FRAMING LAYOUT
- PRELIMINARY

Square Footage Breakdown LUCIA TO VERIFY
FLOOR PLATE 1,069SF
DECK 65SF

N

STUDIO ECTYPOS
ARCHITECTURE

Roof, Roof: Joist, 23' span
1 piece(s) 11 7/8" TJI® 360 @ 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)	943 @ 2 1/2"	1731 (3.50")	Passed (55%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	920 @ 3 1/2"	1961	Passed (47%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5367 @ 11' 9 1/2"	7107	Passed (76%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.834 @ 11' 9 1/2"	1.159	Passed (L/333)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.334 @ 11' 9 1/2"	1.545	Passed (L/208)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/240) and TL (L/180).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 11" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 23' 7" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - SPF	3.50"	3.50"	1.75"	354	590	944	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.75"	354	590	944	Blocking

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 23' 7"	24"	15.0	25.0	Default Load

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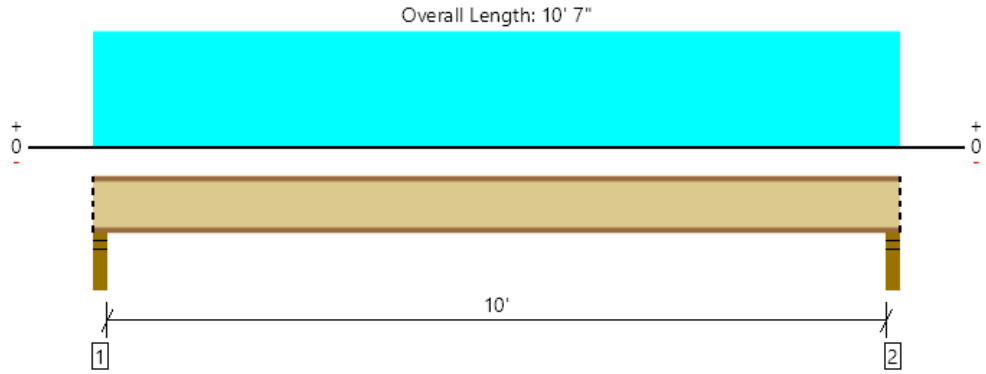
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Roof, Roof: Joist, 10' span
1 piece(s) 11 7/8" TJI® 110 @ 24" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	423 @ 2 1/2"	1581 (3.50")	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	400 @ 3 1/2"	1794	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1034 @ 5' 3 1/2"	3634	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.057 @ 5' 3 1/2"	0.508	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.091 @ 5' 3 1/2"	0.678	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/240) and TL (L/180).
- Top Edge Bracing (Lu): Top compression edge must be braced at 5' 8" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 10' 7" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - SPF	3.50"	3.50"	1.75"	159	265	424	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.75"	159	265	424	Blocking

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 10' 7"	24"	15.0	25.0	Default Load

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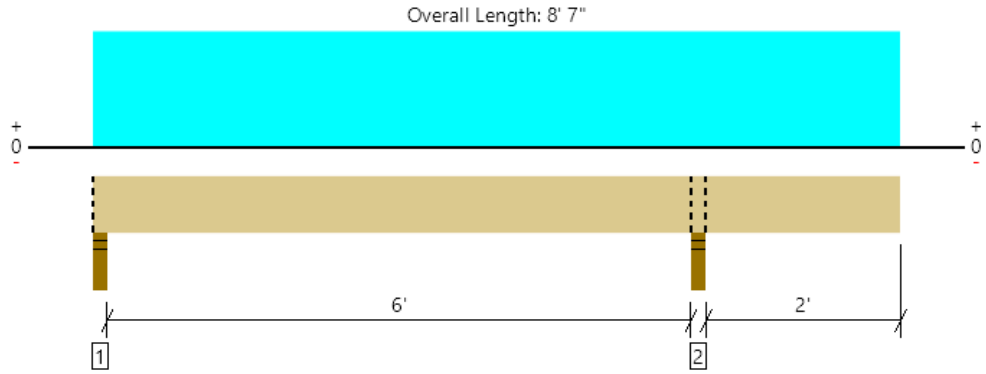
Roof, Roof: Joist, Clerestory
1 piece(s) 2 x 8 Hem-Fir No. 2 @ 24" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	450 @ 6' 5 1/4"	2127 (3.50")	Passed (21%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	219 @ 5' 8 1/4"	1251	Passed (17%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	327 @ 3' 13/16"	1477	Passed (22%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.023 @ 3' 3"	0.312	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.035 @ 3' 2 5/8"	0.415	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)

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

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Top Edge Bracing (Lu): Top compression edge must be braced at 8' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 8' 7" o/c based on loads applied, unless detailed otherwise.
- 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 - Stud wall - SPF	3.50"	3.50"	1.50"	89	157	246	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	169	282	451	Blocking

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 8' 7"	24"	15.0	25.0	Default Load

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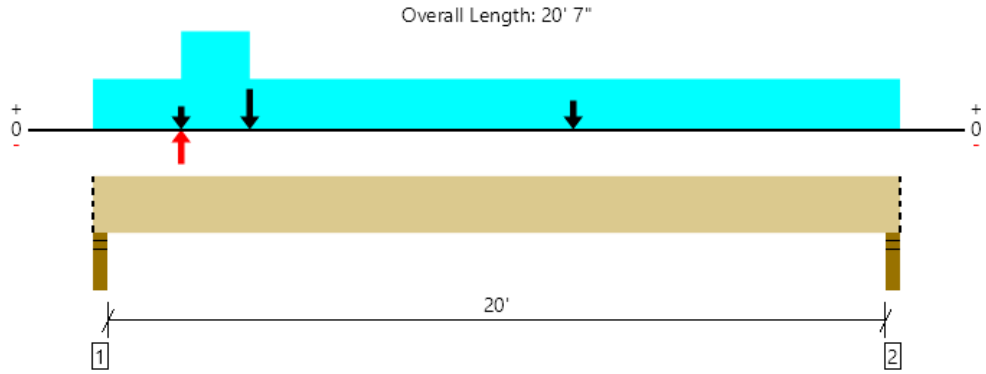
Roof, 1/ Flush Beam

1 piece(s) 5 1/4" x 11 7/8" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4017 @ 2"	11484 (3.50")	Passed (35%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3761 @ 1' 3 3/8"	13861	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	18466 @ 11' 9 15/16"	34332	Passed (54%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.564 @ 10' 3 1/8"	1.013	Passed (L/431)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.955 @ 10' 3 3/16"	1.350	Passed (L/255)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/240) and TL (L/180).
- Top Edge Bracing (Lu): Top compression edge must be braced at 20' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 20' 7" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Snow	Seismic	Total	
1 - Stud wall - DF	3.50"	3.50"	1.50"	1632	2385	173/-173	4190/-173	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	1290	1816	173/-173	3279/-173	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 20' 7"	N/A	19.5	--	--	
1 - Uniform (PSF)	0 to 20' 7" (Front)	4' 6"	15.0	25.0	-	Roof
2 - Point (lb)	2' 3" (Front)	N/A	-	-	-2000	Hold down, omega = 2.5
3 - Point (lb)	4' (Front)	N/A	-	-	2000	Hold down, omega = 2.5
4 - Uniform (PSF)	2' 3" to 4' (Front)	4' 3"	15.0	25.0	-	Wall above
5 - Point (lb)	2' 3" (Front)	N/A	255	425	-	Post above
6 - Point (lb)	4' (Front)	N/A	255	425	-	Post above
7 - Point (lb)	12' 3" (Front)	N/A	510	850	-	Post above

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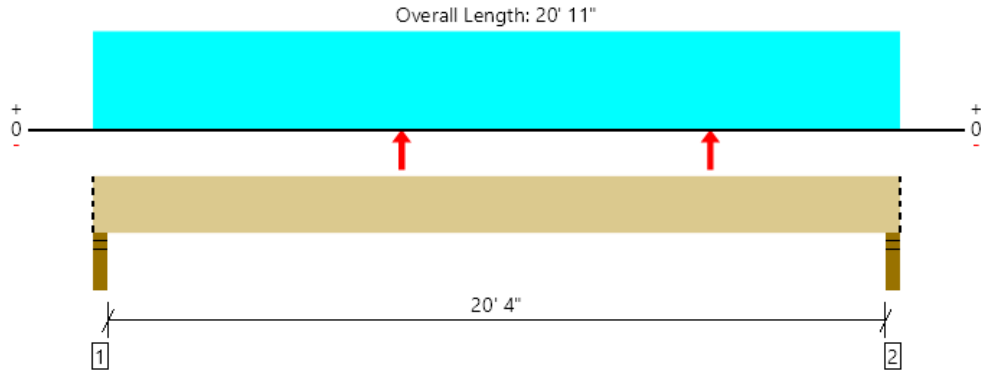
ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 1-sim/ Flush Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2943 @ 2"	7656 (3.50")	Passed (38%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2542 @ 1' 3 3/8"	9241	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	14139 @ 10' 7 3/4"	22888	Passed (62%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.665 @ 10' 5 5/16"	1.029	Passed (L/371)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.138 @ 10' 5 3/8"	1.372	Passed (L/217)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/240) and TL (L/180).
- Top Edge Bracing (Lu): Top compression edge must be braced at 20' 11" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 20' 11" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.50"	3.50"	1.50"	1208	1736	2944	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	1171	1656	2827	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 20' 11"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 20' 11" (Front)	7' 6"	15.0	25.0	Roof
2 - Point (lb)	8' (Front)	N/A	-123	-265	Linked from: 7/ South cantilever, Support 2
3 - Point (lb)	16' (Front)	N/A	-123	-265	Linked from: 7/ South cantilever, Support 2

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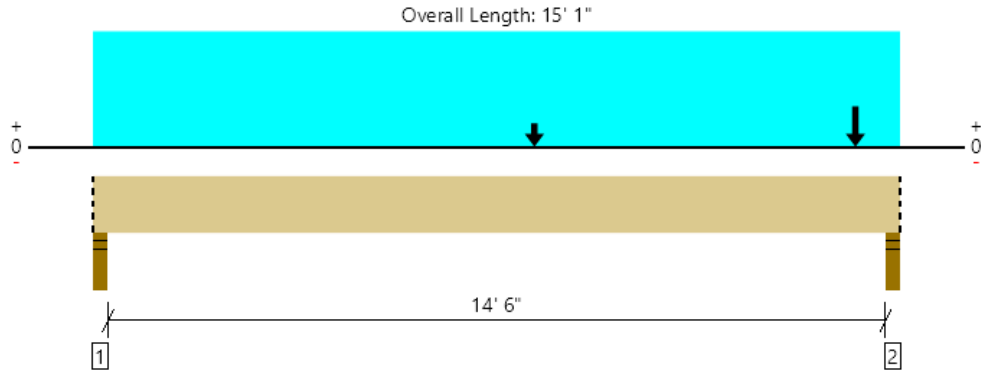
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 2/ Flush Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4428 @ 14' 11"	7656 (3.50")	Passed (58%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2833 @ 13' 9 5/8"	9241	Passed (31%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	7788 @ 8' 3"	22888	Passed (34%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.180 @ 7' 9 13/16"	0.492	Passed (L/983)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.306 @ 7' 9 3/4"	0.738	Passed (L/579)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 15' 1" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 15' 1" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.50"	3.50"	1.50"	573	782	1355	Blocking
2 - Stud wall - DF	3.50"	3.50"	2.02"	1802	2625	4427	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 15' 1"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 15' 1" (Front)	2'	15.0	25.0	Roof
2 - Point (lb)	8' 3" (Front)	N/A	420	700	
3 - Point (lb)	14' 3" (Front)	N/A	1307	1953	

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ForteWEB Software Operator	Job Notes
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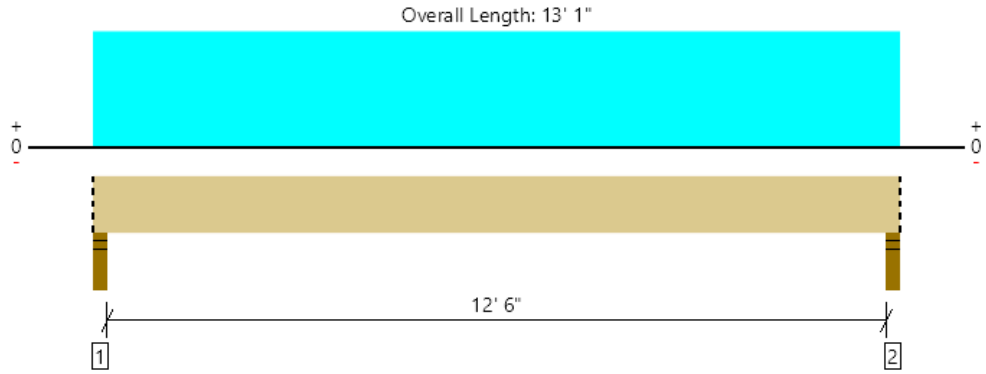
Weyerhaeuser

Roof, 3/ Flush Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2047 @ 2"	7656 (3.50")	Passed (27%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1646 @ 1' 3 3/8"	9878	Passed (17%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6360 @ 6' 6 1/2"	18346	Passed (35%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.161 @ 6' 6 1/2"	0.637	Passed (L/951)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.269 @ 6' 6 1/2"	0.850	Passed (L/570)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/240) and TL (L/180).
- Top Edge Bracing (Lu): Top compression edge must be braced at 13' 1" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 13' 1" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.50"	3.50"	1.50"	821	1227	2048	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	821	1227	2048	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13' 1"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 13' 1" (Front)	7' 6"	15.0	25.0	Roof

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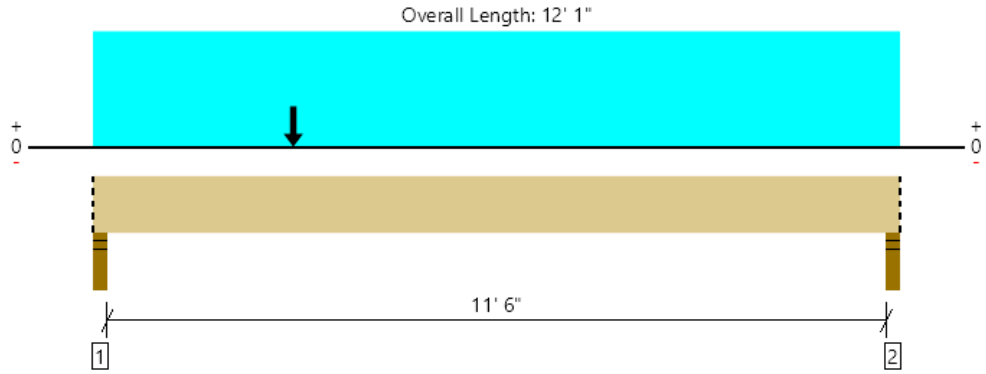
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Roof, 4/ Flush Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1290 @ 2"	7656 (3.50")	Passed (17%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1171 @ 1' 3 3/8"	9878	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3253 @ 3' 6 5/8"	18346	Passed (18%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.066 @ 5' 8 7/16"	0.587	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.113 @ 5' 8 3/4"	0.783	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/240) and TL (L/180).
- Top Edge Bracing (Lu): Top compression edge must be braced at 12' 1" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 12' 1" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.50"	3.50"	1.50"	533	757	1290	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	347	447	794	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 12' 1"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 12' 1" (Front)	2'	15.0	25.0	Roof
2 - Point (lb)	3' (Front)	N/A	360	600	

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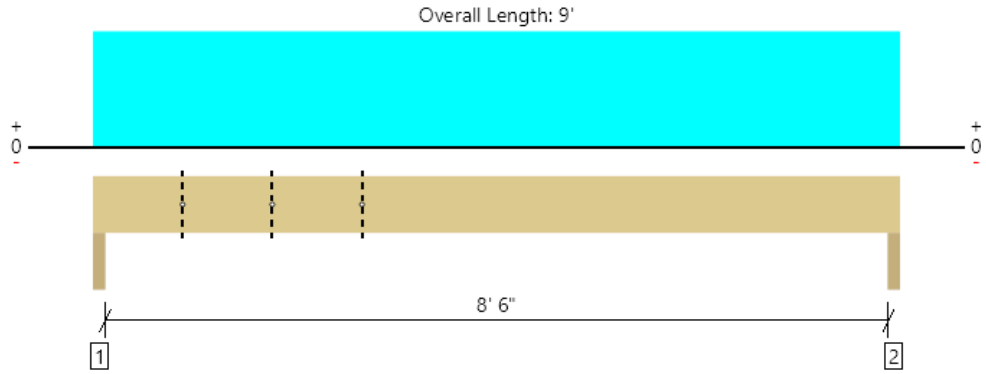
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 5/ Header, typ. @ south elevation
1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2848 @ 1 1/2"	8138 (3.00")	Passed (35%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2064 @ 1' 2 7/8"	9878	Passed (21%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6058 @ 4' 6"	18346	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.081 @ 4' 6"	0.292	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.132 @ 4' 6"	0.438	Passed (L/796)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 9' o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	1105	1744	2849	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	1105	1744	2849	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9'	N/A	13.0	--	
1 - Uniform (PSF)	0 to 9'	15' 6"	15.0	25.0	Snow

Holes (Size)	Diameter	Vertical Offset	Location	Shear (lbs)			Moment (Ft-lbs)			Comments
				Actual	Allowed	Result	Actual	Allowed	Result	
1 - Circular (Per Lit.)	1"	5 15/16"	1'	-	-	Passed	-	-	Passed	
2 - Circular (Per Lit.)	1"	5 15/16"	2'	-	-	Passed	-	-	Passed	
3 - Circular (Per Lit.)	1"	5 15/16"	3'	-	-	Passed	-	-	Passed	

- Hole locations are measured from the outside face of left support (or left cantilever end) to the centerline of the hole.
- Vertical Offset is measured from the top of the member to the centerline of the hole.

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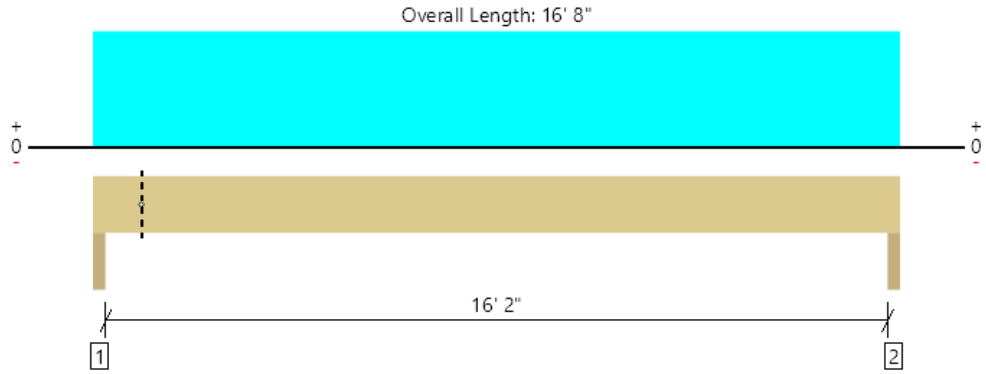
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Roof, 6/ Header

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1525 @ 1 1/2"	8138 (3.00")	Passed (19%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1298 @ 1' 2 7/8"	9878	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6165 @ 8' 4"	18346	Passed (34%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.242 @ 8' 4"	0.547	Passed (L/813)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.417 @ 8' 4"	0.821	Passed (L/472)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 16' 8" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 16' 8" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	640	885	1525	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	640	885	1525	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 16' 8"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 16' 8"	4' 3"	15.0	25.0	Snow

Holes (Size)	Diameter	Vertical Offset	Location	Shear (lbs)			Moment (Ft-lbs)			Comments
				Actual	Allowed	Result	Actual	Allowed	Result	
1 - Circular (Per Lit.)	1"	5 15/16"	1'	-	-	Passed	-	-	Passed	

- Hole locations are measured from the outside face of left support (or left cantilever end) to the centerline of the hole.
- Vertical Offset is measured from the top of the member to the centerline of the hole.

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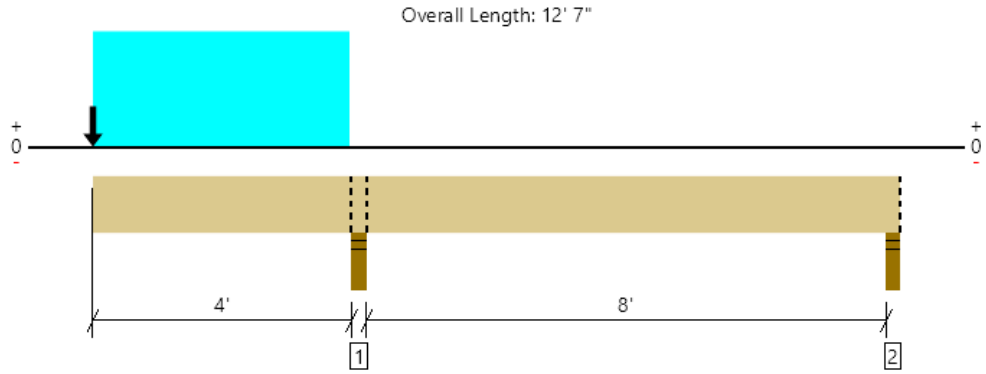
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 7/ South cantilever

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1527 @ 4' 1 3/4"	7809 (3.50")	Passed (20%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	989 @ 3' 4 3/4"	8317	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-3601 @ 4' 1 3/4"	12273	Passed (29%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.198 @ 0	0.276	Passed (2L/502)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.320 @ 0	0.415	Passed (2L/312)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 12' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 12' 7" o/c based on loads applied, unless detailed otherwise.
- -388 lbs uplift at support located at 12' 5". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - SPF	3.50"	3.50"	1.50"	637	890	1527	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	-123	-265	-388	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 12' 7"	N/A	11.1	--	
1 - Point (lb)	0 (Front)	N/A	255	425	
2 - Uniform (PSF)	0 to 4' (Front)	2'	15.0	25.0	

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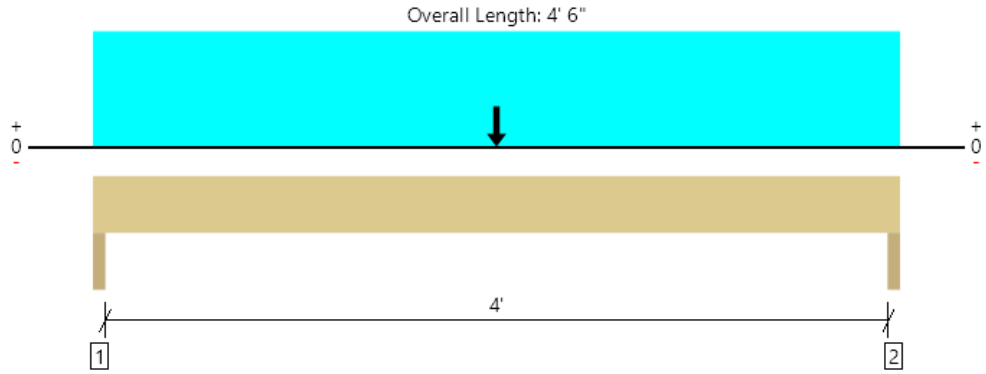
Roof, 8/ Header

2 piece(s) 2 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)	1576 @ 1 1/2"	3645 (3.00")	Passed (43%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1487 @ 1' 1/4"	3191	Passed (47%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3129 @ 2' 3"	3833	Passed (82%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.020 @ 2' 3"	0.142	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.032 @ 2' 3"	0.213	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 4' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 4' 6" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	601	975	1576	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	601	975	1576	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 4' 6"	N/A	7.0	--	
1 - Uniform (PSF)	0 to 4' 6"	2'	15.0	25.0	Snow
2 - Point (lb)	2' 3"	N/A	1035	1725	

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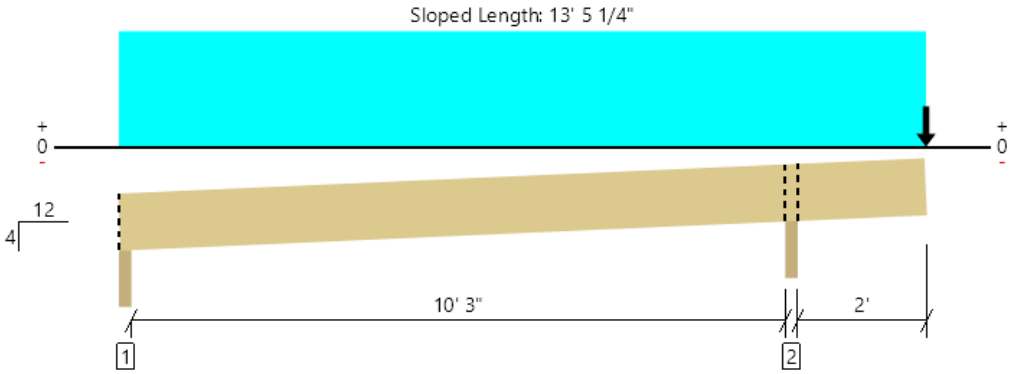
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Roof, Clerestory Cantilever beam
2 piece(s) 2 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.

Member Length : 13' 7 11/16"

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 4/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1122 @ 10' 7 1/2"	3842 (3.00")	Passed (29%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	506 @ 11' 3 7/8"	2501	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1007 @ 10' 7 1/2"	2569	Passed (39%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.045 @ 12' 9"	0.224	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.141 @ 5' 7/16"	0.738	Passed (L/943)	--	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).
- Top Edge Bracing (Lu): Top compression edge must be braced at 13' 5" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 13' 5" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beveled Plate - DF	3.00"	3.00"	1.50"	164	239	403	Blocking
2 - Beveled Plate - DF	3.00"	3.00"	1.50"	456	666	1122	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 12' 9"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 12' 9"	2'	15.0	25.0	Roof
2 - Point (lb)	12' 9"	N/A	143	238	

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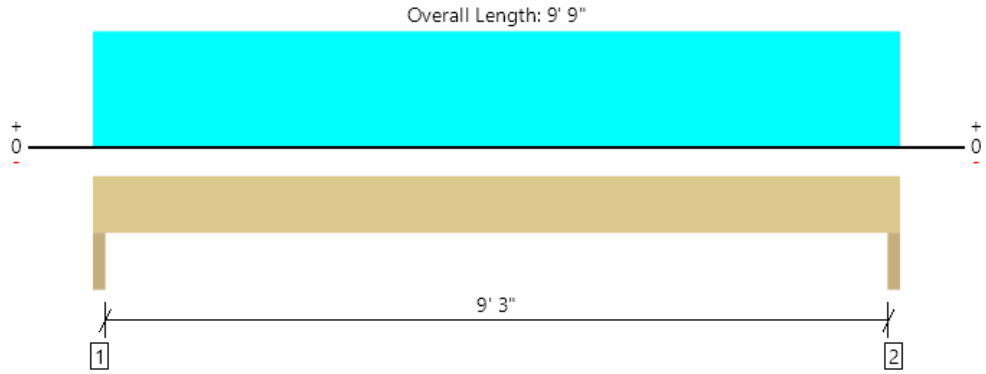
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Roof, Clerestory Header
2 piece(s) 2 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)	839 @ 1 1/2"	3645 (3.00")	Passed (23%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	692 @ 10 1/4"	2501	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1942 @ 4' 10 1/2"	2569	Passed (76%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.154 @ 4' 10 9/16"	0.317	Passed (L/740)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.255 @ 4' 10 9/16"	0.313	Passed (L/447)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/5/16").
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' 9" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 9' 9" o/c based on loads applied, unless detailed otherwise.
- Software only analyzes holes in TJI® Joists, Microllam® LVL, Parallam® PSL and TimberStrand® LSL.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	332	508	840	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	332	508	840	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 9"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 9' 9"	4' 2"	15.0	25.0	Snow

Weyerhaeuser Notes

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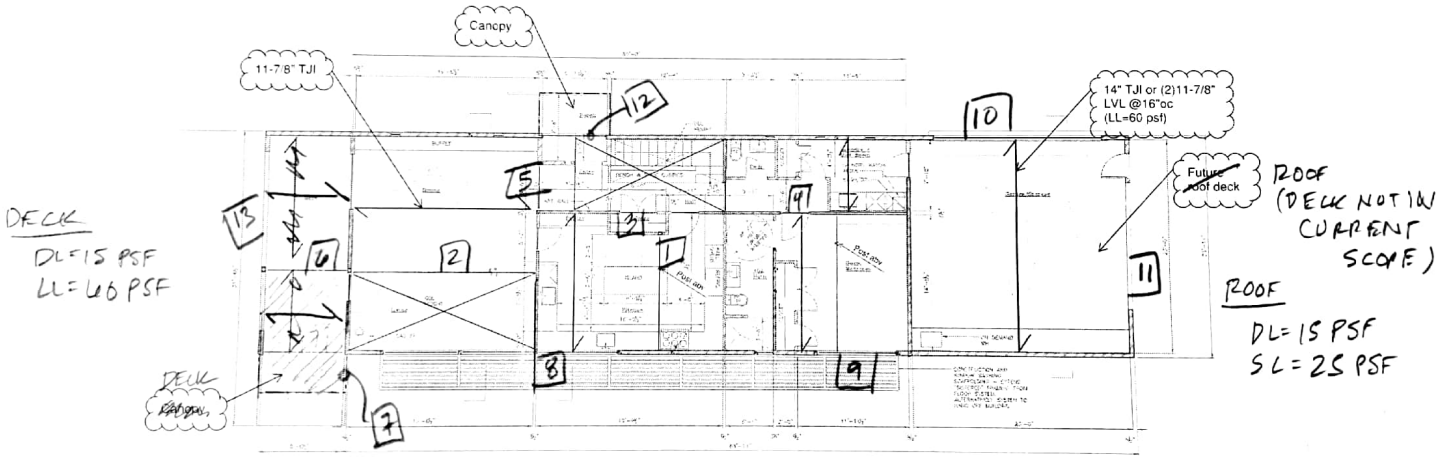
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper floor framing key

UPPER FLOOR FRAMING KEY

FLOOR DL=15 PSF
LL=40 PSF



DECK
DL=15 PSF
LL=60 PSF

ROOF
(DECK NOT IN CURRENT SCOPE)

ROOF
DL=15 PSF
SL=25 PSF

UPPER FLOOR FRAMING LAYOUT - PRELIMINARY

Square Footage Breakdown

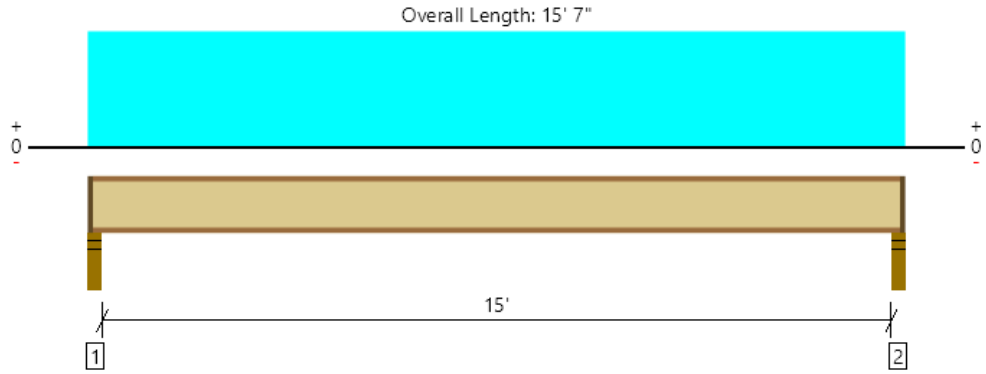
FLOOR PLATE:	1425SF
GARAGE:	561SF
DECK:	309SF
PORCH:	64SF

WINDOW WASH
DL=10 PSF
LL=40 PSF

N

STUDIO ECTYPOS
ARCHITECTURE

Upper, Floor: Joist, 15' span
1 piece(s) 11 7/8" TJI® 110 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	564 @ 2 1/2"	1041 (2.25")	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	550 @ 3 1/2"	1560	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2109 @ 7' 9 1/2"	3160	Passed (67%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.217 @ 7' 9 1/2"	0.379	Passed (L/840)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.298 @ 7' 9 1/2"	0.758	Passed (L/611)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	46	40	Passed	--	--

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

- Deflection criteria: LL (L/480) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 10" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 15' 5" o/c based on loads applied, unless detailed otherwise.
- 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 - SPF	3.50"	2.25"	1.75"	156	416	572	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.75"	156	416	572	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 15' 7"	16"	15.0	40.0	Default Load

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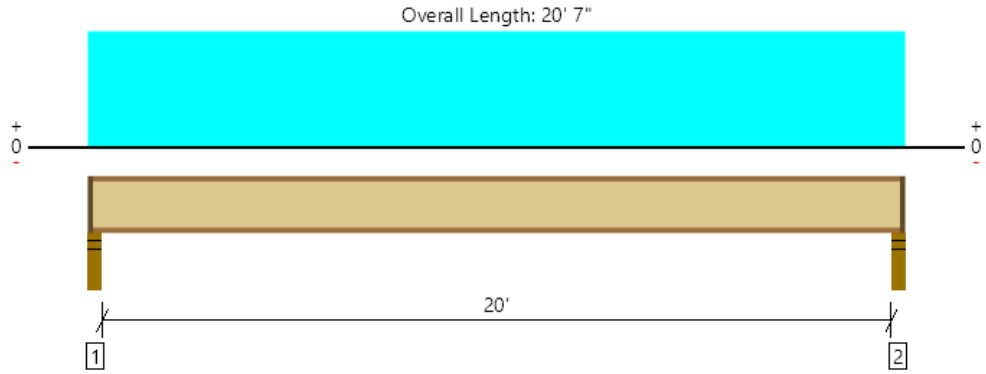
Upper, Floor: Joist, 20' span
1 piece(s) 11 7/8" TJI® 560 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	747 @ 2 1/2"	1396 (2.25")	Passed (53%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	733 @ 3 1/2"	2050	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3728 @ 10' 3 1/2"	9500	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.317 @ 10' 3 1/2"	0.504	Passed (L/764)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.436 @ 10' 3 1/2"	1.008	Passed (L/555)	--	1.0 D + 1.0 L (All 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/480) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' 2" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 20' 5" o/c based on loads applied, unless detailed otherwise.
- 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 - SPF	3.50"	2.25"	1.75"	206	549	755	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.75"	206	549	755	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 20' 7"	16"	15.0	40.0	Default Load

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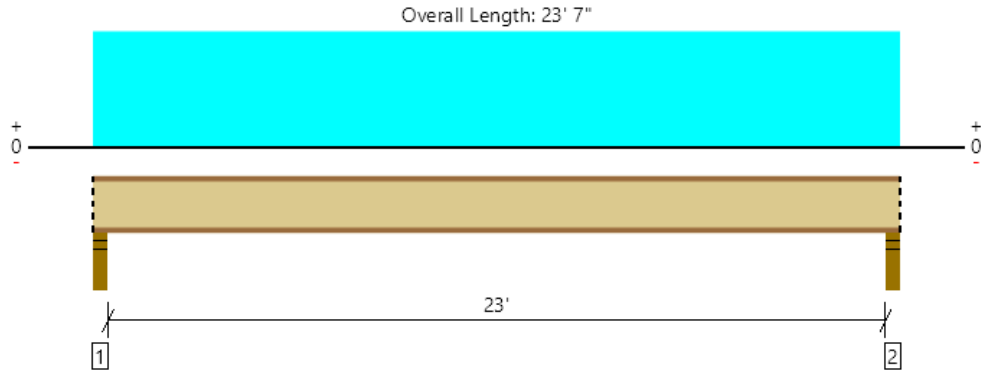
Upper, Roof: Joist, 23' span
1 piece(s) 11 7/8" TJI® 360 @ 24" OC



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)	943 @ 2 1/2"	1731 (3.50")	Passed (55%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	920 @ 3 1/2"	1961	Passed (47%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5367 @ 11' 9 1/2"	7107	Passed (76%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.834 @ 11' 9 1/2"	1.159	Passed (L/333)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.334 @ 11' 9 1/2"	1.545	Passed (L/208)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/240) and TL (L/180).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 11" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 23' 7" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - SPF	3.50"	3.50"	1.75"	354	590	944	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.75"	354	590	944	Blocking

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 23' 7"	24"	15.0	25.0	Default Load

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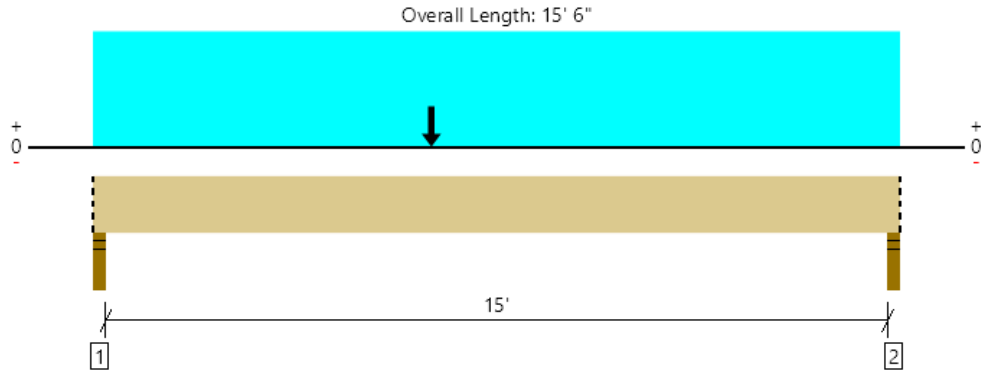
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 1/ Flush Beam

1 piece(s) 5 1/4" x 11 7/8" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4074 @ 1 1/2"	6379 (3.00")	Passed (64%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4025 @ 1' 2 7/8"	13861	Passed (29%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	25140 @ 6' 6"	34332	Passed (73%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.348 @ 7' 5 1/8"	0.381	Passed (L/527)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.619 @ 7' 5 5/16"	0.762	Passed (L/296)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/480) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 15' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 15' 6" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.00"	3.00"	1.92"	1833	413	2242	4488	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	1403	413	1610	3426	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 15' 6"	N/A	19.5	--	--	
1 - Uniform (PSF)	0 to 15' 6" (Front)	1' 4"	15.0	40.0	-	Default Load
2 - Point (lb)	6' 6" (Front)	N/A	2623	-	3852	Post abv

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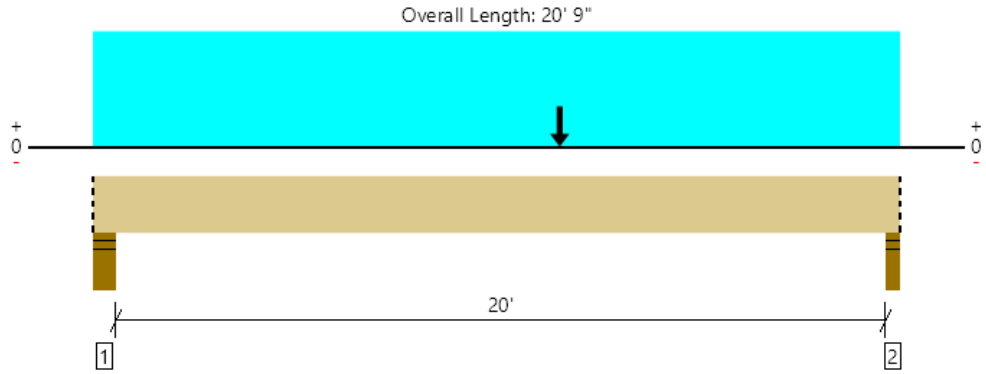
Upper, 2/ Flush Beam

1 piece(s) 3 1/2" x 16" 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)	4377 @ 20' 7"	5206 (3.50")	Passed (84%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4089 @ 19' 1 1/2"	12451	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	30778 @ 12'	40198	Passed (77%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.343 @ 10' 10 11/16"	0.506	Passed (L/709)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.877 @ 10' 9 1/8"	1.013	Passed (L/277)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/480) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 13' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 20' 9" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - SPF	5.50"	5.50"	2.51"	2620	279	1113	4012	Blocking
2 - Stud wall - SPF	3.50"	3.50"	2.94"	2865	274	1512	4651	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 20' 9"	N/A	17.5	--	--	
1 - Uniform (PSF)	0 to 20' 9" (Front)	8"	15.0	40.0	-	Default Load
2 - Uniform (PLF)	0 to 20' 9" (Front)	N/A	150.0	-	-	Wall weight
3 - Point (lb)	12' (Top)	N/A	1802	-	2625	Linked from: Copy of 2/ Flush Beam, Support 2

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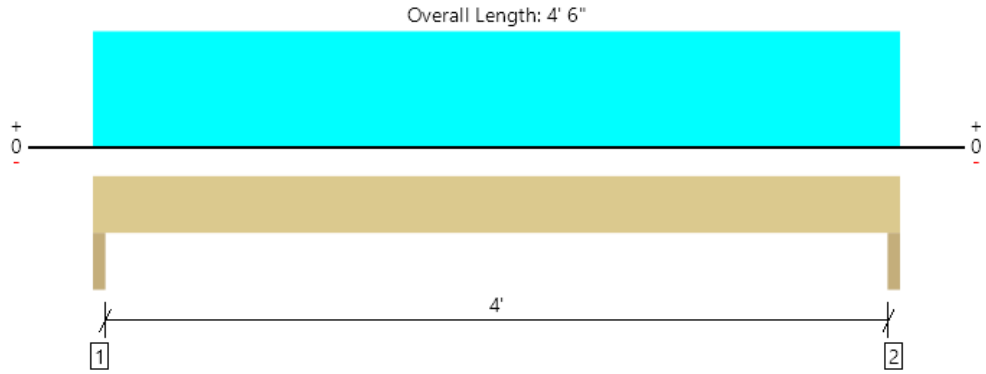
Upper, 3/ Header
2 piece(s) 2 x 8 Hem-Fir No. 2



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)	941 @ 1 1/2"	3645 (3.00")	Passed (26%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	583 @ 10 1/4"	2175	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	944 @ 2' 3"	2234	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.018 @ 2' 3"	0.142	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.025 @ 2' 3"	0.213	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 4' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 4' 6" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	266	675	941	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	266	675	941	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 4' 6"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 4' 6"	7' 6"	15.0	40.0	Floor

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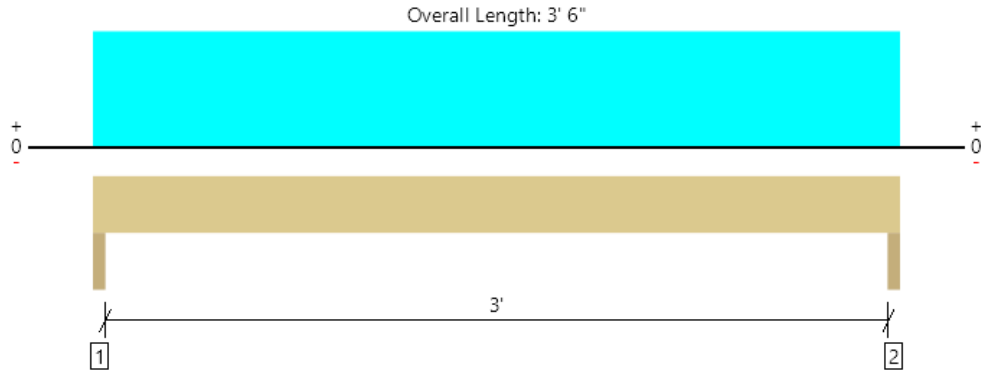
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 4/ Header
2 piece(s) 2 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)	1667 @ 1 1/2"	3645 (3.00")	Passed (46%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	818 @ 10 1/4"	2175	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1205 @ 1' 9"	2234	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.011 @ 1' 9"	0.108	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.019 @ 1' 9"	0.162	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 3' 6" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	758	840	372	1970	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	758	840	372	1970	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 6"	N/A	5.5	--	--	
1 - Uniform (PSF)	0 to 3' 6"	12'	15.0	40.0	-	Floor
2 - Uniform (PSF)	0 to 3' 6"	8' 6"	15.0	-	25.0	Roof
3 - Uniform (PLF)	0 to 3' 6"	N/A	120.0	-	-	Wall weight

Weyerhaeuser Notes

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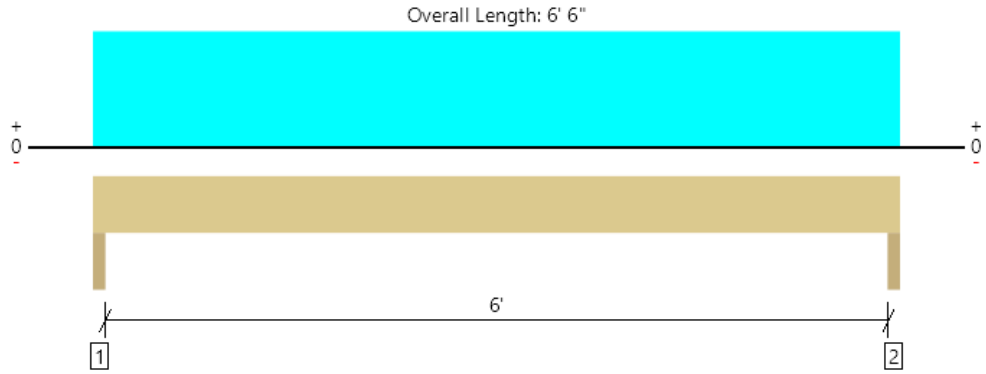
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 5/ Header

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1830 @ 1 1/2"	8138 (3.00")	Passed (22%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1132 @ 1' 2 7/8"	8590	Passed (13%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2749 @ 3' 3"	15953	Passed (17%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.025 @ 3' 3"	0.208	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.035 @ 3' 3"	0.313	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 6' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 6' 6" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	530	1300	1830	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	530	1300	1830	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 6' 6"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 6' 6"	10'	15.0	40.0	Floor

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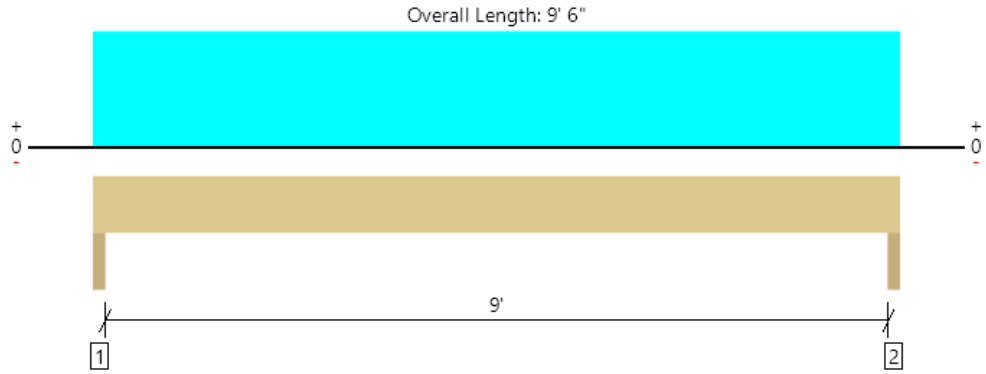
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 6/ Header

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3494 @ 1 1/2"	8138 (3.00")	Passed (43%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2582 @ 1' 2 7/8"	8590	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	7866 @ 4' 9"	15953	Passed (49%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.141 @ 4' 9"	0.308	Passed (L/789)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.188 @ 4' 9"	0.463	Passed (L/590)	--	1.0 D + 1.0 L (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 9' 6" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	881	2613	3494	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	881	2613	3494	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 6"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 9' 6"	7'	15.0	40.0	Floor
2 - Uniform (PSF)	0 to 9' 6"	4' 6"	15.0	60.0	Deck

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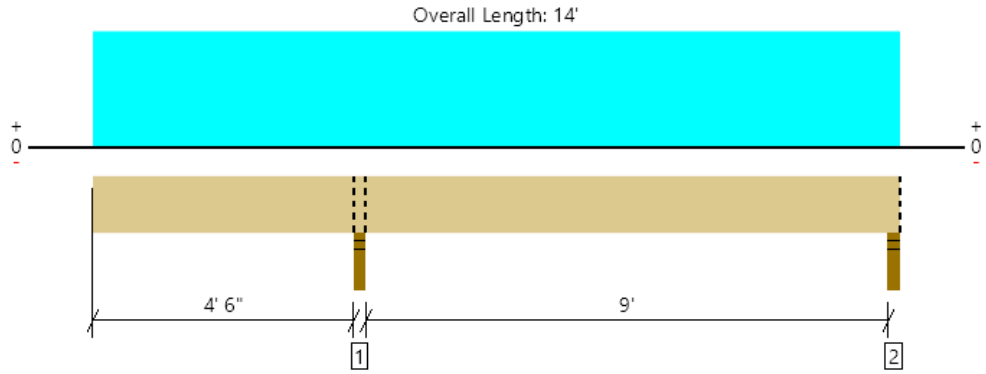
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 7/ Deck Cantilever

1 piece(s) 6 x 10 Douglas Fir-Larch No. 1



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3455 @ 4' 7 1/2"	6683 (3.00")	Passed (52%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1615 @ 5' 6 1/2"	5922	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-3551 @ 4' 7 1/2"	9307	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.163 @ 0	0.231	Passed (2L/680)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.177 @ 0	0.463	Passed (2L/628)	--	1.0 D + 1.0 L (Alt Spans)

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

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 14' o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 14' o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.00"	3.00"	1.55"	801	2654	3455	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	277	1211/-295	1488/-295	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 14'	N/A	13.2	--	
1 - Uniform (PSF)	0 to 14' (Front)	4' 3"	15.0	60.0	Deck

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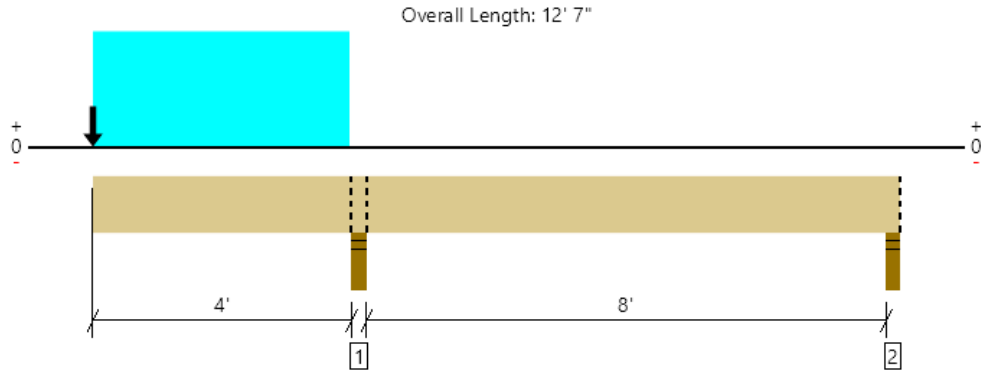
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 8/ Window wash cantilever
3 piece(s) 1 3/4" x 7 1/4" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1715 @ 4' 1 3/4"	7809 (3.50")	Passed (22%)	--	1.0 D + 1.0 Lr (All Spans)
Shear (lbs)	1114 @ 3' 4 3/4"	9040	Passed (12%)	1.25	1.0 D + 1.0 Lr (All Spans)
Moment (Ft-lbs)	-4192 @ 4' 1 3/4"	13340	Passed (31%)	1.25	1.0 D + 1.0 Lr (All Spans)
Live Load Defl. (in)	0.298 @ 0	0.415	Passed (2L/334)	--	1.0 D + 1.0 Lr (All Spans)
Total Load Defl. (in)	0.375 @ 0	0.553	Passed (2L/266)	--	1.0 D + 1.0 Lr (All Spans)

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

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Top Edge Bracing (Lu): Top compression edge must be braced at 12' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 12' 7" o/c based on loads applied, unless detailed otherwise.
- -459 lbs uplift at support located at 12' 5". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Roof Live	Total	
1 - Stud wall - SPF	3.50"	3.50"	1.50"	426	1290	1716	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	-63	-396	-459	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Roof Live (non-snow: 1.25)	Comments
0 - Self Weight (PLF)	0 to 12' 7"	N/A	11.1	--	
1 - Point (lb)	0 (Front)	N/A	170	680	
2 - Uniform (PSF)	0 to 4' (Front)	1' 4"	10.0	40.0	

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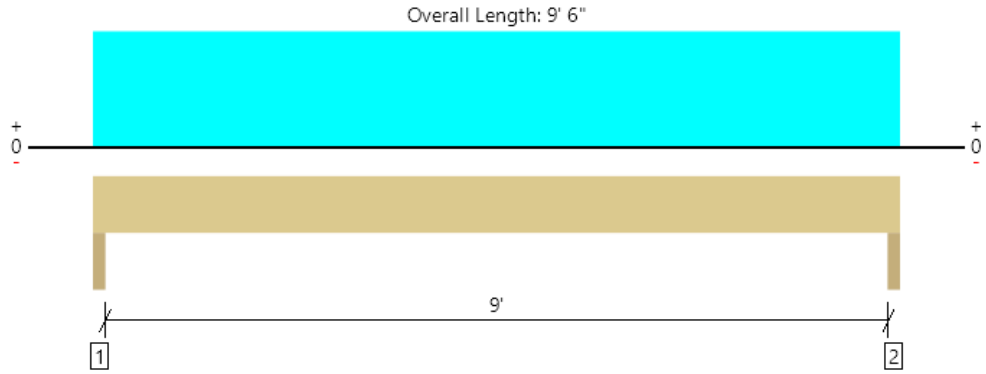
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 9/ Header, typ. @ south elevation
1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2840 @ 1 1/2"	8138 (3.00")	Passed (35%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2099 @ 1' 2 7/8"	8590	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	6396 @ 4' 9"	15953	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.113 @ 4' 9"	0.308	Passed (L/986)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.153 @ 4' 9"	0.463	Passed (L/726)	--	1.0 D + 1.0 L (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 9' 6" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	750	2090	2840	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	750	2090	2840	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 6"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 9' 6"	7'	15.0	40.0	Floor
2 - Uniform (PSF)	0 to 9' 6"	4'	10.0	40.0	Window wash platform

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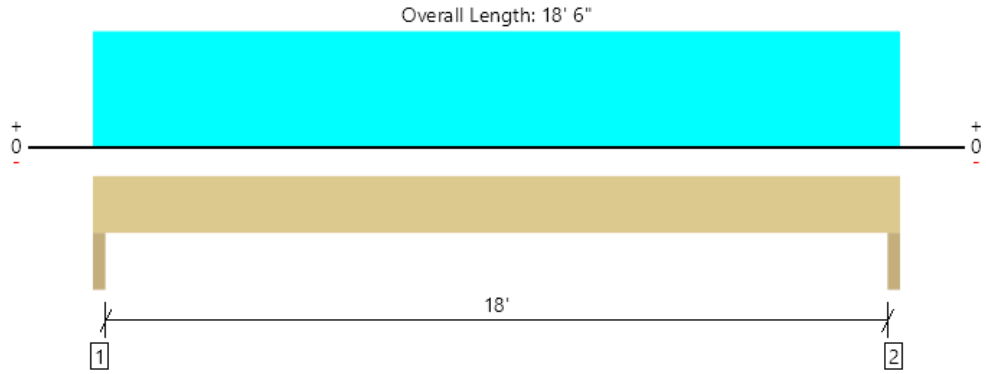
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 10/ Header Garage

1 piece(s) 5 1/4" x 16" 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)	8395 @ 1 1/2"	9844 (3.00")	Passed (85%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	6958 @ 1' 7"	16240	Passed (43%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	37782 @ 9' 3"	52432	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.531 @ 9' 3"	0.608	Passed (L/412)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.684 @ 9' 3"	0.913	Passed (L/320)	--	1.0 D + 1.0 L (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 18' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 18' 6" o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - DF	3.00"	3.00"	2.56"	1873	6521	8394	None
2 - Trimmer - DF	3.00"	3.00"	2.56"	1873	6521	8394	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 18' 6"	N/A	26.3	--	
1 - Uniform (PSF)	0 to 18' 6"	11' 9"	15.0	60.0	Deck

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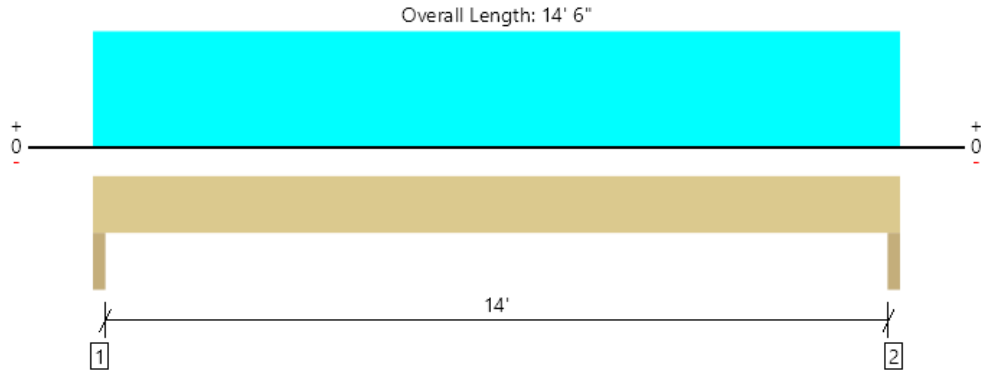
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 11/ Header Garage

1 piece(s) 3 1/2" x 11 1/4" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	452 @ 1 1/2"	6563 (3.00")	Passed (7%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	378 @ 1' 2 1/4"	7613	Passed (5%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1581 @ 7' 3"	17970	Passed (9%)	1.00	1.0 D + 1.0 L (All Spans)
Vert Live Load Defl. (in)	0.048 @ 7' 3"	0.475	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Vert Total Load Defl. (in)	0.074 @ 7' 3"	0.712	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Lat Member Reaction (lbs)	1235 @ 14' 4 1/2"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	1162 @ 6 1/2"	8820	Passed (13%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	4398 @ mid-span	9305	Passed (47%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	1.409 @ mid-span	1.425	Passed (L/121)	--	1.0 D + 0.6 W
Bi-Axial Bending	0.50	1.00	Passed (50%)	1.60	1.0 D + 0.6 W

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	162	290	452	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	162	290	452	None

Lateral Connections						
Supports	Plate Size	Plate Material	Connector	Type/Model	Quantity	Nailing
Left	2X	Douglas Fir-Larch		N/A	N/A	N/A
Right	2X	Douglas Fir-Larch		N/A	N/A	N/A

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 14' 6"	N/A	12.3	--	
1 - Uniform (PSF)	0 to 14' 6"	8"	15.0	60.0	Deck

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	8'	36.1	

- IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

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

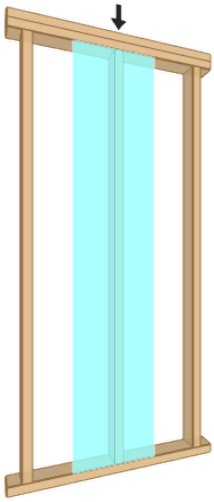
ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, Wall: Stud at stair

1 piece(s) 1 3/4" x 5 1/2" 1.55E TimberStrand® LSL @ 16" OC

Wall Height: 17' 6" Member Height: 17' 1 1/2" O. C. Spacing: 16.00"



Drawing is Conceptual

Design Results	Actual	Allowed	Result	LDF	Load: Combination
Slenderness	32	50	Passed (64%)	--	--
Compression (lbs)	73	5943	Passed (1%)	1.00	1.0 D + 1.0 L
Plate Bearing (lbs)	73	4967	Passed (1%)	--	1.0 D + 1.0 L
Lateral Reaction (lbs)	247	--	--	1.60	1.0 D + 0.6 W
Lateral Shear (lbs)	234	3183	Passed (7%)	1.60	1.0 D + 0.6 W
Lateral Moment (ft-lbs)	1059 @ mid-span	3020	Passed (35%)	1.60	1.0 D + 0.6 W
Total Deflection (in)	1.05 @ mid-span	1.71	Passed (L/195)	--	1.0 D + 0.6 W
Bending/Compression	0.35	1	Passed (35%)	1.60	1.0 D + 0.6 W

- Lateral deflection criteria: Wind (L/120)
- Input axial load eccentricity for this design is 16.67% of applicable member side dimension.
- Applicable calculations are based on NDS.
- A bearing area factor of 1.214286 has been applied to base plate bearing capacity.
- A 4% increase in the moment capacity has been added to account for repetitive member usage.

Supports	Type	Material
Top	Dbl 2X	Spruce-Pine-Fir
Base	2X	Spruce-Pine-Fir

System : Wall
Member Type : Stud
Building Code : IBC 2015
Design Methodology : ASD

Max Unbraced Length	Comments
1'	

Lateral Connections

Supports	Connector	Type/Model	Quantity	Connector Nailing
Top	Nails	8d x 2.5" Box (Toe)	4	N/A
Base	Nails	8d x 2.5" Box (Toe)	4	N/A

- Nailed connection at the top of the member is assumed to be nailed through the bottom 2x plate prior to placement of the top 2x of the double top plate assembly.

Vertical Load	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Point (lb)	N/A	20	53	Floor

Lateral Load	Location	Spacing	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	16.00"	36.1	

- IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

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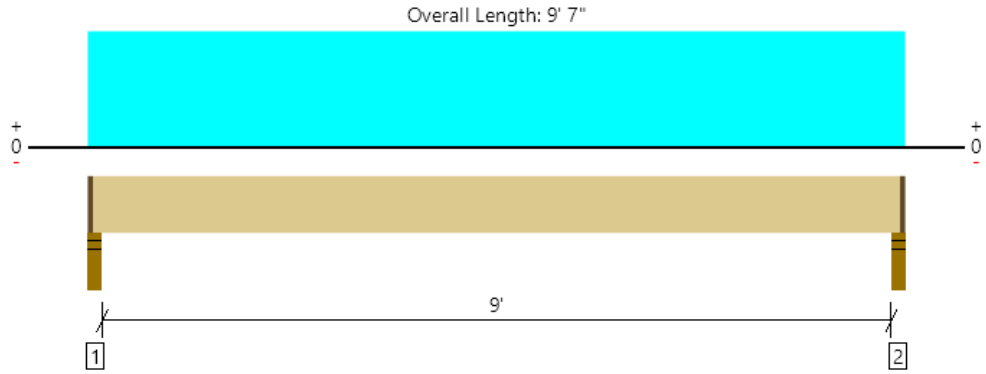
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, West Deck joist
1 piece(s) 2 x 8 Hem-Fir No. 2 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	469 @ 2 1/2"	1367 (2.25")	Passed (34%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	390 @ 10 3/4"	1088	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1050 @ 4' 9 1/2"	1284	Passed (82%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.205 @ 4' 9 1/2"	0.229	Passed (L/536)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.257 @ 4' 9 1/2"	0.458	Passed (L/429)	--	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).
- Top Edge Bracing (Lu): Top compression edge must be braced at 6' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 9' 5" o/c based on loads applied, unless detailed otherwise.
- 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 - Stud wall - SPF	3.50"	2.25"	1.50"	96	383	479	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.50"	96	383	479	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 9' 7"	16"	15.0	60.0	Deck

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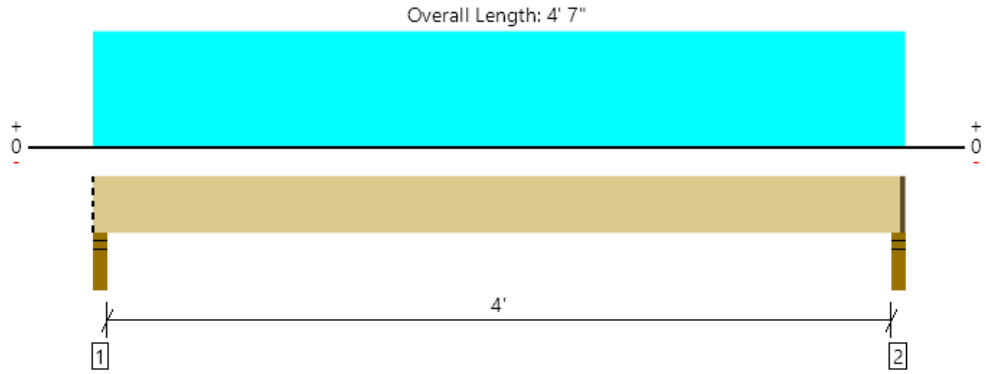
Upper, Window wash joist
1 piece(s) 2 x 6 Hem-Fir No. 2 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	146 @ 4' 4 1/2"	1367 (2.25")	Passed (11%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	103 @ 9"	825	Passed (12%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	145 @ 2' 3 1/2"	801	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.013 @ 2' 3 1/2"	0.139	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.017 @ 2' 3 1/2"	0.208	Passed (L/999+)	--	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/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 4' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 4' 6" o/c based on loads applied, unless detailed otherwise.
- 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 - Stud wall - SPF	3.50"	3.50"	1.50"	31	122	153	Blocking
2 - Stud wall - SPF	3.50"	2.25"	1.50"	31	122	153	1 1/4" Rim Board

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 4' 7"	16"	10.0	40.0	Default Load

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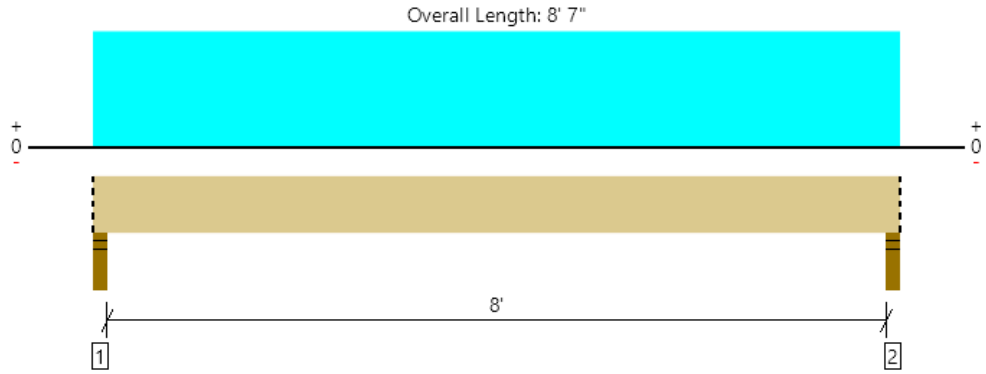
Upper, Entry canopy joist
1 piece(s) 2 x 6 Hem-Fir No. 2 @ 24" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	343 @ 2 1/2"	2126 (3.50")	Passed (16%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	283 @ 9"	949	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	667 @ 4' 3 1/2"	921	Passed (72%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.185 @ 4' 3 1/2"	0.408	Passed (L/529)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.296 @ 4' 3 1/2"	0.544	Passed (L/331)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/240) and TL (L/180).
- Top Edge Bracing (Lu): Top compression edge must be braced at 8' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 8' 7" o/c based on loads applied, unless detailed otherwise.
- 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 - Stud wall - SPF	3.50"	3.50"	1.50"	129	215	344	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	129	215	344	Blocking

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 8' 7"	24"	15.0	25.0	Default Load

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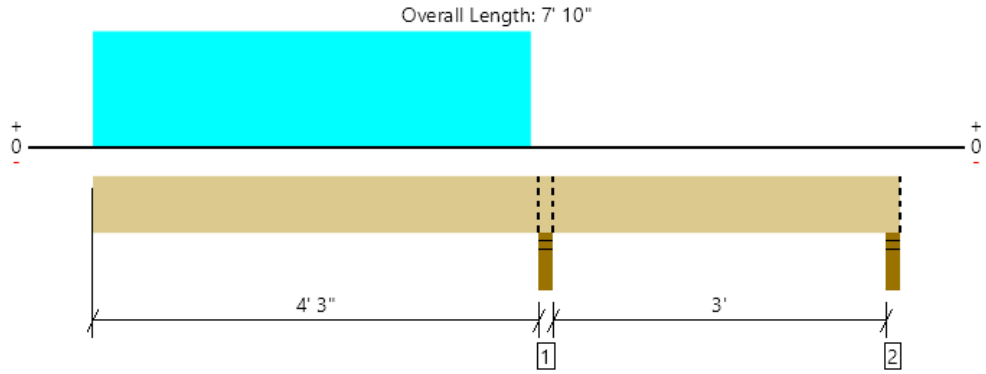
Upper, Entry canopy cantilever
3 piece(s) 1 3/4" x 5 1/2" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1228 @ 4' 4 3/4"	11484 (3.50")	Passed (11%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	639 @ 3' 9 1/2"	6309	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1626 @ 4' 4 3/4"	7333	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.114 @ 0	0.440	Passed (2L/924)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.192 @ 0	0.586	Passed (2L/550)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Top Edge Bracing (Lu): Top compression edge must be braced at 7' 10" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 7' 10" o/c based on loads applied, unless detailed otherwise.
- -482 lbs uplift at support located at 7' 8". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.50"	3.50"	1.50"	508	720	1228	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	-187	-295	-482	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 7' 10"	N/A	8.4	--	
1 - Uniform (PSF)	0 to 4' 3" (Front)	4'	15.0	25.0	Roof

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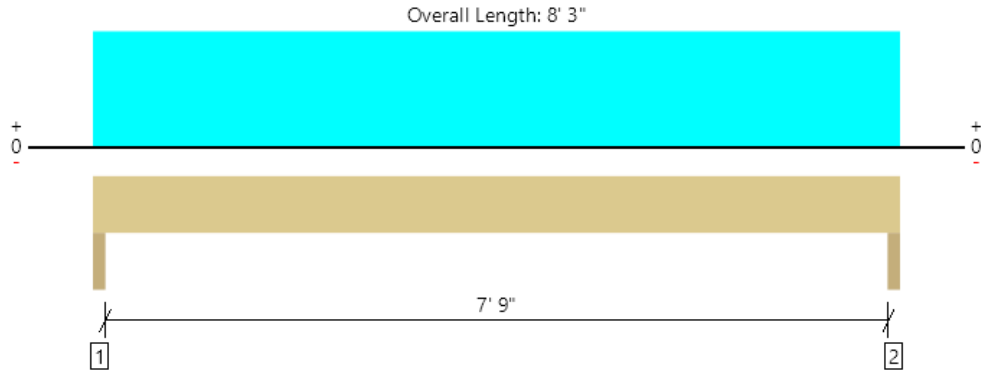
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 12/ Header at two-story space/ window wash
1 piece(s) 3 1/2" x 16" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1279 @ 1 1/2"	8138 (3.00")	Passed (16%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	788 @ 1' 7"	13309	Passed (6%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	2480 @ 4' 1 1/2"	32404	Passed (8%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Vert Live Load Defl. (in)	0.012 @ 4' 1 1/2"	0.267	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Vert Total Load Defl. (in)	0.022 @ 4' 1 1/2"	0.400	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Lat Member Reaction (lbs)	944 @ 8' 1 1/2"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	846 @ 6 1/2"	8960	Passed (9%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	1888 @ mid-span	11390	Passed (17%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	0.175 @ mid-span	0.800	Passed (L/548)	--	1.0 D + 0.6 W
Bi-Axial Bending	0.20	1.00	Passed (20%)	1.60	1.0 D + 0.6 W

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

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	567	330	619	1516	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	567	330	619	1516	None

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 8' 3"	N/A	17.5	--	--	
1 - Uniform (PSF)	0 to 8' 3"	2'	15.0	40.0	-	Floor
2 - Uniform (PSF)	0 to 8' 3"	6'	15.0	-	25.0	Roof + Canopy

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	9'	43.7	C&C

• IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

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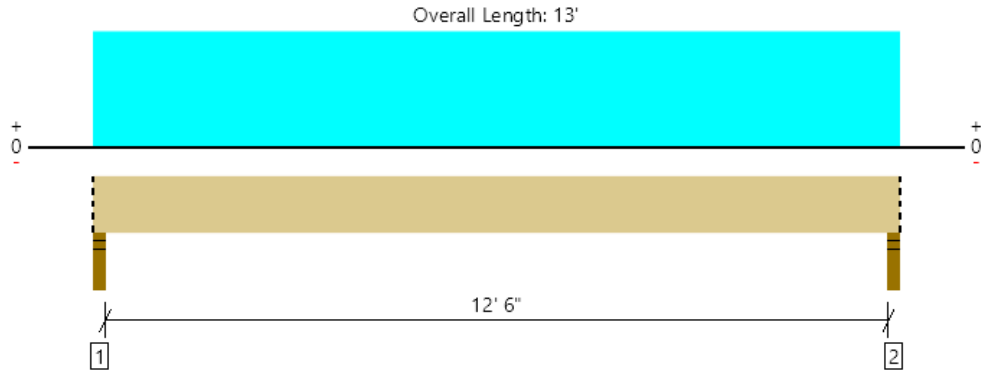
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 13/ Flush header

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1279 @ 1 1/2"	4253 (3.00")	Passed (30%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	971 @ 1' 2 7/8"	8590	Passed (11%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3752 @ 6' 6"	15953	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.033 @ 6' 6"	0.319	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.169 @ 6' 6"	0.637	Passed (L/906)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

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

- Deflection criteria: LL (L/480) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 13' o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 13' o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.00"	3.00"	1.50"	1027	173	163	1363	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	1027	173	163	1363	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13'	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 13' (Front)	8"	15.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 13' (Front)	1'	15.0	-	25.0	
3 - Uniform (PLF)	0 to 13' (Front)	N/A	120.0	-	-	

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

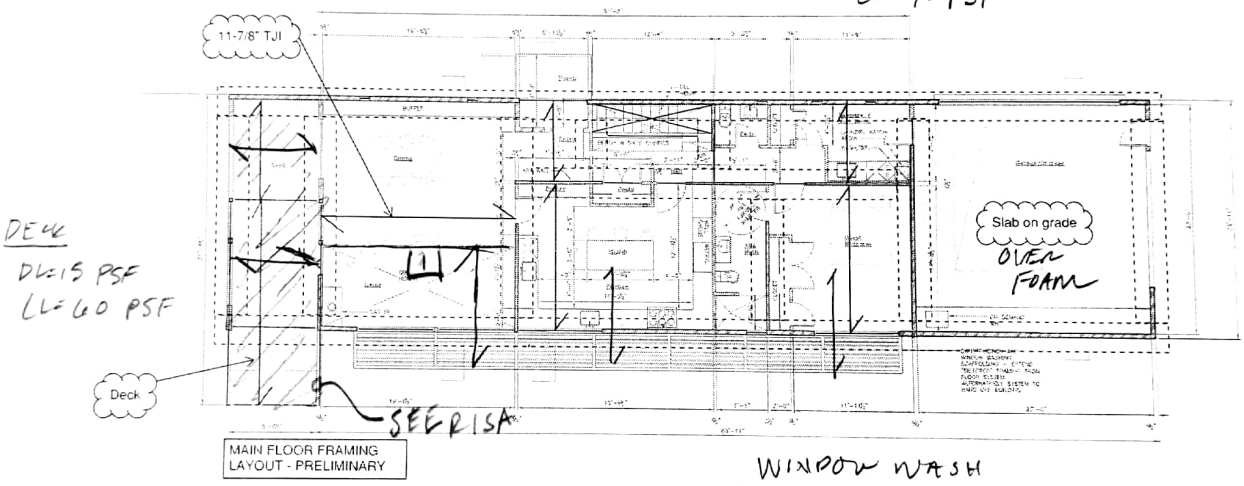
ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Main floor framing key

MAIN FLOOR FRAMING KEY

FLOOR DL=15 PSF
LL=40 PSF



DECK
DL=15 PSF
LL=60 PSF

MAIN FLOOR FRAMING
LAYOUT - PRELIMINARY

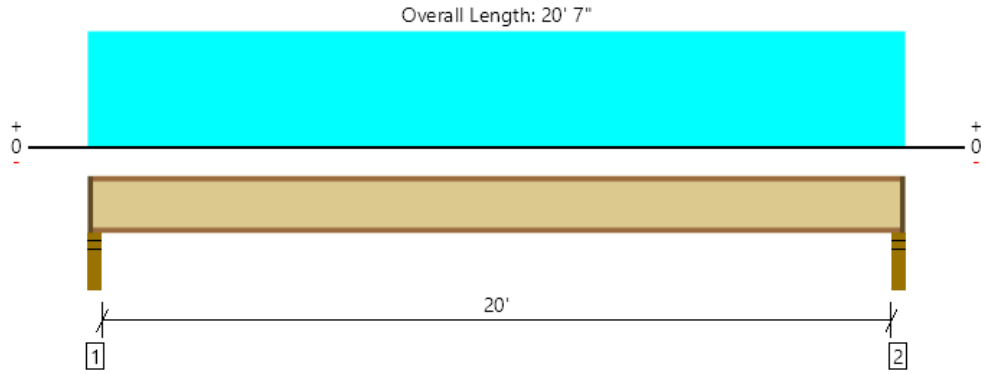
WINDOW WASH
DL=10 PSF
LL=40 PSF

Square Footage Breakdown

FLOOR PLATE:	1425SF
GARAGE:	561SF
DECK:	309SF
PORCH:	64SF

STUDIO ECTYPOS
ARCHITECTURE

Main, Floor: Joist, 20' span
1 piece(s) 11 7/8" TJI® 560 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	747 @ 2 1/2"	1396 (2.25")	Passed (53%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	733 @ 3 1/2"	2050	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3728 @ 10' 3 1/2"	9500	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.317 @ 10' 3 1/2"	0.504	Passed (L/764)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.436 @ 10' 3 1/2"	1.008	Passed (L/555)	--	1.0 D + 1.0 L (All 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/480) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' 2" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 20' 5" o/c based on loads applied, unless detailed otherwise.
- 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 - SPF	3.50"	2.25"	1.75"	206	549	755	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.75"	206	549	755	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 20' 7"	16"	15.0	40.0	Default Load

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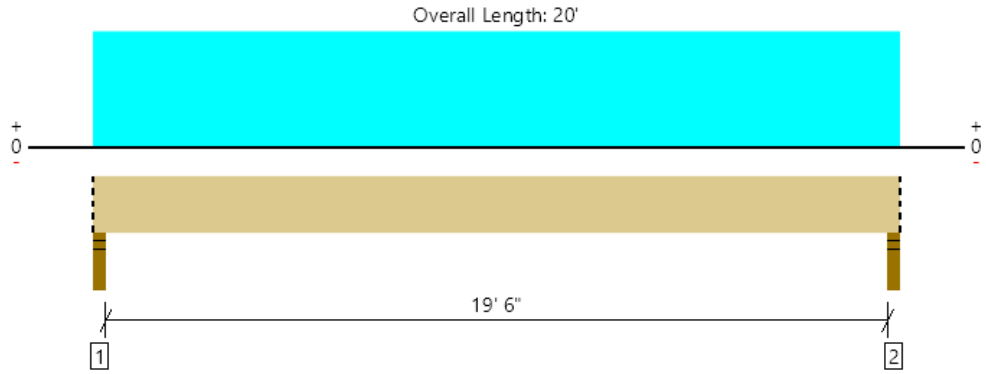
Main, 1/ Flush Beam

1 piece(s) 5 1/4" x 11 7/8" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2670 @ 1 1/2"	6379 (3.00")	Passed (42%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2339 @ 1' 2 7/8"	12053	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	13018 @ 10'	29854	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.437 @ 10'	0.494	Passed (L/543)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.648 @ 10'	0.988	Passed (L/366)	--	1.0 D + 1.0 L (All Spans)

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

- Deflection criteria: LL (L/480) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 20' o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 20' o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.00"	3.00"	1.50"	870	1800	2670	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	870	1800	2670	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 20'	N/A	19.5	--	
1 - Uniform (PSF)	0 to 20' (Front)	4' 6"	15.0	40.0	Default Load

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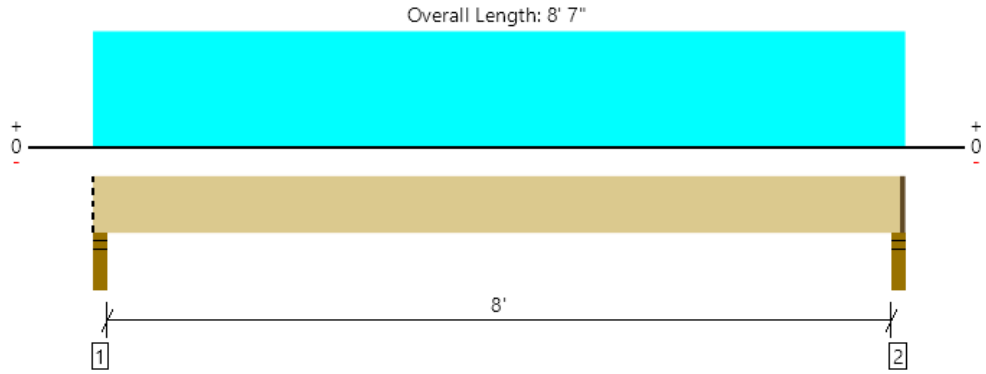
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Main, Deck Joist
1 piece(s) 2 x 10 Hem-Fir No. 2 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	419 @ 8' 4 1/2"	1367 (2.25")	Passed (31%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	323 @ 1' 3/4"	1388	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	834 @ 4' 3 1/2"	1917	Passed (43%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.062 @ 4' 3 1/2"	0.204	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.078 @ 4' 3 1/2"	0.408	Passed (L/999+)	--	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).
- Top Edge Bracing (Lu): Top compression edge must be braced at 8' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 8' 6" o/c based on loads applied, unless detailed otherwise.
- 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 - Stud wall - SPF	3.50"	3.50"	1.50"	86	343	429	Blocking
2 - Stud wall - SPF	3.50"	2.25"	1.50"	86	343	429	1 1/4" Rim Board

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 8' 7"	16"	15.0	60.0	Default Load

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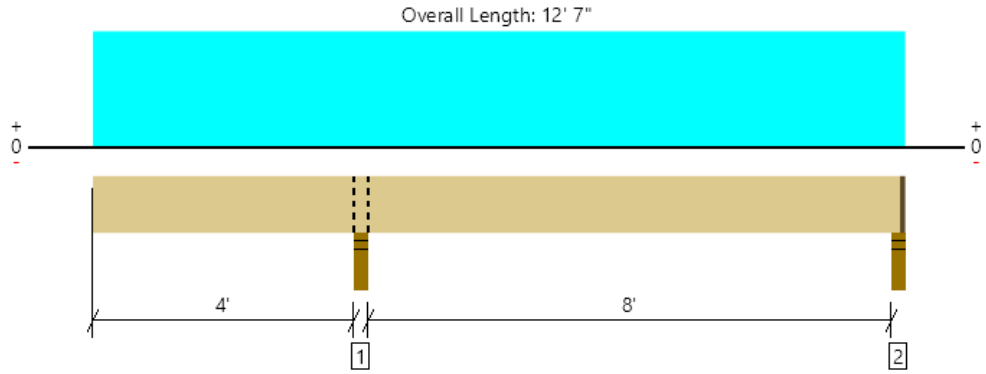
Main, Joist, Window wash cantilever
1 piece(s) 2 x 8 Hem-Fir No. 2 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	620 @ 4' 1 3/4"	2126 (3.50")	Passed (29%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	294 @ 4' 10 3/4"	1088	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-573 @ 4' 1 3/4"	1284	Passed (45%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.200 @ 0	0.207	Passed (2L/496)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.215 @ 0	0.415	Passed (2L/464)	--	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).
- Top Edge Bracing (Lu): Top compression edge must be braced at 12' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 12' 6" o/c based on loads applied, unless detailed otherwise.
- 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 - Stud wall - SPF	3.50"	3.50"	1.50"	124	496	620	Blocking
2 - Stud wall - SPF	3.50"	2.25"	1.50"	44	231/-50	275/-50	1 1/4" Rim Board

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 12' 7"	16"	10.0	40.0	Default Load

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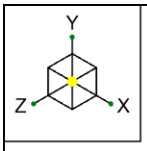
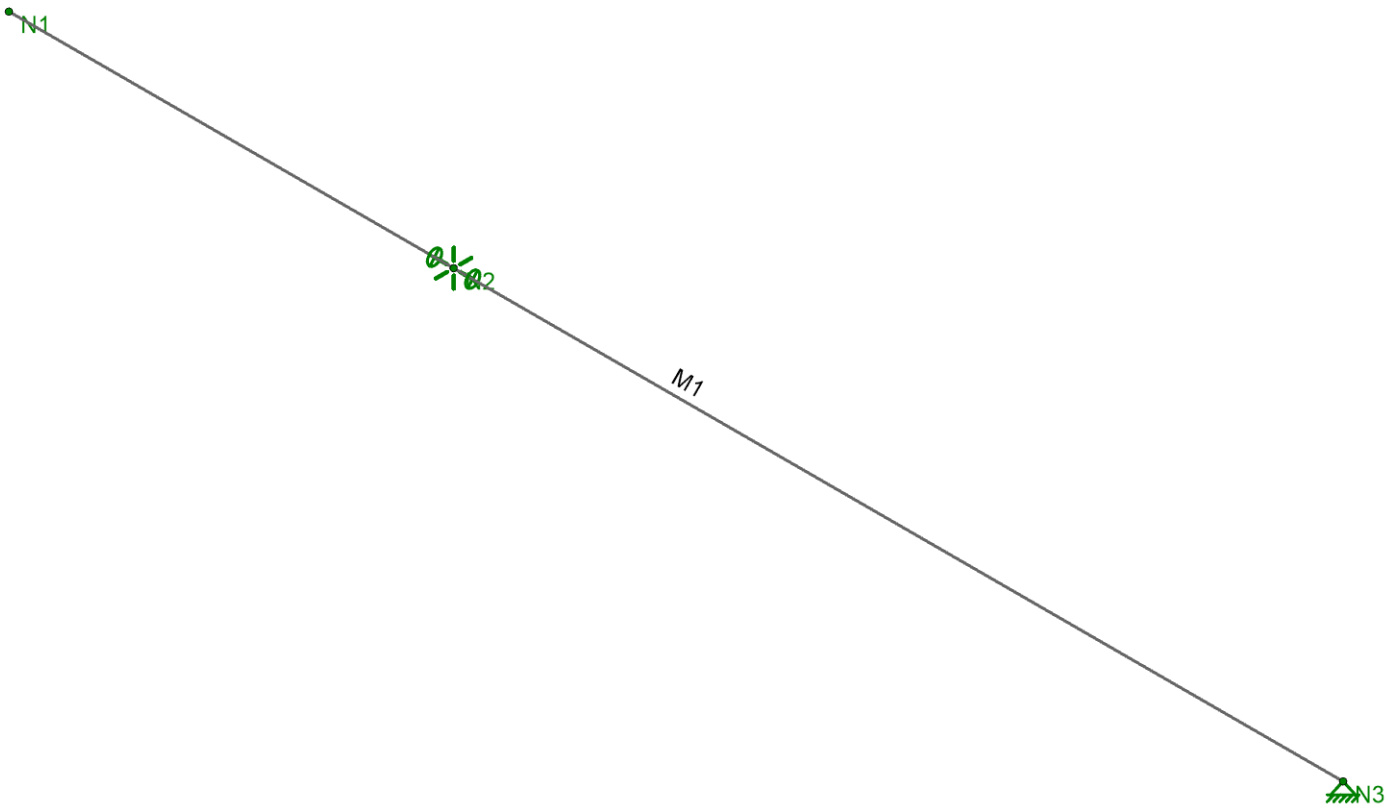
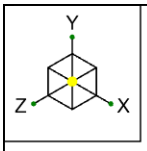
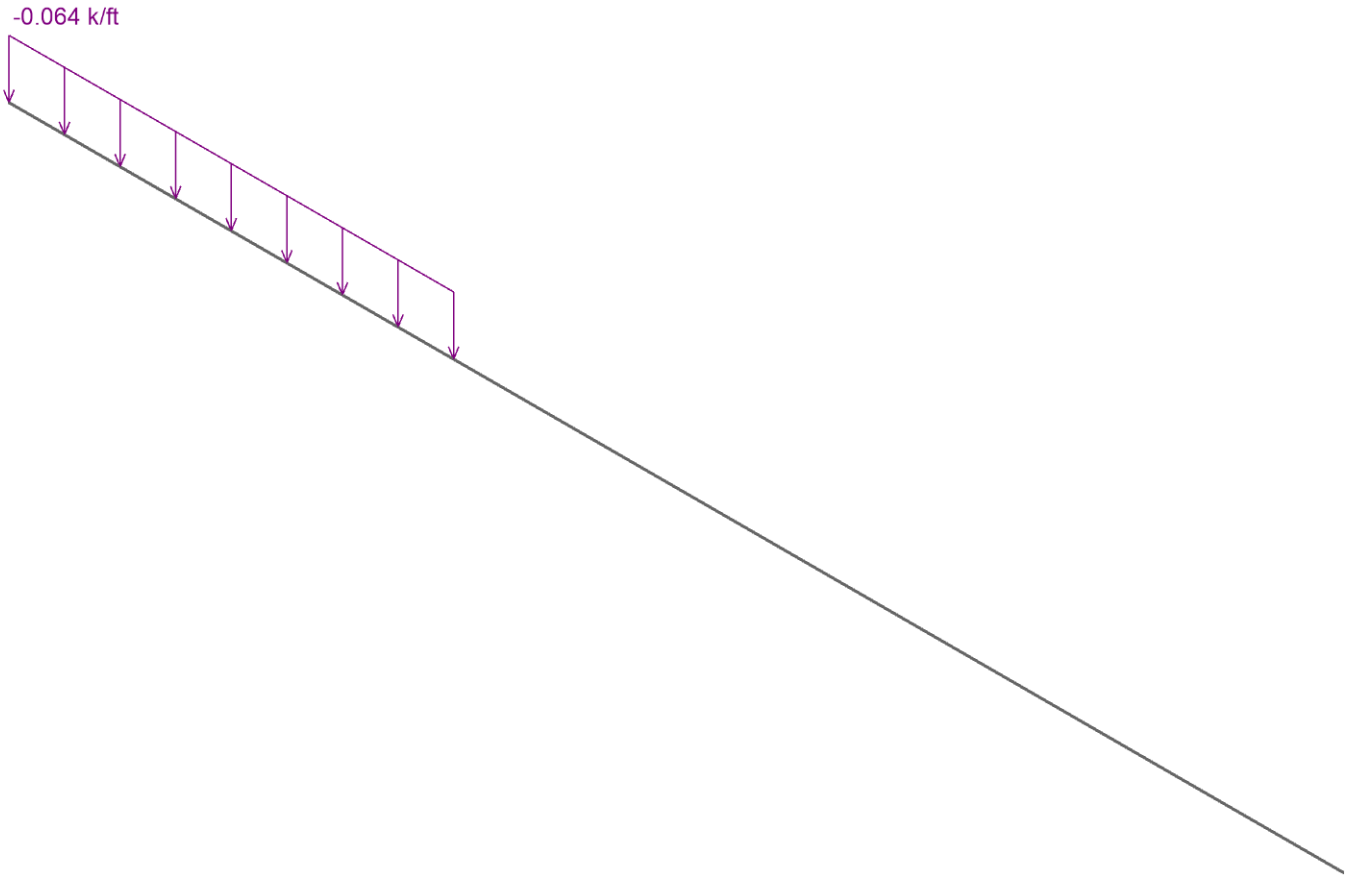




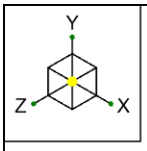
Bykonen Carter Quinn	Master Deck Cantilever	SK-1
Jane Johnson		May 28, 2020
Vaney Shinde Residence	Member and Node Key	Master deck beam.r3d

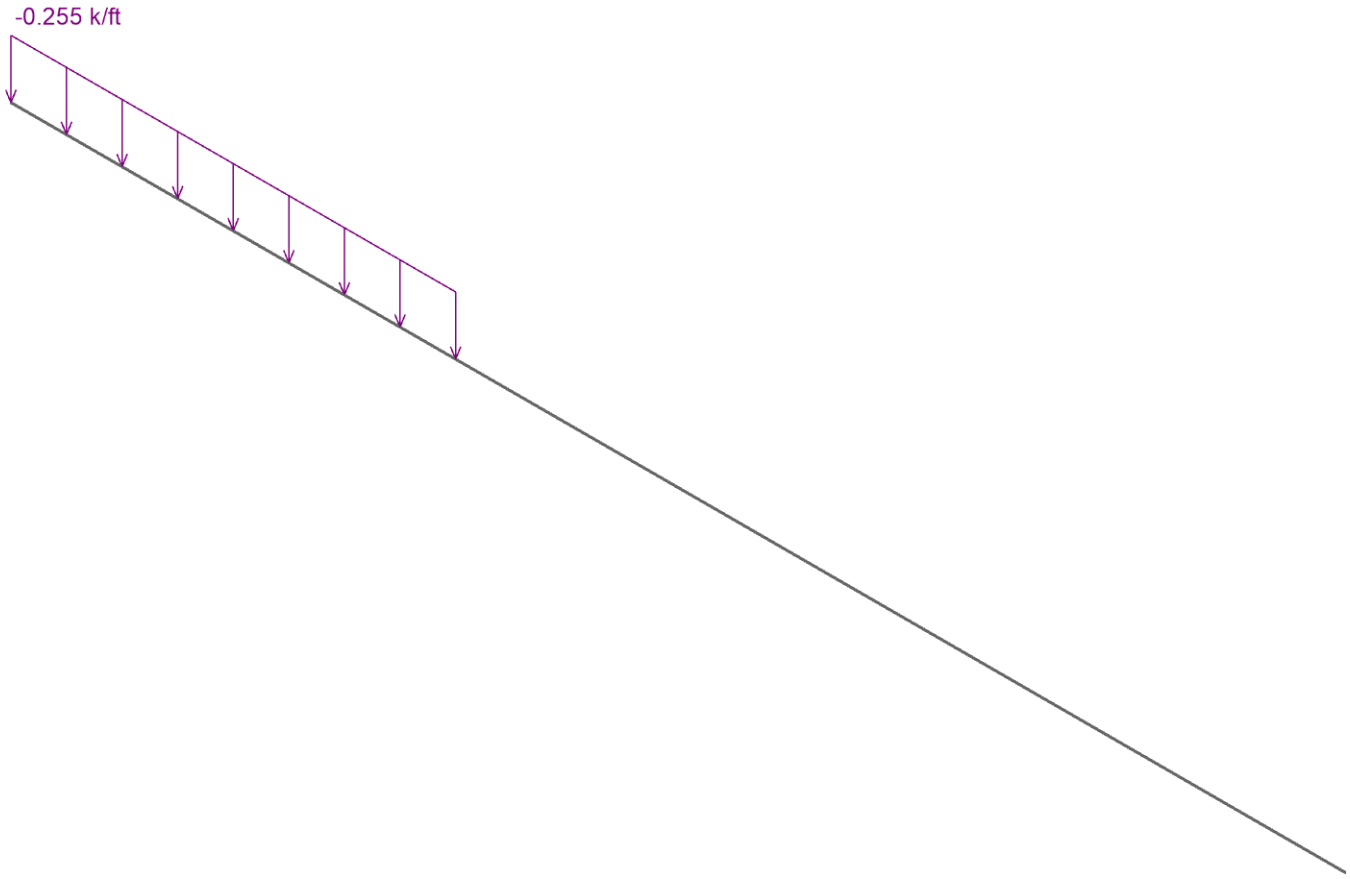




Loads: BLC 1, D

Bykonen Carter Quinn	Master Deck Cantilever	SK-2
Jane Johnson		May 28, 2020
Vaney Shinde Residence	Loads - Dead	Master deck beam.r3d

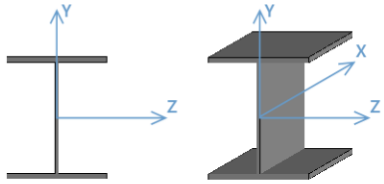




Loads: BLC 2, L

Bykonen Carter Quinn	Master Deck Cantilever	SK-3
Jane Johnson		May 28, 2020
Vaney Shinde Residence	Loads - Live	Master deck beam.r3d

Detail Report: M1 **Load Combination: LC 1: D+L**



Input Data:

Shape:	W10X33	**I Node:**	N1
Member Type:	Beam	**J Node:**	N3
Length (ft):	24	**I Release:**	Fixed
Material Type:	Hot Rolled Steel	**J Release:**	Fixed
Design Rule:	Typical	**I Offset (in):**	N/A
Number of Internal Sections:	97	**J Offset (in):**	N/A

Material Properties:

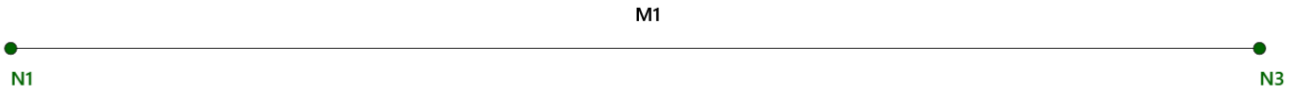
Material:	A992	**Therm. Coeff. ($1e^{5}°F^{-1}$):**	0.65	**R_y:**	1.1
E (ksi):	29000	**Density (k/ft^3):**	0.49	**F_u (ksi):**	65
G (ksi):	11154	**F_y (ksi):**	50	**R_t:**	1.1
Nu:	0.3				

Shape Properties:

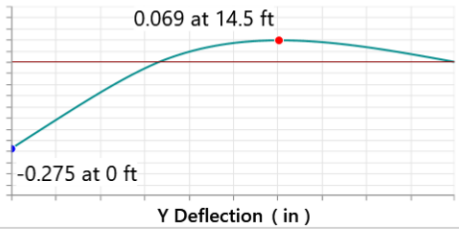
d (in):	9.73	**Area (in^2):**	9.71	**S_w (in^4):**	16
b_f (in):	7.96	**Z_{yy} (in^3):**	14	**r_T (in):**	2.16
t_f (in):	0.435	**Z_{zz} (in^3):**	38.8	**J (in^4):**	0.583
t_w (in):	0.29	**C_w (in^6):**	791	**k_{det} (in):**	1.125
I_{yy} (in^4):	36.6	**W_{no} (in^2):**	18.5	**k_{des} (in):**	0.935
I_{zz} (in^4):	171				

Design Properties:

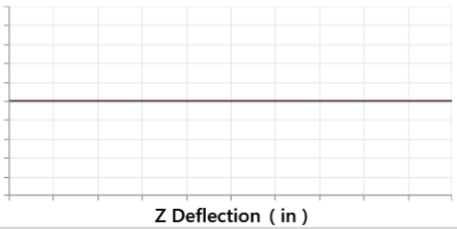
$L_{b\ y\text{-}y}$ (ft):	24	**$K_{y\text{-}y}$:**	1	**Max Defl Ratio:**	L/697
$L_{b\ z\text{-}z}$ (ft):	24	**$K_{z\text{-}z}$:**	1	**Max Defl Location:**	0
$L_{comp\ top}$ (ft):	24	**y sway:**	No	**Span:**	1
$L_{comp\ bot}$ (ft):	24	**z sway:**	No		
L_{torque} (ft):	24	**Function:**	Lateral		
C_b:	1.609	**Seismic DR:**	None		

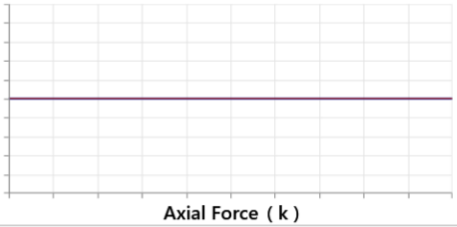


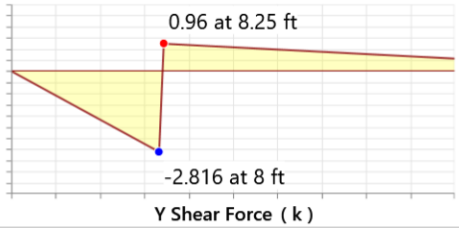
Diagrams:



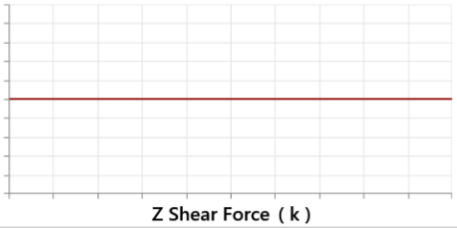
Y Deflection (in)

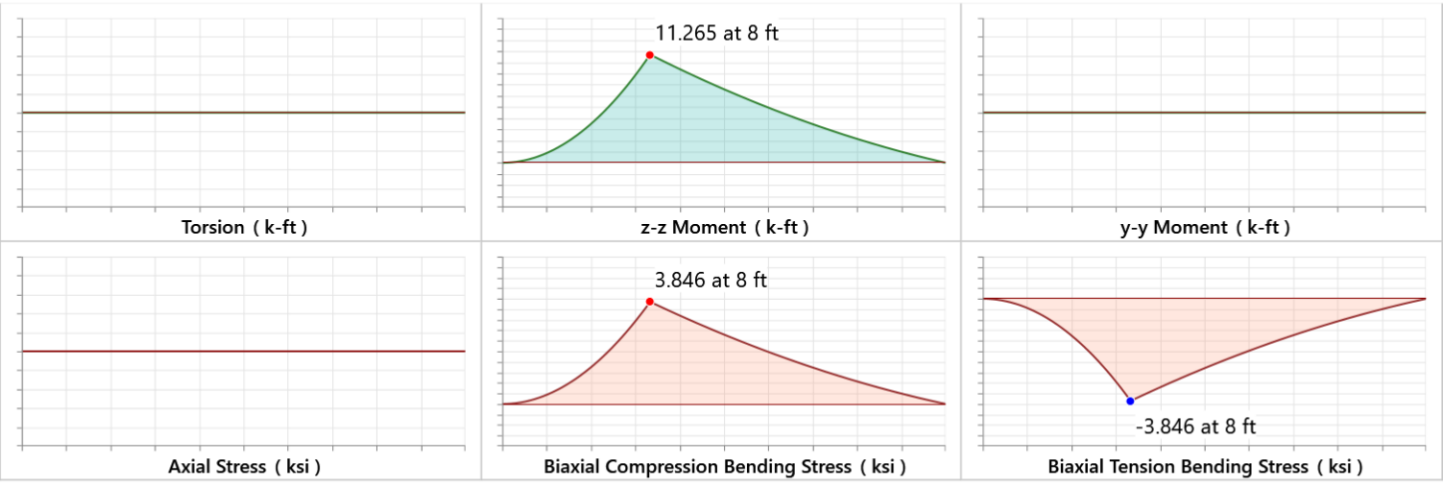

Z Deflection (in)


Axial Force (k)



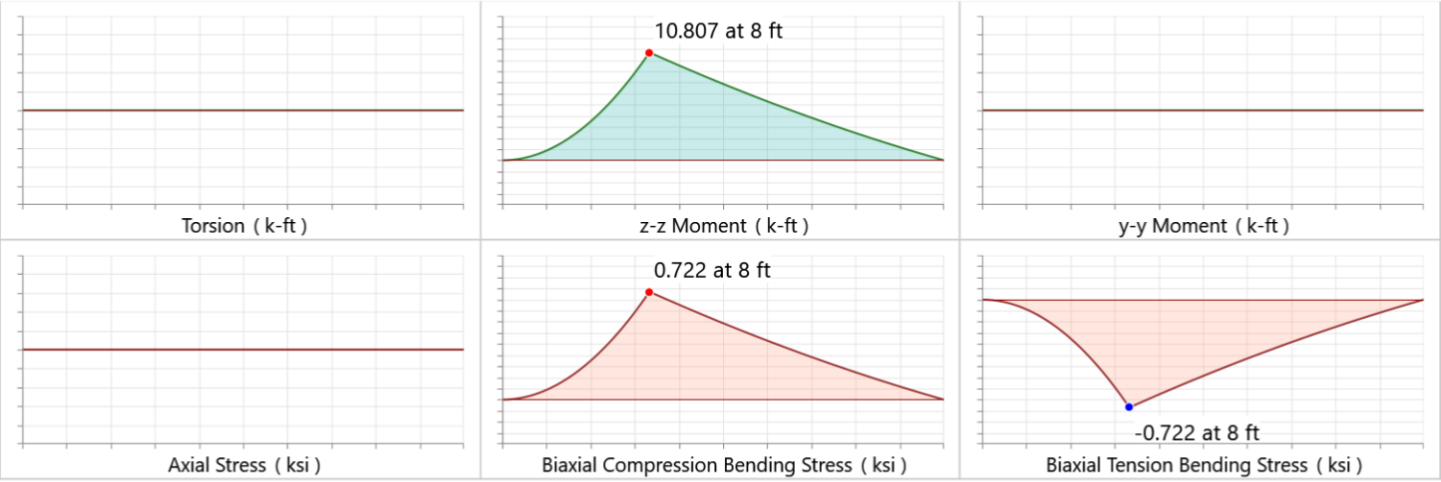
Y Shear Force (k)


Z Shear Force (k)



AISC 14th (360-10): ASD Code Check

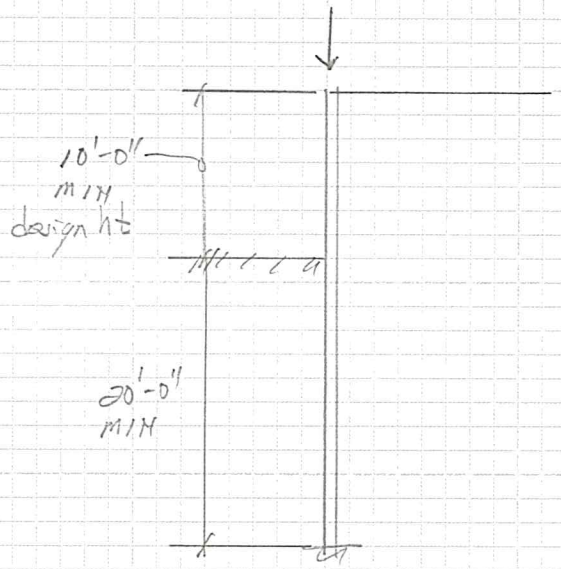
Limit State	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial				
Applied Loading - Shear	-	-	-	-
Axial Tension Analysis	0.000 k	290.719 k	-	-
Axial Compression Analysis	0.000 k	66.325 k	-	-
Flexural Analysis (Strong Axis)	11.265 k-ft	86.751 k-ft	-	-
Flexural Analysis (Weak Axis)	0.000 k-ft	34.93 k-ft	-	-
Shear Analysis (Major Axis y)	2.816 k	56.434 k	0.05	Pass
Shear Analysis (Minor Axis z)	0.000 k	124.405 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	-	-	0.13	Pass

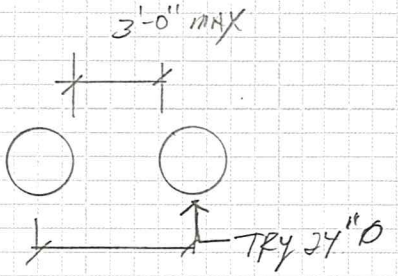


AWC NDS-12: ASD Code Check

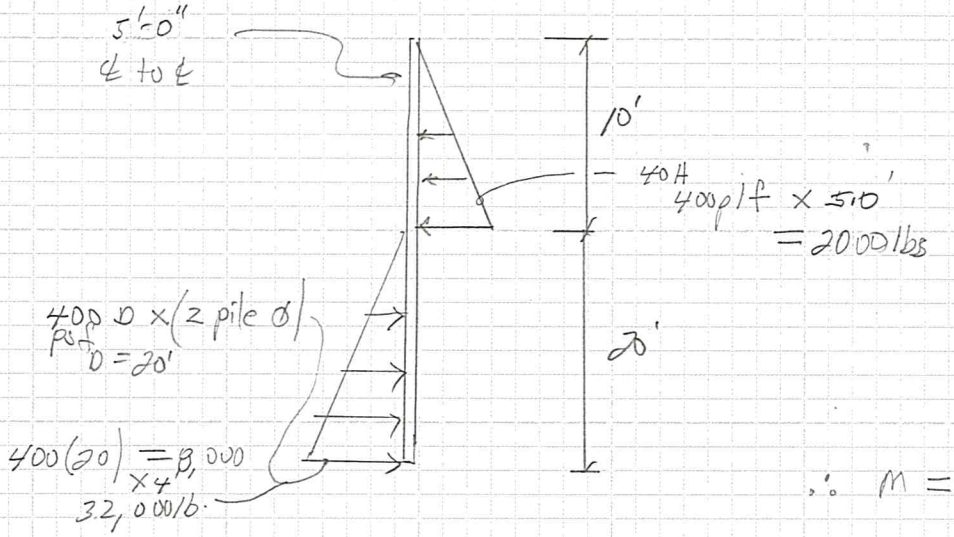
Limit State	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	-	-	-	-
Applied Loading - Shear	-	-	-	-
Axial Compression Analysis	0.000 ksi	0.249 ksi	-	-
Axial Tension Analysis	0.000 ksi	1.1 ksi	-	-
Flexural Analysis, Fb1'	0.722 ksi	2.316 ksi	-	-
Flexural Analysis, Fb2'	0.000 ksi	1.551 ksi	-	-
Bending & Axial Compression Analysis	-	-	0.312	**Pass**
Bending & Axial Tension Analysis	-	-	0.312	**Pass**
Shear Analysis	0.053 ksi	0.265 ksi	0.199	**Pass**

- Foundation Piers
site stabilization walls



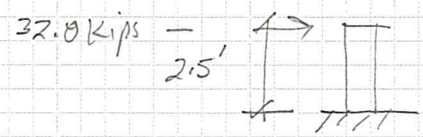


∴ ℄ to ℄ = 5'-0"



∴ M = 82,278 K'
From Shoring program
V = 32,897 Kips
(sheet F-4)

determine reinforcing
based on M = 82,278 K'
V = 32,897 Kips



32.8K x 2.5' = 82.3K' = M

BYKONEN CARTER QUINN
STRUCTURAL ENGINEERING
▶ 820 John Street #201 Seattle, WA 98109 206-264-7784 www.BCQ-SE.com

PROJECT: Vuney Shande DATE: 7/18
DESIGNER: TB SHEET #: F-1

SHORING WALL CALCULATION SUMMARY
The leading shoring design and calculation software
Software Copyright by CivilTech Software
www.civiltechsoftware.com

ShoringSuite Software is developed by CivilTech Software, Bellevue, WA, USA.
The calculation method is based on the following references:

1. FHWA 98-011, FHWA-RD-97-130, FHWA SA 96-069, FHWA-IF-99-015
2. STEEL SHEET PILING DESIGN MANUAL by Pile Buck Inc., 1987
3. DESIGN MANUAL DM-7 (NAVFAC), Department of the Navy, May 1982
4. TRENCHING AND SHORING MANUAL Revision 12, California Department of Transportation, January 2000
6. EARTH SUPPORT SYSTEM & RETAINING STRUCTURES, Pile Buck Inc. 2002
5. DESIGN OF SHEET PILE WALLS, EM 1110-2-2504, U.S. Army Corps of Engineers, 31 March 1994
7. EARTH RETENTION SYSTEMS HANDBOOK, Alan Macnab, McGraw-Hill. 2002
8. AASHTO HB-17, American Association of State and Highway Transportation Officials, 2 September 2002

UNITS: Width/Spacing/Diameter/Length/Depth - ft, Force - kip, Moment - kip-ft, Friction/Bearing/Pressure - ksf, Pres. Slope - kip/ft3, Deflection - in

---

Licensed to 4324324234 3424343
Date: 7/8/2018 File: C:\Shoring8\sample\EXP16.SH8

Title: Vaney Shinde Site Stabilization Wall
Subtitle: 24 inch diameter at 5'0" OC

**********INPUT DATA**********

Wall Type: 4. Secant/Tangent
Wall Height: 10.00
Pile Diameter: 2.00
Pile Spacing: 5.00
Factor of Safety (F.S.): 1.00
Lateral Support Type (Braces): 1. No
Top Brace Increase (Multi-Bracing): Add 15%*
Embedment Option: 1. Yes
Friction at Pile Tip: No
Pile Properties:
Allowable Fb/Fy: 0.66
Steel Strength, Fy: 60 ksi = 414 MPa
Elastic Module, E: 3.10
Moment of Inertia, I: 534.00
User Input Pile: W10X88

concrete

* DRIVING PRESSURE (ACTIVE, WATER, & SURCHARGE) *

No.	Z1 top	Top Pres.	Z2 bottom	Bottom Pres.	Slope
1	0.00	0.00	10.00	400.00	40.0000
2	10.00	400.00	100.00	4000.00	40.0000

* PASSIVE PRESSURE *

No.	Z1 top	Top Pres.	Z2 bottom	Bottom Pres.	Slope
1	10.00	0.00	30.00	8000.00	400.0000

* ACTIVE SPACE *

No.	Z depth	Spacing

1	0.00	5.00
2	10.00	2.00

* PASSIVE SPACE *

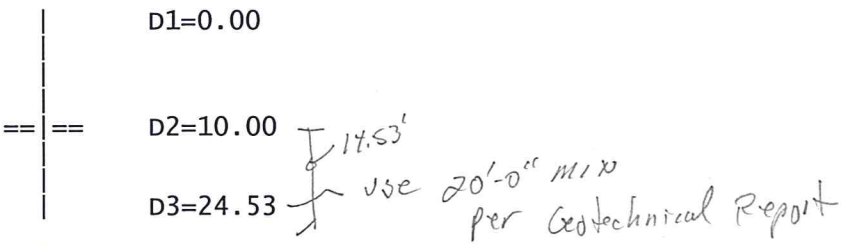
No.	Z depth	Spacing
1	10.00	2.00
2	100.00	2.00

*For Tieback: Input1 = Diameter; Input2 = Bond Stength
*For Plate: Input1 = Diameter; Input2 = Allowable Pressure
*For Deaman: Input1 = Horz. Width; Input2 = Allowable Pressure; Angle = 0

**********CALCULATION**********

The calculated moment and shear are per pile spacing. Sheet piles are per one foot or meter; Soldier piles are per pile.

Top Pressures start at depth = 0.00



D1 - TOP DEPTH
D2 - EXCAVATION BASE
D3 - PILE TIP (20% increased, see EMBEDMENT Notes below)

MOMENT BALANCE: M=0.00 AT DEPTH=22.11 WITH EMBEDMENT OF 12.11
FORCE BALANCE: F=0.00 AT DEPTH=24.53 WITH EMBEDMENT OF 14.53

The program calculates an embedment for moment equilibrium, then increase the embedment by 20% to reach force equilibrium.
A Balance Force=33291.63 is developed from depth=22.11 to depth=24.53
Total Passive Pressure = Total Active Pressure, OK!

**********RESULTS**********

* EMBEDMENT Notes *
Based on USS Design Manual, fist calculate embedment for moment equilibrium, then increased by 20 to 40 % to reach force equilibrium.
The embedment for moment equilibrium is 12.11
The 20% increased embedment for force equilibrium is 14.53 (Used by Program)
The 30% increased embedment for force equilibrium is 15.74
The 40% increased embedment for force equilibrium is 16.95

Based on AASHTO Standard Specifications, fist calculate embedment for moment equilibrium, then add safety factor of 30% for temporary shoring; add safety factor of 50% for permanent shoring.
The embedment for moment equilibrium is 12.11
Add 30% embedment for temporary shoring is 15.74
Add 50% embedment for permanent shoring is 18.16

PROGRAM CALCULATED MINIMUM EMBEDMENT = 14.53
TOTAL MINIMUM PILE LENGTH = 24.53

* MOMENT IN PILE (per pile spacing)*
Overall Maximum Moment = 82278.32 at 16.49
Maximum Shear = 32897.09
Moment and Shear are per pile spacing: 5.0 foot or meter

* VERTICAL LOADING *
Vertical Loading from Braces = 0.00
Vertical Loading from External Load = 0.00
Total Vertical Loading = 0.00

* DEFLECTION *
I (in4)/pile=534.00
Top deflection = 3833150.750(in)
Max. deflection = 3833150.750(in)

********PRESSURE, LOAD, SHEAR, MOMENT, AND DEFLECTION v.s. DEPTH**********

The shear and moment are per single soldier pile (secant/tangent pile) or one foot of sheet pile (concrete wall). The deflection is based on users input pile below:
User Input Pile: W10X88
Elastic Module, E (ksi)= 3.10
Moment of Inertia, I (in4)/pile= 534.00

PRESS. - Sum of all pressures on wall. Driving (Active) direction is positive
LOAD - Liner load (force per unit depth) = Pressures multiply by acting space

No	DEPTH ft	PRESS. ksf	LOAD kip/ft	SHEAR kip	MOMENT kip-ft	DEFLECTION in
1	0.00	0.00	0.00	0.00	0.00	3833150.750
2	0.03	1.23	6.14	0.09	0.00	3825342.000
3	0.06	2.46	12.29	0.38	0.01	3817533.500
4	0.09	3.69	18.43	0.85	0.03	3809725.000
5	0.12	4.91	24.57	1.51	0.06	3801916.500
6	0.15	6.14	30.71	2.36	0.12	3794107.750
7	0.18	7.37	36.86	3.40	0.21	3786299.250
8	0.22	8.60	43.00	4.62	0.33	3778490.750
9	0.25	9.83	49.14	6.04	0.49	3770682.250
10	0.28	11.06	55.29	7.64	0.70	3762873.500
11	0.31	12.29	61.43	9.43	0.97	3755065.000
12	0.34	13.51	67.57	11.41	1.29	3747256.500
13	0.37	14.74	73.71	13.58	1.67	3739447.750
14	0.40	15.97	79.86	15.94	2.12	3731639.250
15	0.43	17.20	86.00	18.49	2.65	3723830.750
16	0.46	18.43	92.14	21.23	3.26	3716022.250
17	0.49	19.66	98.29	24.15	3.96	3708213.500
18	0.52	20.89	104.43	27.26	4.75	3700405.000
19	0.55	22.11	110.57	30.57	5.63	3692596.500
20	0.58	23.34	116.71	34.06	6.62	3684788.000
21	0.61	24.57	122.86	37.73	7.73	3676979.250
22	0.65	25.80	129.00	41.60	8.94	3669170.750
23	0.68	27.03	135.14	45.66	10.28	3661362.250
24	0.71	28.26	141.29	49.90	11.75	3653553.500
25	0.74	29.49	147.43	54.34	13.35	3645745.000
26	0.77	30.71	153.57	58.96	15.09	3637936.500
27	0.80	31.94	159.71	63.77	16.98	3630128.000

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Project ID:
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Concrete Column

Lic. # : KW-06003456 — **Licensee : BYKONEN CARTER QUINN**

Description : Column at site stabilzation wall

Code References

Calculations per ACI 318-11, IBC 2012, CBC 2013, ASCE 7-10
Load Combinations Used : IBC 2018

General Information

f'c : Concrete 28 day strength	=	3.0 ksi
E =	=	3,122.02 ksi
Density	=	150.0 pcf
β	=	0.850
fy - Main Rebar	=	60.0 ksi
E - Main Rebar	=	29,000.0 ksi
Allow. Reinforcing Limits		*ASTM A615 Bars Used*
Min. Reinf.	=	1.0 %
Max. Reinf.	=	8.0 %

Overall Column Height = 2.5 ft
End Fixity: Top Free, Bottom Fixed

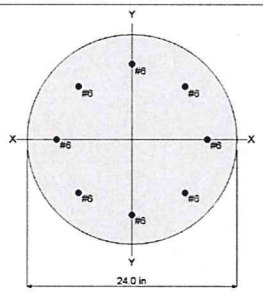
Brace condition for deflection (buckling) along columns :
X-X (width) axis :
Fully braced against buckling along X-X Axis
Y-Y (depth) axis :
Fully braced against buckling along Y-Y Axis

Column Cross Section

Column Dimensions : 24.0in Diameter, Column Edge to Rebar
Edge Cover = 3.0in

Column Reinforcing : 8 - #6 bars

w/ #4 Ties @ [9" O.C. d/2]



Applied Loads

Entered loads are factored per load combinations specified by user.

Column self weight included : 1,178.10 lbs * Dead Load Factor
BENDING LOADS . . .
Lat. Point Load at 10.0 ft creating Mx-x, L = 32.80 k

DESIGN SUMMARY

Load Combination +1.20D+0.50Lr+1.60L+1.60H
Location of max.above base 2.483 ft

Maximum Stress Ratio 0.943 : 1
Ratio = (Pu^2+Mu^2)^.5 / (PhiPn^2+PhiMn^2)^.5

Pu =	1.414 k	φ * Pn =	1.198 k
Mu-x =	-131.20 k-ft	φ * Mn-x =	139.915 k-ft
Mu-y =	0.0 k-ft	φ * Mn-y =	0.0 k-ft
Mu Angle =	180.0 deg		
Mu at Angle =	131.20 k-ft	φMn at Angle =	139.181 k-ft

Pn & Mn values located at Pu-Mu vector intersection with capacity curve

Column Capacities . . .

Pnmax : Nominal Max. Compressive Axial Capacity	1,355.82 k
Pnmin : Nominal Min. Tension Axial Capacity	k
φ Pn, max : Usable Compressive Axial Capacity	864.33 k
φ Pn, min : Usable Tension Axial Capacity	k

Maximum SERVICE Load Reactions . .

Top along Y-Y	0.0 k	Bottom along Y-Y	0.0 k
Top along X-X	0.0 k	Bottom along X-X	32.80 k

Maximum SERVICE Load Deflections . . .

Along Y-Y 0.005777 in at 2.50 ft above base
for load combination : +D+L+H

Along X-X 0.0 in at 0.0 ft above base
for load combination :

General Section Information . φ = 0.750 β = 0.850 θ = 0.850

ρ : % Reinforcing	0.7781 %	Rebar < Min of 1.0 %
Reinforcing Area	3.520 in^2	
Concrete Area	452.389 in^2	

Governing Load Combination Results

Governing Factored Load Combination	Moment X-X	Moment Y-Y	Dist. from base ft	Axial Load k Pu	φ * Pn	Bending Analysis k-ft δx	δx * Mux	δy	δy * Muy	Alpha (deg)	δ Mu	φ Mn	Utilization Ratio
+1.40D+1.60H			2.48	1.65	864.33					0.000			**0.002**
+1.20D+0.50Lr+1.60L+1.60H	Actual		2.48	1.41	1.20	1.000	-131.20			180.000	131.20	139.18	**0.943**
+1.20D+1.60L+0.50S+1.60H	Actual		2.48	1.41	1.20	1.000	-131.20			180.000	131.20	139.18	**0.943**

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Concrete Column

Lic. # : KW-06003456 **Licensee : BYKONEN CARTER QUINN**

Description : Column at site stabilzation wall

Governing Load Combination Results

Governing Factored Load Combination	Moment X-X	Moment Y-Y	Dist. from base ft	Axial Load k Pu	φ * Pn	Bending Analysis k-ft δx	δx * Mux	δy	δy * Muy	Alpha (deg)	δ Mu	φ Mn	Utilization Ratio
+1.20D+1.60Lr+0.50L+1.60H	Actual		2.48	1.41	5.30	1.000	-41.00			180.000	41.00	141.69	**0.289**
+1.20D+1.60Lr+0.50W+1.60H			2.48	1.41	864.33					0.000			**0.002**
+1.20D+0.50L+1.60S+1.60H	Actual		2.48	1.41	5.30	1.000	-41.00			180.000	41.00	141.69	**0.289**
+1.20D+1.60S+0.50W+1.60H			2.48	1.41	864.33					0.000			**0.002**
+1.20D+0.50Lr+0.50L+W+1.60H	Actual		2.48	1.41	5.30	1.000	-41.00			180.000	41.00	141.69	**0.289**
+1.20D+0.50L+0.50S+W+1.60H	Actual		2.48	1.41	5.30	1.000	-41.00			180.000	41.00	141.69	**0.289**
+1.20D+0.50L+0.70S+E+1.60H	Actual		2.48	1.41	5.30	1.000	-41.00			180.000	41.00	141.69	**0.289**
+0.90D+W+0.90H			2.48	1.06	864.33					0.000			**0.001**
+0.90D+E+0.90H			2.48	1.06	864.33					0.000			**0.001**

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction @ Base	@ Top	k	Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	My - End Moments k-ft @ Base	@ Top	Mx - End Moments @ Base	@ Top
+D+H						1.178				
+D+L+H				32.800		1.178	82.000			
+D+Lr+H						1.178				
+D+S+H						1.178				
+D+0.750Lr+0.750L+H				24.600		1.178	61.500			
+D+0.750L+0.750S+H				24.600		1.178	61.500			
+D+0.60W+H						1.178				
+D+0.70E+H						1.178				
+D+0.750Lr+0.750L+0.450W+H				24.600		1.178	61.500			
+D+0.750L+0.750S+0.450W+H				24.600		1.178	61.500			
+D+0.750L+0.750S+0.5250E+H				24.600		1.178	61.500			
+0.60D+0.60W+0.60H						0.707				
+0.60D+0.70E+0.60H						0.707				
D Only						1.178				
Lr Only										
L Only				32.800			82.000			
S Only										
W Only										
E Only										
H Only										

Maximum Moment Reactions

Note: Only non-zero reactions are listed.

Load Combination	Moment About X-X Axis @ Base	@ Top		Moment About Y-Y Axis @ Base	@ Top	
+D+H			k-ft			k-ft
+D+L+H	82.000		k-ft			k-ft
+D+Lr+H			k-ft			k-ft
+D+S+H			k-ft			k-ft
+D+0.750Lr+0.750L+H	61.500		k-ft			k-ft
+D+0.750L+0.750S+H	61.500		k-ft			k-ft
+D+0.60W+H			k-ft			k-ft
+D+0.70E+H			k-ft			k-ft
+D+0.750Lr+0.750L+0.450W+H	61.500		k-ft			k-ft
+D+0.750L+0.750S+0.450W+H	61.500		k-ft			k-ft
+D+0.750L+0.750S+0.5250E+H	61.500		k-ft			k-ft
+0.60D+0.60W+0.60H			k-ft			k-ft
+0.60D+0.70E+0.60H			k-ft			k-ft
D Only			k-ft			k-ft
Lr Only			k-ft			k-ft
L Only	82.000		k-ft			k-ft
S Only			k-ft			k-ft
W Only			k-ft			k-ft
E Only			k-ft			k-ft
H Only			k-ft			k-ft

F 7

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Concrete Column

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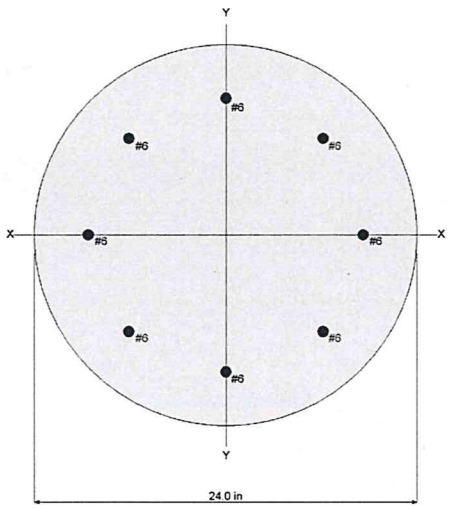
Description : Column at site stabilzation wall

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection		Distance		Max. Y-Y Deflection		Distance	
+D+H	0.0000	in	0.000	ft	0.000	in	0.000	ft
+D+L+H	0.0000	in	0.000	ft	0.006	in	2.500	ft
+D+Lr+H	0.0000	in	0.000	ft	0.000	in	0.000	ft
+D+S+H	0.0000	in	0.000	ft	0.000	in	0.000	ft
+D+0.750Lr+0.750L+H	0.0000	in	0.000	ft	0.004	in	2.500	ft
+D+0.750L+0.750S+H	0.0000	in	0.000	ft	0.004	in	2.500	ft
+D+0.60W+H	0.0000	in	0.000	ft	0.000	in	0.000	ft
+D+0.70E+H	0.0000	in	0.000	ft	0.000	in	0.000	ft
+D+0.750Lr+0.750L+0.450W+H	0.0000	in	0.000	ft	0.004	in	2.500	ft
+D+0.750L+0.750S+0.450W+H	0.0000	in	0.000	ft	0.004	in	2.500	ft
+D+0.750L+0.750S+0.5250E+H	0.0000	in	0.000	ft	0.004	in	2.500	ft
+0.60D+0.60W+0.60H	0.0000	in	0.000	ft	0.000	in	0.000	ft
+0.60D+0.70E+0.60H	0.0000	in	0.000	ft	0.000	in	0.000	ft
D Only	0.0000	in	0.000	ft	0.000	in	0.000	ft
Lr Only	0.0000	in	0.000	ft	0.000	in	0.000	ft
L Only	0.0000	in	0.000	ft	0.006	in	2.500	ft
S Only	0.0000	in	0.000	ft	0.000	in	0.000	ft
W Only	0.0000	in	0.000	ft	0.000	in	0.000	ft
E Only	0.0000	in	0.000	ft	0.000	in	0.000	ft
H Only	0.0000	in	0.000	ft	0.000	in	0.000	ft

Sketches



Interaction Diagrams

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Concrete Column

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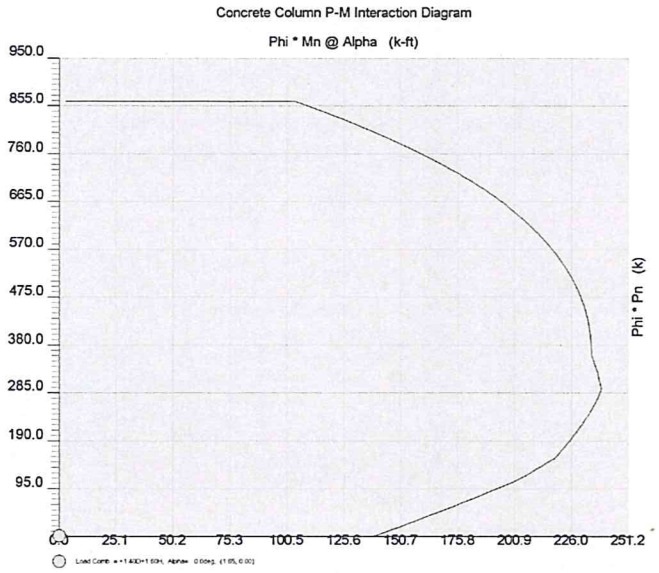
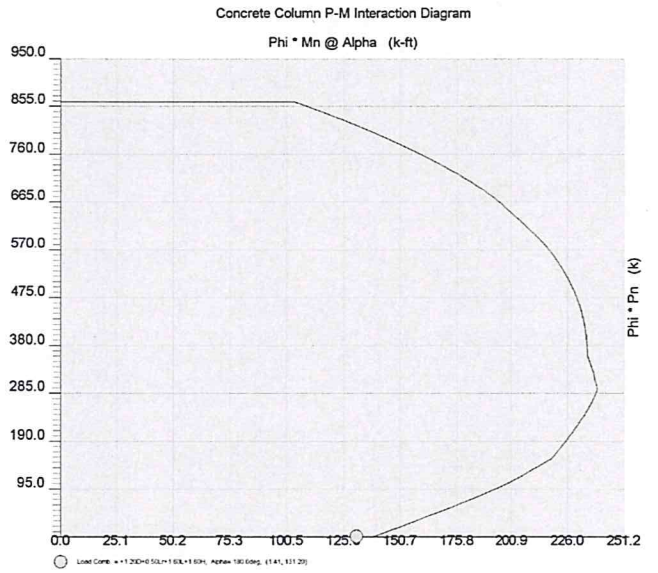
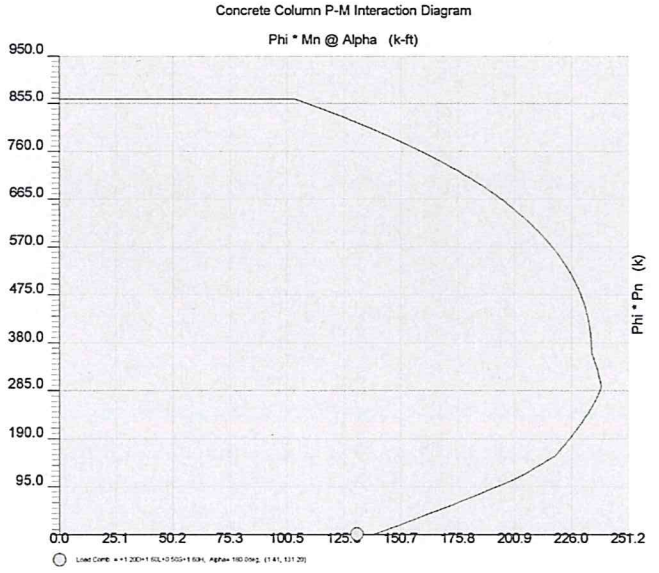
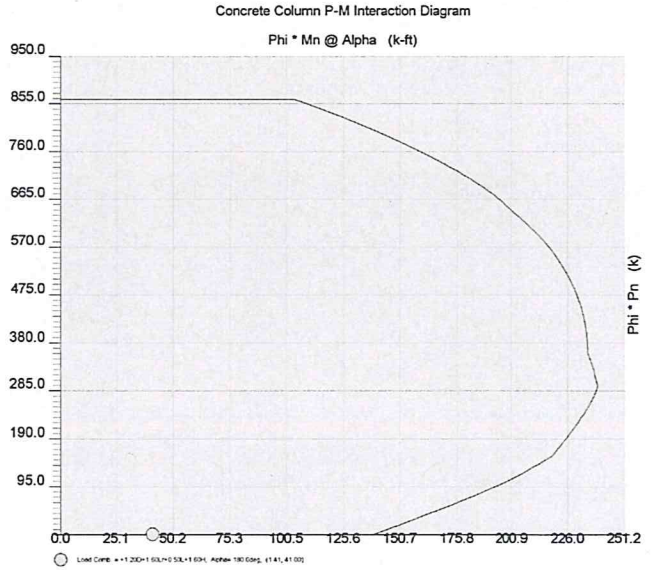
Description : Column at site stabilzation wall









F-8

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Project Title:
Engineer:
Project ID:
Project Descr:

Printed: 8 JUL 2018, 12:01PM

Concrete Column

File = P:\VANEYS~1\PILE24~1.EC6

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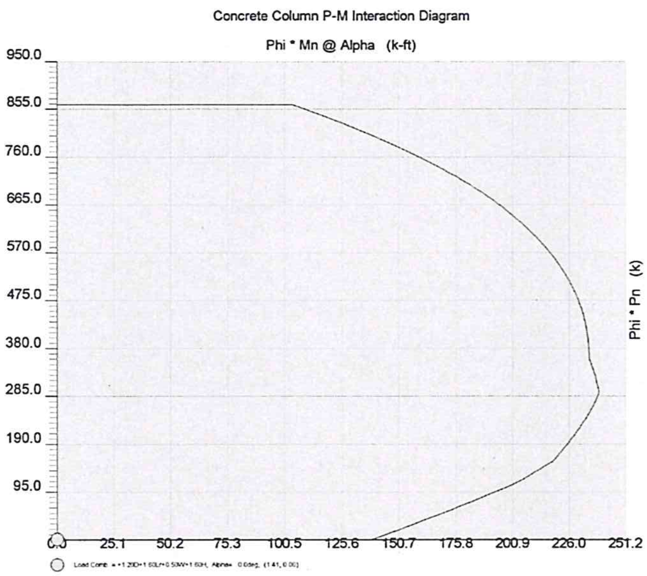
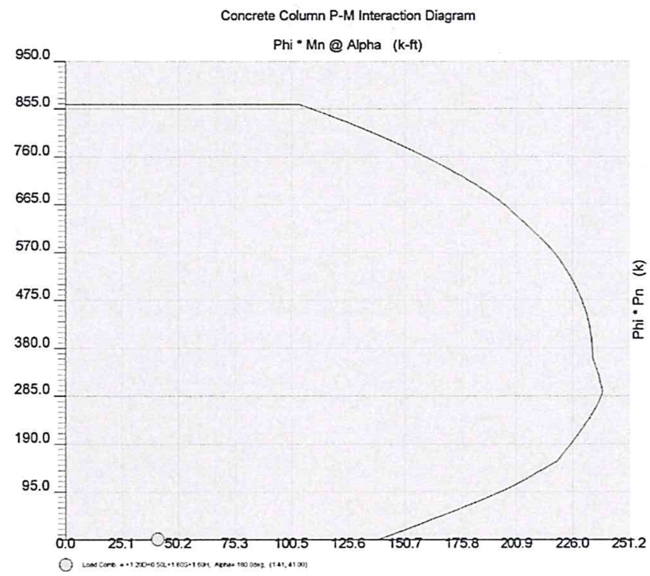
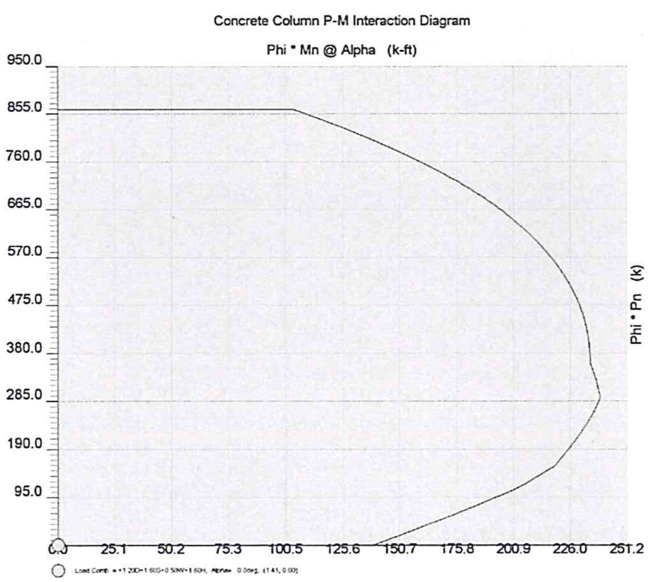
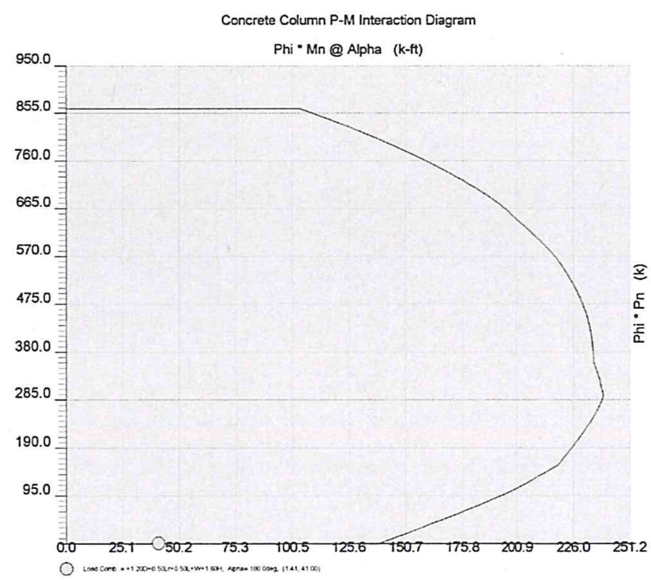
Description : Column at site stabilzation wall









F-9

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Project ID:
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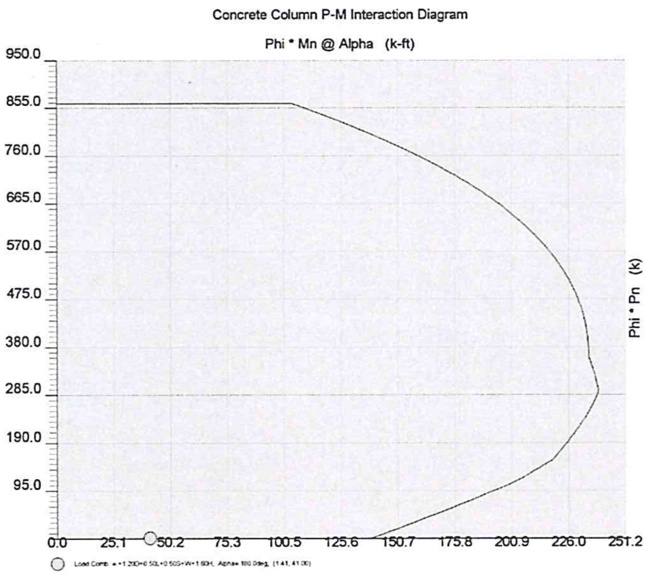
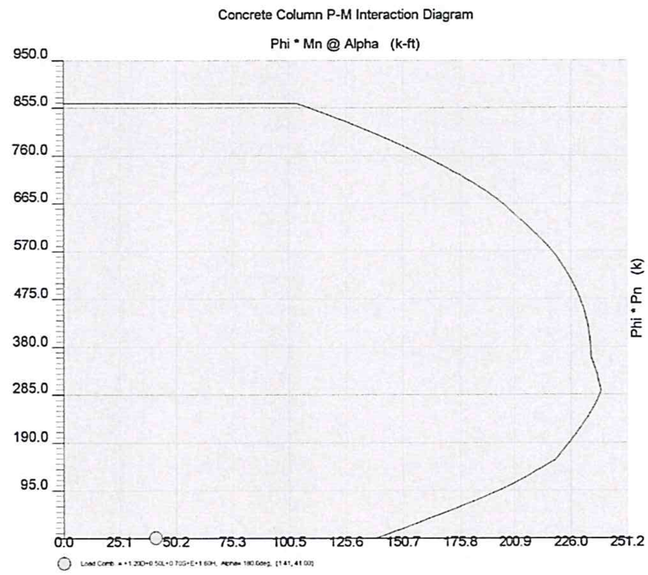
File = P:\VANEYS~1\PILE24~1.EC6

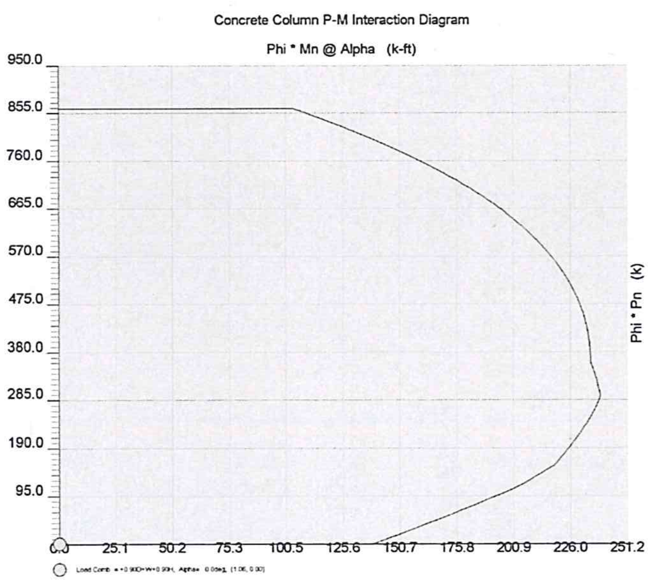
Concrete Column

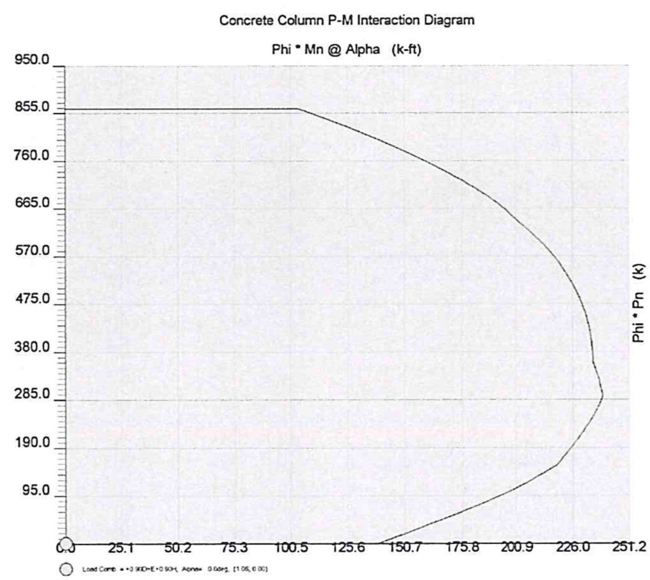
Lic. # : KW-06003456 **Licensee : BYKONEN CARTER QUINN**

Description : Column at site stabilzation wall



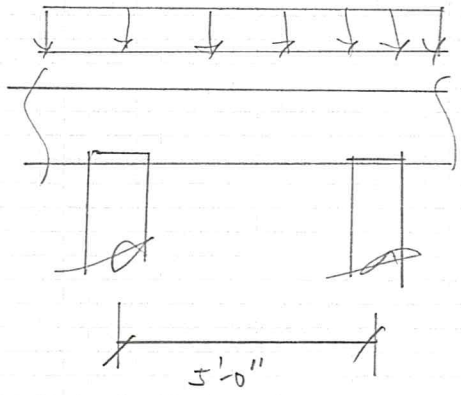






check grade beam

Vertical load

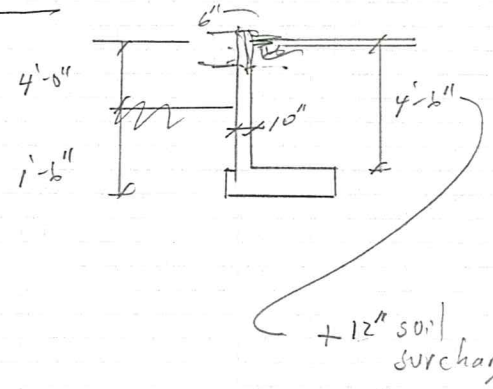


Pile capacity @
16" = 20 ton
@ 24" = say 20 tons
or 40,000 lbs/5' = 8000 lb/ft
use min reinforcement ∴ ok
@ grade beam

BYKONEN CARTER QUINN
STRUCTURAL ENGINEERING
▶ 2033 Sixth Avenue #995 Seattle, WA 98121 206-264-7784 www.BCQ-SE.com

PROJECT: Vaney Shindo DATE:
DESIGNER: TB SHEET #: F-11

Retaining Wall @ Garage



ABP = 2,500 psi

F_c = 3 ksi

EFP = 35 pcf

passive = 350 pcf

COF = 0.40

∴ design for H = 5'-6" F13-14

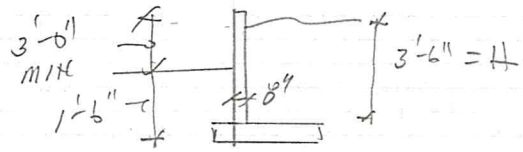
+ seismic load = 8H

w/FS for overturning & sliding @ 1.2

F15-16

---

typ retaining wall



F17-18

+ Seismic = 8H F19-20

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Cantilevered Retaining Wall

Lic. # : KW-06003456 **Licensee : BYKONEN CARTER QUINN**

Description : Retaining Wall Vaney Shinde at Garage

Calculations per ACI 318-11, ACI 530-11, IBC 2012, CBC 2013, ASCE 7-10

Criteria

Retained Height	=	5.50 ft
Wall height above soil	=	0.00 ft
Slope Behind Wall	=	0.00 : 1
Height of Soil over Toe	=	6.00 in
Water height over heel	=	0.0 ft

Vertical component of active
Lateral soil pressure options:
NOT USED for Soil Pressure.
NOT USED for Sliding Resistance.
NOT USED for Overturning Resistance.

Soil Data

Allow Soil Bearing	=	2,500.0 psf
Equivalent Fluid Pressure Method		
Heel Active Pressure	=	35.0 psf/ft
Toe Active Pressure	=	35.0 psf/ft
Passive Pressure	=	350.0 psf/ft
Soil Density, Heel	=	130.00 pcf
Soil Density, Toe	=	130.00 pcf
Friction Coeff btwn Ftg & Soil	=	0.400
Soil height to ignore for passive pressure	=	12.00 in

Design Summary

Wall Stability Ratios

Overturning	=	2.21	OK
Sliding	=	1.64	OK
Total Bearing Load	=	2,325 lbs	
...resultant ecc.	=	7.10 in	
Soil Pressure @ Toe	=	1,882 psf	OK
Soil Pressure @ Heel	=	0 psf	OK
Allowable	=	2,500 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	2,259 psf	
ACI Factored @ Heel	=	0 psf	
Footing Shear @ Toe	=	0.0 psi	OK
Footing Shear @ Heel	=	15.2 psi	OK
Allowable	=	82.2 psi	

Sliding Calcs (Vertical Component NOT Used)

Lateral Sliding Force	=	700.0 lbs	
less 100% Passive Force	= -	218.8 lbs	
less 100% Friction Force	= -	930.0 lbs	
Added Force Req'd	=	0.0 lbs	OK
....for 1.5 : 1 Stability	=	0.0 lbs	OK

Load Factors

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

Stem Construction

Top Stem

		Stem OK
Design Height Above Ftg	ft =	0.00
Wall Material Above "Ht"	=	Concrete
Thickness	in =	10.00
Rebar Size	=	# 4
Rebar Spacing	in =	18.00
Rebar Placed at	=	Edge

Design Data

fb/FB + fa/Fa	=	**0.319**
Total Force @ Section	lbs =	840.0
Moment....Actual	ft-l =	1,551.7
Moment.....Allowable	ft-l =	4,871.3
Shear.....Actual	psi =	8.5
Shear.....Allowable	psi =	82.2
Wall Weight	psf =	125.0
Rebar Depth 'd'	in =	8.25
Lap splice if above	in =	17.09
Lap splice if below	in =	17.09
Hook embed into footing	in =	17.09

Concrete Data

f'c	psi =	3,000.0
Fy	psi =	

F-13

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Cantilevered Retaining Wall

Lic. # : KW-06003456 — Licensee : BYKONEN CARTER QUINN

Description : Retaining Wall Vaney Shinde at Garage

Footing Dimensions & Strengths

Toe Width	=	0.33 ft
Heel Width	=	2.50
Total Footing Width	=	2.83
Footing Thickness	=	12.00 in
Key Width	=	12.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	2.00 ft

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

Footing Design Results

		Toe	Heel
Factored Pressure	=	2,259	0 psf
Mu' : Upward	=	118	0 ft-lb
Mu' : Downward	=	14	1,442 ft-lb
Mu: Design	=	103	1,442 ft-lb
Actual 1-Way Shear	=	0.00	15.18 psi
Allow 1-Way Shear	=	82.16	82.16 psi
Toe Reinforcing	=	# 4 @ 18.00 in	
Heel Reinforcing	=	# 4 @ 18.00 in	
Key Reinforcing	=	None Spec'd	

Other Acceptable Sizes & Spacings

Toe: Not req'd, Mu < S * Fr
Heel: Not req'd, Mu < S * Fr
Key: Not req'd, Mu < S * Fr

Summary of Overturning & Resisting Forces & Moments

Item		.....OVERTURNING..... Force lbs	Distance ft	Moment ft-lb		.....RESISTING..... Force lbs	Distance ft	Moment ft-lb
Heel Active Pressure	=	739.4	2.17	1,602.0	Soil Over Heel	=	1,191.7	2.00	2,379.4
Surcharge over Heel	=				Sloped Soil Over Heel	=			
Toe Active Pressure	=	-39.4	0.50	-19.7	Surcharge Over Heel	=			
Surcharge Over Toe	=				Adjacent Footing Load	=			
Adjacent Footing Load	=				Axial Dead Load on Stem	=			
Added Lateral Load	=				* Axial Live Load on Stem	=			
Load @ Stem Above Soil	=				Soil Over Toe	=	21.5	0.17	3.5
					Surcharge Over Toe	=			
					Stem Weight(s)	=	687.5	0.75	513.3
					Earth @ Stem Transitions	=			
Total	=	700.0	**O.T.M.** =	1,582.3	Footing Weight	=	424.5	1.42	600.7
					Key Weight	=		2.50	
					Vert. Component	=			
					Total =		2,325.1 lbs	**R.M. =**	3,496.9

Resisting/Overturning Ratio = 2.21
Vertical Loads used for Soil Pressure = 2,325.1 lbs

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

F-14

Design Maps Summary Report

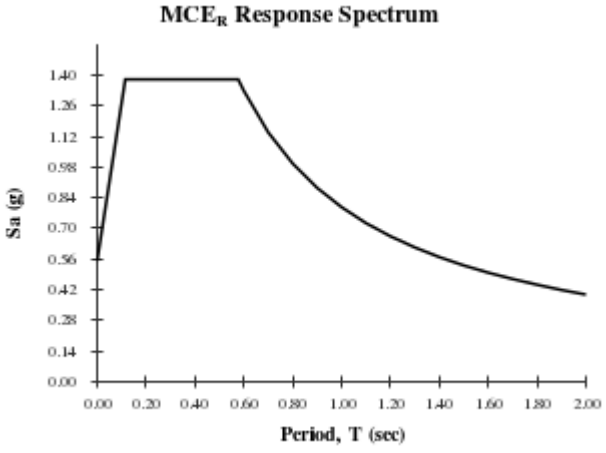
User–Specified Input

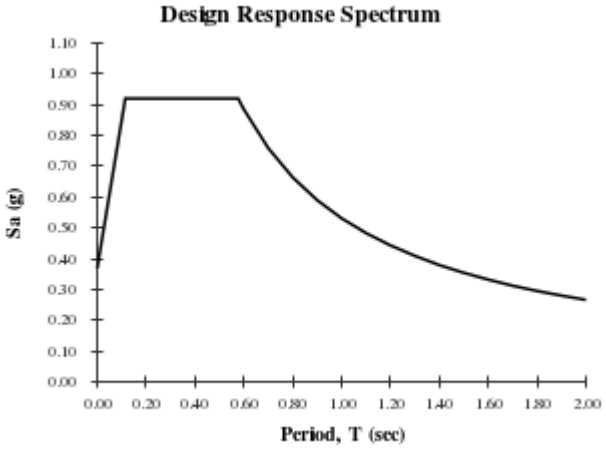
Report Title	Vaney Shinde Remodel Mon July 2, 2018 17:19:27 UTC
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	47.58475°N, 122.23491°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

USGS–Provided Output

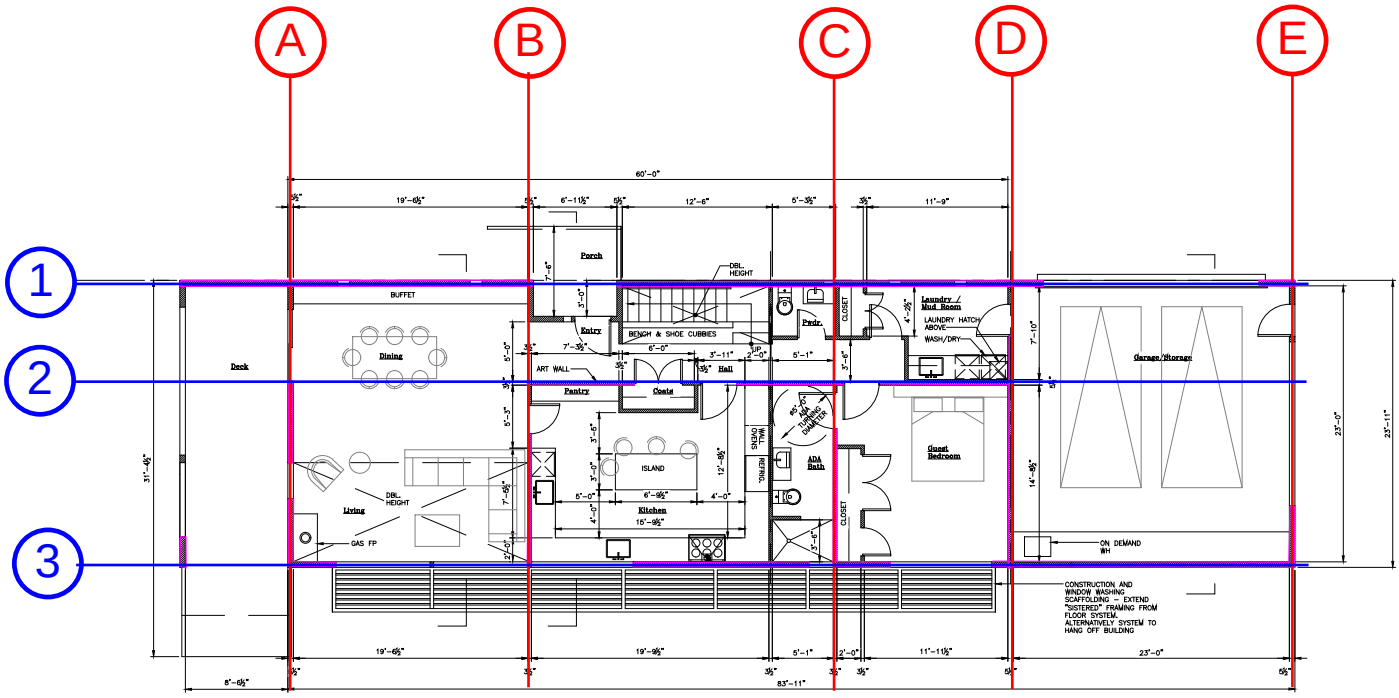
S_S =	1.380 g	S_{MS} =	1.380 g	S_{DS} =	0.920 g
S_1 =	0.531 g	S_{M1} =	0.797 g	S_{D1} =	0.531 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.


A
B
C
D
E
1
2
3
60'-0"
19'-6½"
6'-11½"
12'-6"
5'-3½"
11'-9"
Porch
DBL. HEIGHT
BUFFET
Entry
BENCH & SHOE CUBBIES
Pntr.
CLOSET
Laundry / Mud Room
LAUNDRY HATCH ABOVE
WASH/DRY
Deck
Dining
ART WALL
Hall
Pantry
Coats
Garage/Storage
ISLAND
ADA Bath
Guest Bedroom
Living
DBL. HEIGHT
GAS FP
Kitchen
16'-6½"
ON DEMAND WH
CONSTRUCTION AND WINDOW WASHING SCAFFOLDING -- EXTEND "SISTERED" FRAMING FROM FLOOR SYSTEM. ALTERNATIVELY SYSTEM TO HANG OFF BUILDING
31'-6½"
23'-0"
23'-11"
83'-11"

Vaney Shinde New - Lateral
Loads
JAJ

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MASSING

Uniform Loads (PSF)

ROOF

Misc	*Partitions*
15	6.0

Uniform Loads (PSF)

FLOORS

Misc	*Partitions*
15	12

Additional (PSF)

GARAGE ROOF

Misc	*Partitions*
25	12

SEISMIC

DESIGN PARAMETERS

Site Class =	D	S_s =	1.380	
Risk Cat. =	II	S_1 =	0.531	
S_{DS} =	0.920	f_a =	1.00	
R =	6.50	f_v =	1.50	
Cs =	0.142	k =	1.0	

ASCE 7-10 Equivalent Lateral Force Prcedure, 18.5 — **ASD**

Level	Area (SF)	Unit DL (PSF)	w (k)	h^k (ft)	(w)(h^k)	C_{vx}	F_x (k)	0.7E (k)
ROOF	1890	21.0	39.7	19.5	774	52%	8.4	5.9
UPPER	2534	27.0	74.9	9.5	711	48%	7.8	5.4
Base Shear							**16.2**	

WIND

DESIGN PARAMETERS

V (mph) =	110	**G =**	0.85	**L/B =**	2.81		**L/B =**	0.36	
Exposure Cat. =	C	**Gcpi =**	0.18	**Cp =**	*Windward Wall*	0.80	**Cp =**	*Windward Wall*	0.80
K_{zt} =	1.60	K_z=	1.04		*Leeward Wall*	-0.14		*Leeward Wall*	-0.50
K_d =	0.85	q_z=	43.8		*Side Wall*	-0.70		*Side Wall*	-0.70
Roof Slope (in/ft) =	5				*Roof*	-0.90		*Roof*	-0.90

ASCE 7-10 MWFRS Directional Procedure, 27.4-1 — **ASD**

ROOF	**h (ft)**	**Direction**	**Wall Area**	K_h	q_h	**Wall (PSF)**	**Roof (k)**	F_x (k)	**06W (k)**
HORIZONTAL PROJECTION	19.5	*PARALLEL TO WL-A*	338	1.04	43.8	34.9	0.0	11.8	7.1
		PARALLEL TO WL-1	120	1.04	43.8	48.4	0.0	5.8	3.5
UPPER	**h (ft)**	**Direction**	**Wall Area**		q_h	**Wall (PSF)**	**Roof (k)**	F_x (k)	**06W (k)**
HORIZONTAL PROJECTION	9.5	*PARALLEL TO WL-A*	882	0.98	41.3	34.6	0.0	30.5	18.3
		PARALLEL TO WL-1	234	0.98	41.3	47.3	0.0	11.1	6.6
Base Shear - Parallel to Grid A								**42.3**	
Base Shear - Parallel to Grid 1								**16.9**	

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WALL LINE A

ROOF		**WIND TRIB =**	45%		**ΣL =**	5.50									
		0.6W (k) =	3.18												
		SEISMIC TRIB =	45%												
		0.7E (k) =	2.66											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	$2/(h/L)^1$	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
1	9.4	5.5	1.70	1.00	413	484	SW 4	595	3.87	4.54	4.54	0.31	4.38	*6.48*	*16.20*
UPPER		**WIND TRIB =**	21%		**ΣL =**	11.50									
		0.6W (k) =	7.03												
		SEISMIC TRIB =	21%												
		0.7E (k) =	5.04											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	$2/(h/L)^1$	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
1	8.9	6.0	1.48	1.00	437	439	SW 3	455	3.88	3.89	3.89	0.32	3.73	*5.56*	*13.90*
1	8.9	5.5	1.61	1.00	437	439	SW 3	455	3.88	3.89	3.89	0.29	3.75	*5.56*	*13.90*

WALL LINE B

UPPER		**WIND TRIB =**	25%		**ΣL =**	10.50									
		0.6W (k) =	4.58												
		SEISMIC TRIB =	25%												
		0.7E (k) =	2.84											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	$2/(h/L)^1$	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
1	8.9	10.5	0.85	1.00	312	270	SW 3	455	2.77	2.40	2.77	0.56	2.49	*3.43*	*8.56*

WALL LINE C

ROOF		**WIND TRIB =**	46%		**ΣL =**	6.50									
		0.6W (k) =	3.25												
		SEISMIC TRIB =	46%												
		0.7E (k) =	2.72											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	$2/(h/L)^1$	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
1	9.4	6.5	1.44	1.00	357	419	SW 3	455	3.35	3.92	3.92	0.37	3.74	*5.61*	*14.01*
UPPER		**WIND TRIB =**	21%		**ΣL =**	10.50									
		0.6W (k) =	7.10												
		SEISMIC TRIB =	21%												
		0.7E (k) =	5.10											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	$2/(h/L)^1$	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
1	8.9	10.5	0.85	1.00	483	486	SW 4	595	4.29	4.31	4.31	0.56	4.03	*6.16*	*15.41*

WALL LINE D

ROOF		**WIND TRIB =**	10%		**ΣL =**	18.50									
		0.6W (k) =	0.71												
		SEISMIC TRIB =	10%												
		0.7E (k) =	0.59											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	$2/(h/L)^1$	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
1	9.4	11.5	0.82	1.00	27	32	SW 1	240	0.26	0.30	0.30	0.65	0.00	*0.43*	*1.07*
1	9.4	7.0	1.34	1.00	27	32	SW 1	240	0.26	0.30	0.30	0.39	0.10	*0.43*	*1.07*
UPPER		**WIND TRIB =**	20%		**ΣL =**	18.00									
		0.6W (k) =	4.37												
		SEISMIC TRIB =	20%												
		0.7E (k) =	2.86											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	$2/(h/L)^1$	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
1	8.9	18.0	0.49	1.00	174	159	SW 1	240	1.54	1.41	1.54	0.96	1.06	*2.02*	*5.04*

Vaney Shinde New - Lateral
GL-ABC
JAJ

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WALL LINE E

UPPER		**WIND TRIB =**	13%		**ΣL =**	5.00									
		0.6W (k) =	2.38												
		SEISMIC TRIB =	13%												
		0.7E (k) =	1.48											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
1	8.9	5.0	1.78	1.00	340	295	SW 2	355	3.02	2.62	3.02	0.27	2.89	*3.74*	*9.35*

BYKONEN CARTER QUINN STRUCTURAL ENGINEERING

WALL LINE 1

ROOF		**WIND TRIB =**	15%		**ΣL =**	32.00									
		0.6W (k) =	0.52												
		SEISMIC TRIB =	15%												
		0.7E (k) =	0.89											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
1	9.4	24.0	0.39	1.00	12	28	SW 1	240	0.11	0.26	0.26	1.35	0.00	*0.37*	*0.93*
1	9.4	8.0	1.17	1.00	12	28	SW 1	240	0.11	0.26	0.3	0.5	0.03	*0.37*	*0.93*
UPPER		**WIND TRIB =**	15%		**ΣL =**	26.50									
		0.6W (k) =	1.52												
		SEISMIC TRIB =	15%												
		0.7E (k) =	2.59											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
1	8.9	12.0	0.74	1.00	41	98	SW 1	240	0.36	0.87	0.87	0.64	0.55	*1.24*	*3.10*
1	8.9	8.5	1.04	1.00	41	98	SW 1	240	0.36	0.87	0.87	0.45	0.64	*1.24*	*3.10*
1	8.9	6.0	1.48	1.00	41	98	SW 1	240	0.36	0.87	0.87	0.32	0.71	*1.24*	*3.10*

WALL LINE 2

CLERE		**WIND TRIB =**	26%		**ΣL =**	11.00									
		0.6W (k) =	0.91												
		SEISMIC TRIB =	26%												
		0.7E (k) =	1.55											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
2	4.0	2.0	2.00	1.00	59	141	SW 1	240	0.24	0.56	0.56	0.05	0.54	*0.80*	*2.01*
ROOF		**WIND TRIB =**	43%		**ΣL =**	7.00		**Clerestory**							
		0.6W (k) =	1.50					**0.6W (k) =**	0.39						
		SEISMIC TRIB =	43%												
		0.7E (k) =	2.54					**0.7E (k) =**	0.66					*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
2	9.4	3.5	2.68	0.75	153	487	SW 4	595	1.43	6.11	3.41	0.20	3.31	*8.73*	*21.82*
UPPER		**WIND TRIB =**	43%		**ΣL =**	26.00									
		0.6W (k) =	4.36												
		SEISMIC TRIB =	43%												
		0.7E (k) =	7.42											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
2	8.9	8.0	1.11	1.00	120	286	SW 4	595	1.06	2.53	2.53	0.43	2.32	*3.62*	*9.05*
1	8.9	10.0	0.89	1.00	120	286	SW 4	595	1.06	2.53	2.53	0.53	2.27	*3.62*	*9.05*

WALL LINE 3

ROOF		**WIND TRIB =**	42%		**ΣL =**	12.00									
		0.6W (k) =	1.46												
		SEISMIC TRIB =	42%												
		0.7E (k) =	2.48											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
1	9.4	5.5	1.70	1.00	87	207	SW 1	240	0.82	1.94	1.94	0.31	1.79	*2.77*	*6.93*
1	9.4	6.5	1.44	1.00	87	207	SW 1	240	0.82	1.94	1.94	0.37	1.76	*2.77*	*6.93*
UPPER		**WIND TRIB =**	42%		**ΣL =**	29.50									
		0.6W (k) =	4.26												
		SEISMIC TRIB =	42%												
		0.7E (k) =	7.25											*Seismic*	
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)	*Ult*	*Omega*
1	8.9	14.0	0.63	1.00	103	246	SW 2	355	0.91	2.18	2.18	0.75	1.81	*3.12*	*7.79*
1	8.9	3.5	2.54	0.79	103	312	SW 2	355	0.91	3.51	2.18	0.19	2.09	*5.01*	*12.52*
1	8.9	12.0	0.74	1.00	103	246	SW 2	355	0.91	2.18	2.18	0.64	1.86	*3.12*	*7.79*