

Architect



WANNEMACHER JENSEN ARCHITECTS
815 NORTHWEST 57 AVE. SUITE 219
MIAMI, FLORIDA 33126
727-822-5566
WJARC.COM AA0002277

MECHANICAL, PLUMBING, & ELECTRICAL ENGINEERING:

Project

GARY MATZNER PARK

CLIENT

**VILLAGE OF
PINECREST**
PINECREST PARKS & RECREATION

Structural Engineer



DONNEL DUQUESNE & ALBAISA, P.E.
4930 SW 74th COURT
MIAMI, FL 33155
Date: June-23-2022
Project. No. 2210-B



AIDA M. ALBAISA
P.E. 45130

Title

STRUCTURAL CALCULATIONS
PERMIT SET

GARY MATZNER PARK



CLIENT

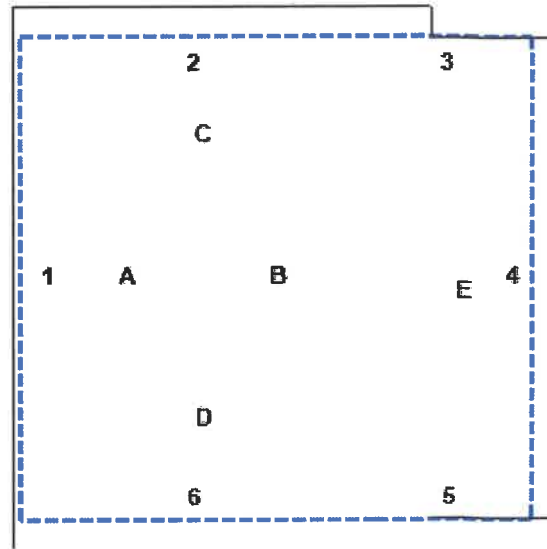
**VILLAGE OF
PINECREST**
PINECREST PARKS & RECREATION

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Title

Prepared By: yr



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These calculations are derived from various editions of the ASCE 7 Standard (ASCE 7-98, ASCE 7-02, ASCE 7-05, ASCE 7-10, ASCE 7-16, ASCE7-22) to determine the minimum wind loads and performance goals for buildings, other structures and their nonstructural components that are subject to building code requirements. While the information presented by this program is believed to be correct, SDG, Inc. neither intends for this program to replace the sound judgment of a competent professional, having knowledge and experience in the relevant field(s) of practice, nor to substitute for the standard of care required of such a professional in interpreting and applying the results of the report provided by the WLS program.

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Input

Site Information

Wind Dir.	Exposure
1	C
2	C
3	C
4	C

Basic Wind Speed: 175 mph
Topography: Flat

Optional Factors

This project uses load combinations from ASCE 7.

Structure Information

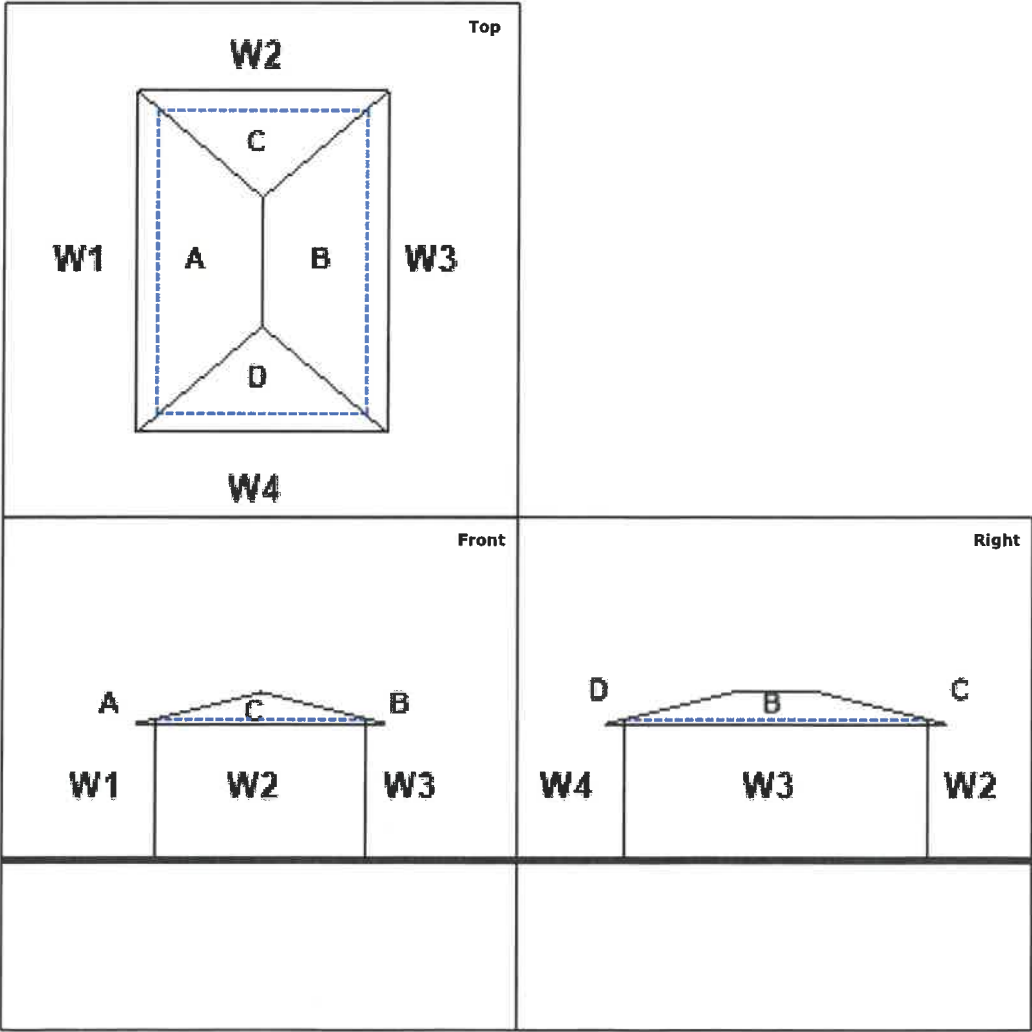
Structure Type: Building
Structure Category: II
Enclosure Classification: Enclosed

Main Section

Wall	Length (ft)	Overhang (ft)
1	40.0	2.50
2	28.0	2.50
3	40.0	2.50
4	28.0	2.50

Eave Height: 18.5 ft
Parapet Height: 0.00 ft
Parapet Enclosure: Solid
Roof Shape: Hipped

Roof	Slope (X:12)
A & B	3.00
C & D	3.00



Section 1

Connected to:Main Section

Connected to Wall:W3

Position on W3:0.00 ft

Eave Height:9.00 ft

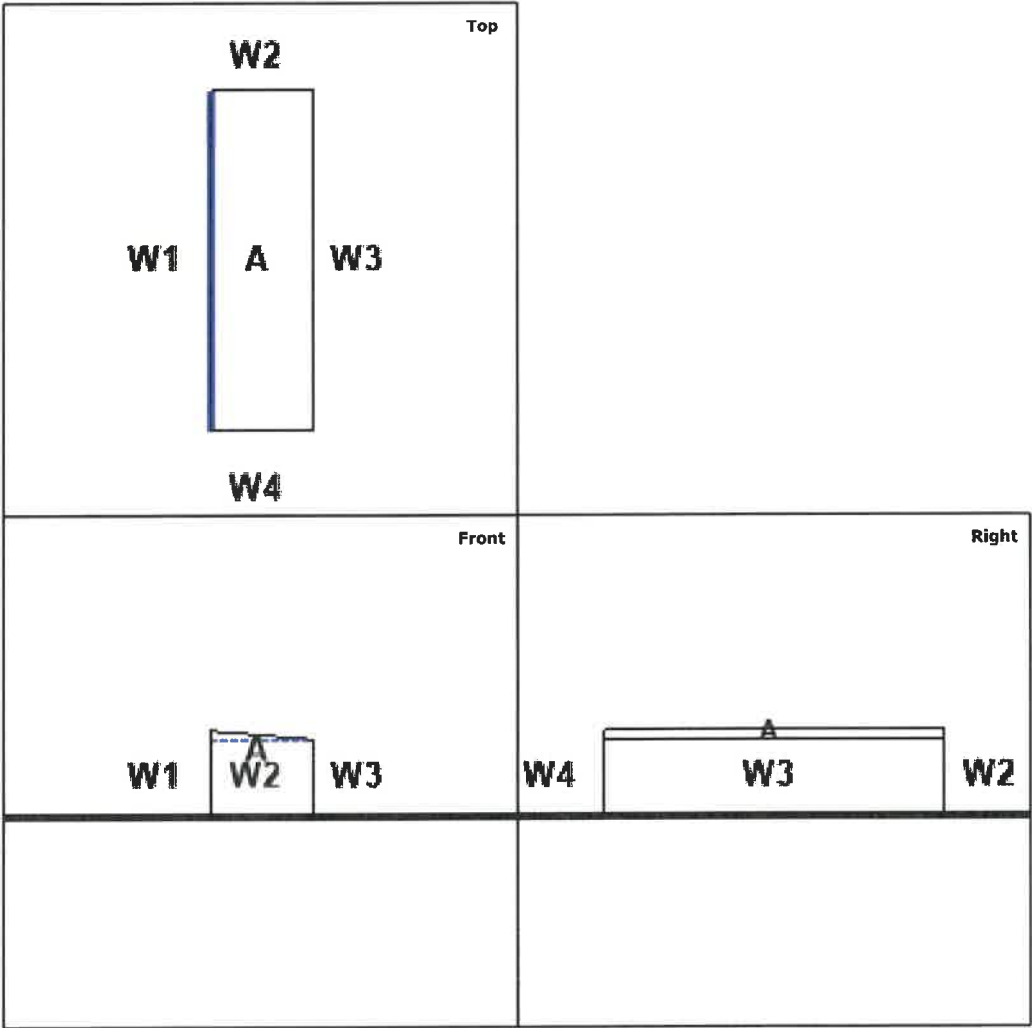
Parapet Height:0.00 ft

Parapet Enclosure:Partially Enclosed

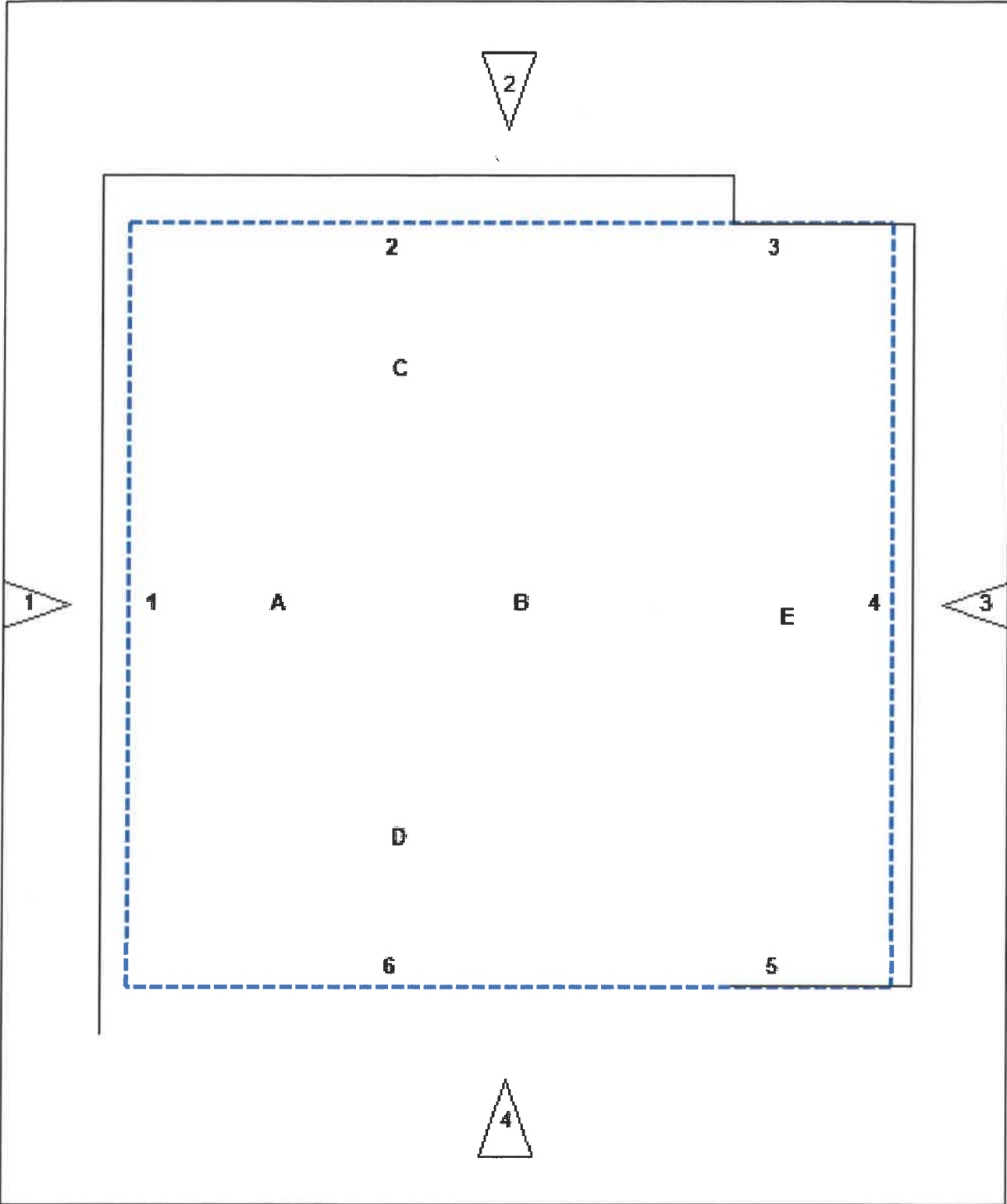
Roof Shape:Monoslope

Wall	Length (ft)	Overhang (ft)
1	40.0	0.00
2	12.0	0.00
3	40.0	0.00
4	12.0	0.00

Roof	Slope (X:12)
A	1.00



Composite Drawing



ASCE 7-22 Wind Load Report

Main Wind Force Resisting System - Wind Direction 1

September 19, 2024

This data was calculated using the building of all heights method.

#	Surface	z (ft)	q (psf)	G	Cp	GCpi	Ext Pres (psf)	Net w/ +GCpi (psf)	Net w/ -GCpi (psf)
1	Windward	9.00	66.7	0.883	0.800	0.180	40.0	29.2	50.9
		10.00	66.7				40.0	29.2	50.9
		15.0	66.7				40.0	29.2	50.9
		18.5	69.6				41.8	30.9	52.6
	Overhang Top	20.3	70.9		-0.180		-9.57		
		20.3	70.9		-0.742		-39.5		
	Overhang Bot	18.5	69.6		0.800		41.8		
2	Side	20.3	70.9	0.883	-0.700	0.180	-37.2	-48.1	-26.4
3	Side	20.3	70.9	0.883	-0.700	0.180	-37.2	-48.1	-26.4
4	Leeward	20.3	70.9	0.883	-0.500	0.180	-26.6	-37.4	-15.7
5	Side	20.3	70.9	0.883	-0.700	0.180	-37.2	-48.1	-26.4
6	Side	20.3	70.9	0.883	-0.700	0.180	-37.2	-48.1	-26.4
A	Windward Roof	20.3	70.9	0.883	-0.180	0.180	-9.57	-20.4	1.27
		20.3	70.9		-0.865		-46.0	-56.9	-35.2
B	Leeward Roof	20.3	70.9	0.883	-0.553	0.180	-29.4	-40.3	-18.6
C&D	Roof	0.00 - 10.1*	70.9	0.883	-1.01	0.180	-53.6	-64.4	-42.7
		10.1 - 20.3*	70.9		-0.811		-43.1	-54.0	-32.3
		20.3 - 28.0*	70.9		-0.589		-31.3	-42.2	-20.5
		0.00 - 28.0*	70.9		-0.180		-9.57	-20.4	1.27
E	Roof	0.00 - 10.1*	70.9	0.883	-1.14	0.180	-60.8	-71.6	-50.0
		10.1 - 12.0*	70.9		-0.700		-37.2	-48.1	-26.4
		0.00 - 12.0*	70.9		-0.180		-9.57	-20.4	1.27

This is load case 1 in ASCE 7-22 Figure 27.3-8. See Figure 27.3-8 for other cases.

* Distance from windward edge.



ASCE 7-22 Wind Load Report

Main Wind Force Resisting System - Wind Direction 2

September 19, 2024

This data was calculated using the building of all heights method.

#	Surface	z (ft)	q (psf)	G	Cp	GCpi	Ext Pres (psf)	Net w/ +GCpi (psf)	Net w/ -GCpi (psf)
1	Side	20.3	70.9	0.883	-0.700	0.180	-37.2	-48.1	-26.4
2	Windward	9.00	66.7	0.883	0.800	0.180	40.0	29.2	50.9
		10.00	66.7				40.0	29.2	50.9
		15.0	66.7				40.0	29.2	50.9
		20.0	70.7				42.4	31.6	53.3
		20.3	70.9				42.6	31.7	53.4
		22.0	72.1				43.3	32.4	54.1
	Overhang Top	20.3	70.9		-0.180		-9.57		
		20.3	70.9		-0.742		-39.5		
	Overhang Bot	18.5	69.6		0.800		41.8		
							-81 <		
3	Windward	9.00	66.7	0.883	0.800	0.180	40.0	29.2	50.9
		10.00	66.7				40.0	29.2	50.9
4	Side	20.3	70.9	0.883	-0.700	0.180	-37.2	-48.1	-26.4
5	Leeward	20.3	70.9	0.883	-0.500	0.180	-26.6	-37.4	-15.7
6	Leeward	20.3	70.9	0.883	-0.500	0.180	-26.6	-37.4	-15.7
A&B Roof		0.00 - 10.1*	70.9	0.883	-0.903	0.180	-48.0	-58.9	-37.2
		10.1 - 20.3*	70.9		-0.898		-47.7	-58.6	-36.9
		20.3 - 40.0*	70.9		-0.502		-26.7	-37.6	-15.9
		0.00 - 40.0*	70.9		-0.180		-9.57	-20.4	1.27
C	Windward Roof	20.3	70.9	0.883	-0.180	0.180	-9.57	-20.4	1.27
		20.3	70.9		-0.742		-39.5	-50.3	-28.6
D	Leeward Roof	20.3	70.9	0.883	-0.501	0.180	-26.7	-37.5	-15.8
E	Roof	0.00 - 10.1*	70.9	0.883	-0.905	0.180	-48.1	-59.0	-37.3
		10.1 - 20.3*	70.9		-0.898		-47.7	-58.6	-36.9
		20.3 - 40.0*	70.9		-0.502		-26.7	-37.6	-15.9
		0.00 - 40.0*	70.9		-0.180		-9.57	-20.4	1.27

This is load case 1 in ASCE 7-22 Figure 27.3-8. See Figure 27.3-8 for other cases.

* Distance from windward edge.

ASCE 7-22 Wind Load Report

September 19, 2024

Main Wind Force Resisting System - Wind Direction 3

This data was calculated using the building of all heights method.

#	Surface	z (ft)	q (psf)	G	Cp	GCpi	Ext Pres (psf)	Net w/ +GCpi (psf)	Net w/ -GCpi (psf)
1	Leeward	20.3	70.9	0.883	-0.500	0.180	-26.6	-37.4	-15.7
2	Side	20.3	70.9	0.883	-0.700	0.180	-37.2	-48.1	-26.4
3	Side	20.3	70.9	0.883	-0.700	0.180	-37.2	-48.1	-26.4
4	Windward	9.00	66.7	0.883	0.800	0.180	40.0	29.2	50.9
5	Side	20.3	70.9	0.883	-0.700	0.180	-37.2	-48.1	-26.4
6	Side	20.3	70.9	0.883	-0.700	0.180	-37.2	-48.1	-26.4
A	Leeward Roof	20.3	70.9	0.883	-0.553	0.180	-29.4	-40.3	-18.6
B	Windward Roof	20.3	70.9	0.883	-0.180	0.180	-9.57	-20.4	1.27
		20.3	70.9		-0.865		-46.0	-56.9	-35.2
C&D	Roof	0.00 - 10.1*	70.9	0.883	-1.01	0.180	-53.6	-64.4	-42.7
		10.1 - 20.3*	70.9		-0.811		-43.1	-54.0	-32.3
		20.3 - 28.0*	70.9		-0.589		-31.3	-42.2	-20.5
		0.00 - 28.0*	70.9		-0.180		-9.57	-20.4	1.27
E	Roof	0.00 - 10.1*	70.9	0.883	-1.14	0.180	-60.8	-71.6	-50.0
		10.1 - 12.0*	70.9		-0.700		-37.2	-48.1	-26.4
		0.00 - 12.0*	70.9		-0.180		-9.57	-20.4	1.27

This is load case 1 in ASCE 7-22 Figure 27.3-8. See Figure 27.3-8 for other cases.

* Distance from windward edge.

ASCE 7-22 Wind Load Report

Main Wind Force Resisting System - Wind Direction 4

September 19, 2024

This data was calculated using the building of all heights method.

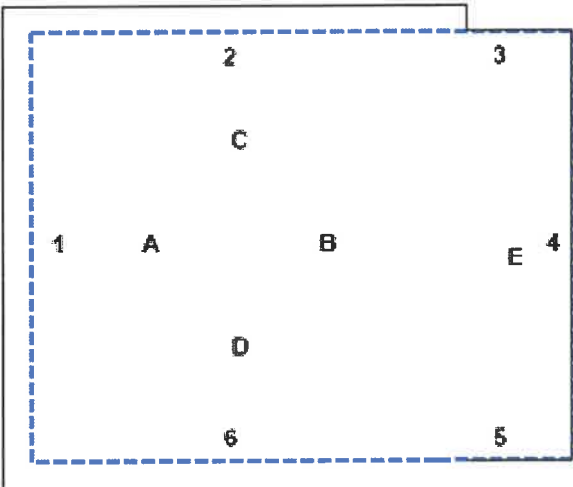
#	Surface	z (ft)	q (psf)	G	Cp	GCpi	Ext Pres (psf)	Net w/ +GCpi (psf)	Net w/ -GCpi (psf)
1	Side	20.3	70.9	0.883	-0.700	0.180	-37.2	-48.1	-26.4
2	Leeward	20.3	70.9	0.883	-0.500	0.180	-26.6	-37.4	-15.7
3	Leeward	20.3	70.9	0.883	-0.500	0.180	-26.6	-37.4	-15.7
4	Side	20.3	70.9	0.883	-0.700	0.180	-37.2	-48.1	-26.4
5	Windward	9.00	66.7	0.883	0.800	0.180	40.0	29.2	50.9
		10.00	66.7				40.0	29.2	50.9
6	Windward	9.00	66.7	0.883	0.800	0.180	40.0	29.2	50.9
		10.00	66.7				40.0	29.2	50.9
		15.0	66.7				40.0	29.2	50.9
		20.0	70.7				42.4	31.6	53.3
		20.3	70.9				42.6	31.7	53.4
		22.0	72.1				43.3	32.4	54.1
A	Leeward Roof	20.3	70.9	0.883	-0.501	0.180	-26.7	-37.5	-15.8
B	Windward Roof	20.3	70.9	0.883	-0.180	0.180	-9.57	-20.4	1.27
		20.3	70.9		-0.742		-39.5	-50.3	-28.6
C&D	Roof	0.00 - 10.1*	70.9	0.883	-0.903	0.180	-48.0	-58.9	-37.2
		10.1 - 20.3*	70.9		-0.898		-47.7	-58.6	-36.9
		20.3 - 40.0*	70.9		-0.502		-26.7	-37.6	-15.9
		0.00 - 40.0*	70.9		-0.180		-9.57	-20.4	1.27
E	Roof	0.00 - 10.1*	70.9	0.883	-0.905	0.180	-48.1	-59.0	-37.3
		10.1 - 20.3*	70.9		-0.898		-47.7	-58.6	-36.9
		20.3 - 40.0*	70.9		-0.502		-26.7	-37.6	-15.9
		0.00 - 40.0*	70.9		-0.180		-9.57	-20.4	1.27

This is load case 1 in ASCE 7-22 Figure 27.3-8. See Figure 27.3-8 for other cases.

* Distance from windward edge.

Title

Prepared By: yr



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These calculations are derived from various editions of the ASCE 7 Standard (ASCE 7-98, ASCE 7-02, ASCE 7-05, ASCE 7-10, ASCE 7-16, ASCE7-22) to determine the minimum wind loads and performance goals for buildings, other structures and their nonstructural components that are subject to building code requirements. While the information presented by this program is believed to be correct, SDG, Inc. neither intends for this program to replace the sound judgment of a competent professional, having knowledge and experience in the relevant field(s) of practice, nor to substitute for the standard of care required of such a professional in interpreting and applying the results of the report provided by the WLS program.

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Site Information

Wind Dir.	Exposure
1	C
2	C
3	C
4	C

Basic Wind Speed: 175 mph
Topography: Flat

Optional Factors

This project uses load combinations from ASCE 7.

Structure Information

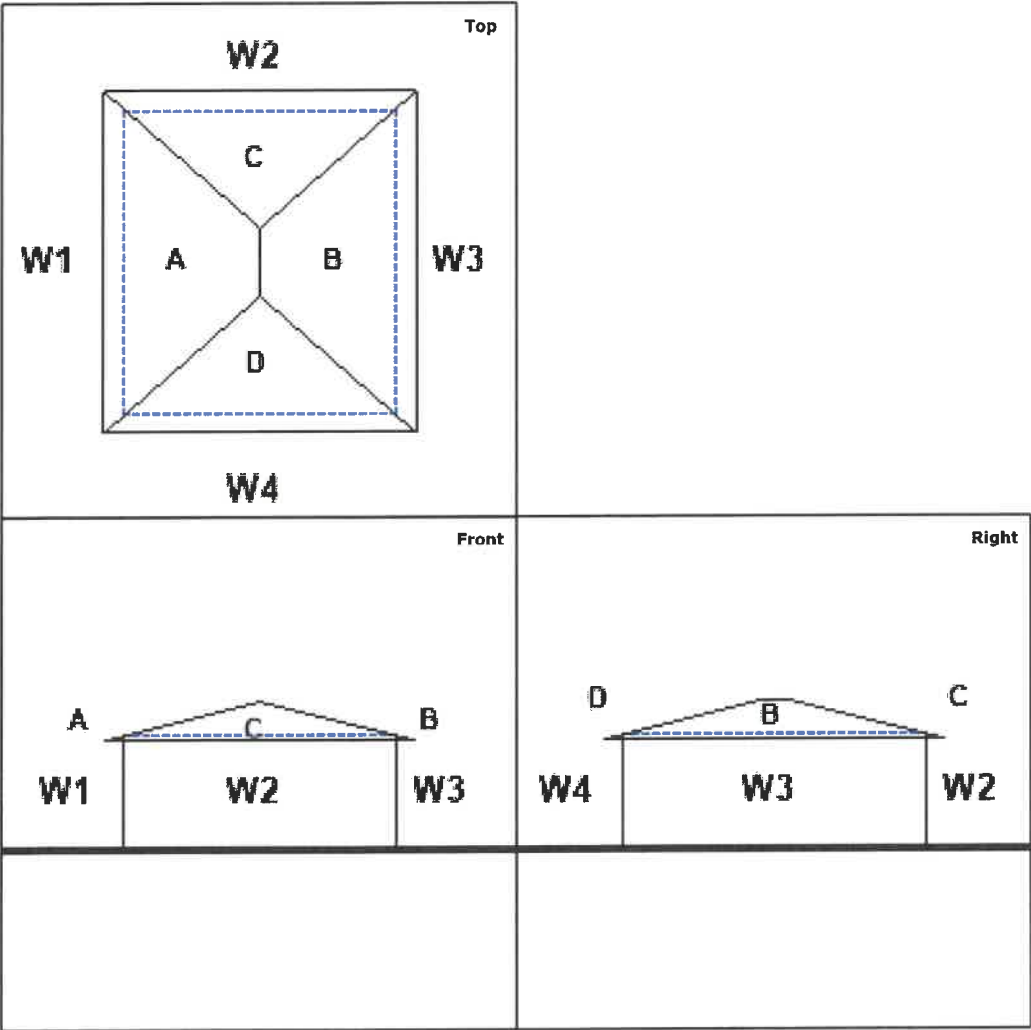
Structure Type: Building
Structure Category: II
Enclosure Classification: Enclosed

Main Section

Wall	Length (ft)	Overhang (ft)
1	40.0	2.50
2	36.0	2.50
3	40.0	2.50
4	36.0	2.50

Eave Height: 15.0 ft
Parapet Height: 0.00 ft
Parapet Enclosure: Solid
Roof Shape: Hipped

Roof	Slope (X:12)
A & B	3.00
C & D	3.00



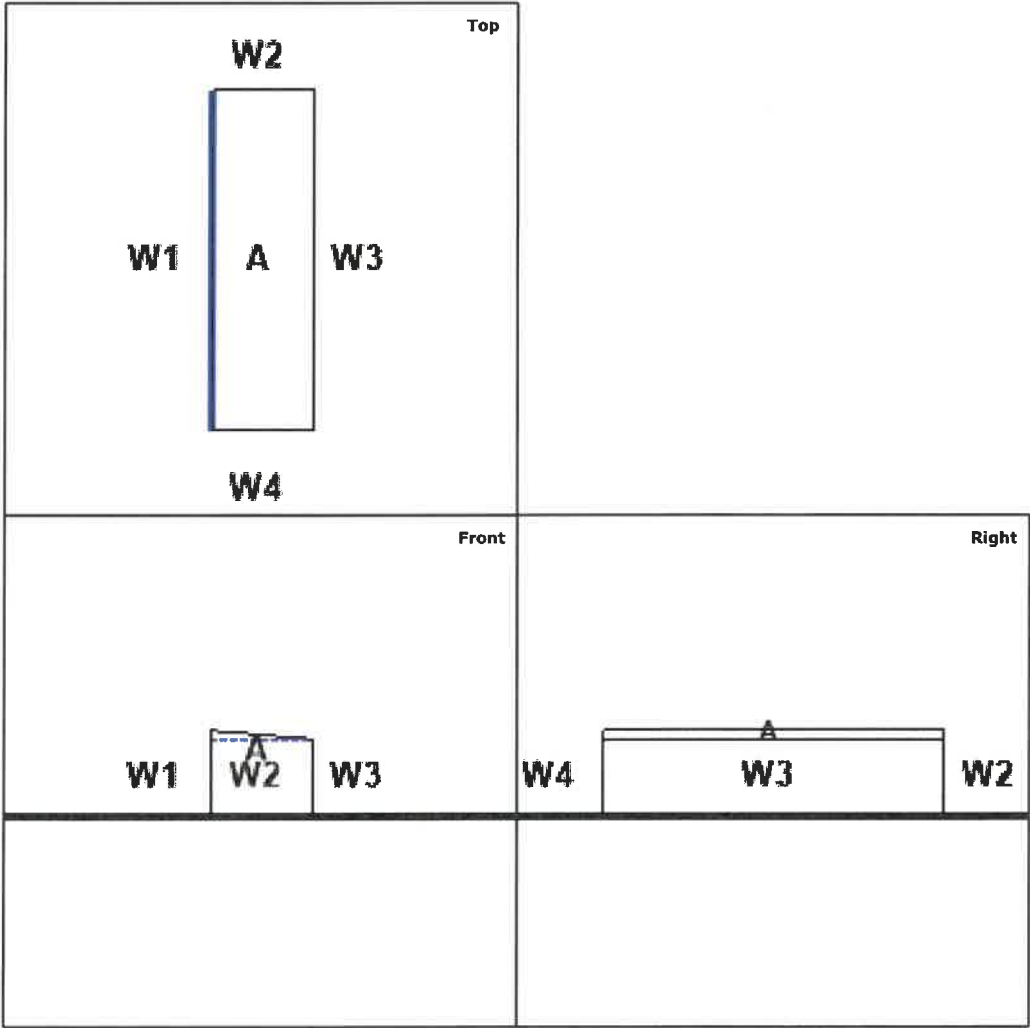
Section 1

Connected to: Main Section
Connected to Wall: W3
Position on W3: 0.00 ft

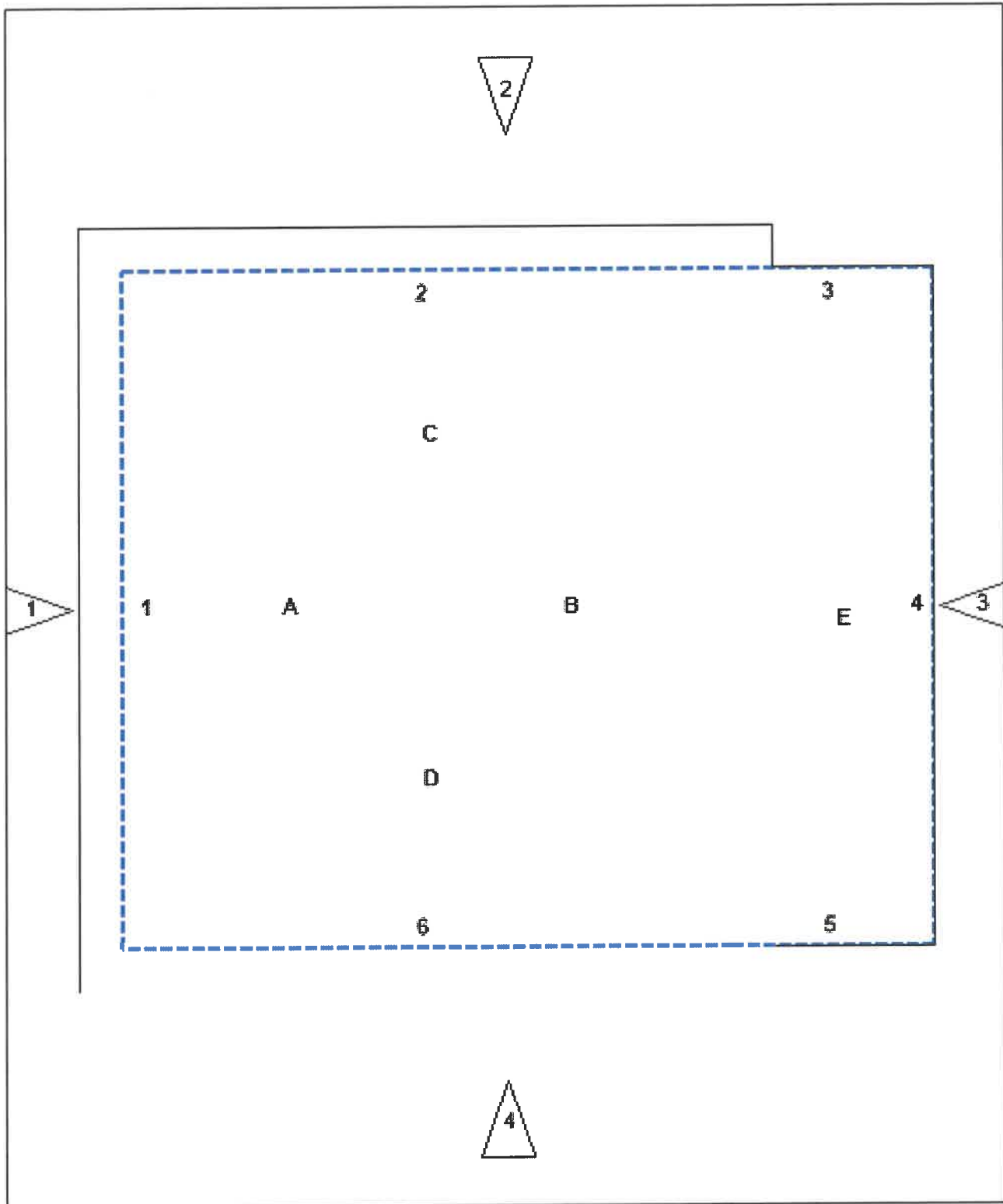
Wall	Length (ft)	Overhang (ft)
1	40.0	0.00
2	12.0	0.00
3	40.0	0.00
4	12.0	0.00

Eave Height: 9.00 ft
Parapet Height: 0.00 ft
Parapet Enclosure: Partially Enclosed
Roof Shape: Monoslope

Roof	Slope (X:12)
A	1.00



Composite Drawing



Components & Cladding

Description	Wall/Roof	Surface	Zone	Span	Width	Area
10 sq ft	Wall	1	(All)	0.00 ft	0.00 ft	10.00 ft²
25 sq ft	Wall	1	(All)	0.00 ft	0.00 ft	25.0 ft²
50 sq ft	Wall	1	(All)	0.00 ft	0.00 ft	50.0 ft²
75 sq ft	Wall	1	(All)	0.00 ft	0.00 ft	75.0 ft²
100 sq ft	Wall	1	(All)	0.00 ft	0.00 ft	100.0 ft²
250 sq ft	Wall	1	(All)	0.00 ft	0.00 ft	250 ft²
Roofing	Roof	A	(All)	0.00 ft	0.00 ft	10.00 ft²
T1	Roof	A	(All)	21.7 ft	3.50 ft	156 ft²
T2	Roof	A	(All)	21.7 ft	2.00 ft	156 ft²
T3-T4	Roof	A	(All)	5.00 ft	2.00 ft	10.00 ft²
T5	Roof	A	(All)	9.00 ft	2.00 ft	27.0 ft²
T6	Roof	A	(All)	12.0 ft	2.00 ft	48.0 ft²
T7	Roof	A	(All)	18.7 ft	3.50 ft	117 ft²
T8	Roof	A	(All)	18.7 ft	2.00 ft	117 ft²

ASCE 7-22 Wind Load Report

Components & Cladding

October 16, 2024

This data was calculated using the components and cladding method.

Component Description	Surface	Zone	z (ft)	q (psf)	GCp	GCpi	Ext Pres (psf)	Net w/ +GCpi (psf)	Net w/ -GCpi (psf)
10 sq ft	1	4	17.2	68.6	1.00	0.180	58.3	47.8	68.8
			17.2	68.6	-1.10		-64.2	-74.7	-53.7
		5	17.2	68.6	1.00		58.3	47.8	68.8
			17.2	68.6	-1.40		-81.7	-92.2	-71.2
25 sq ft	1	4	17.2	68.6	0.930	0.180	54.2	43.7	64.7
			17.2	68.6	-1.03		-60.1	-70.6	-49.6
		5	17.2	68.6	0.930		54.2	43.7	64.7
			17.2	68.6	-1.26		-73.5	-84.0	-63.0
50 sq ft	1	4	17.2	68.6	0.877	0.180	51.1	40.6	61.6
			17.2	68.6	-0.977		-57.0	-67.5	-46.5
		5	17.2	68.6	0.877		51.1	40.6	61.6
			17.2	68.6	-1.15		-67.3	-77.8	-56.8
75 sq ft	1	4	17.2	68.6	0.846	0.180	49.3	38.8	59.8
			17.2	68.6	-0.946		-55.1	-65.6	-44.7
		5	17.2	68.6	0.846		49.3	38.8	59.8
			17.2	68.6	-1.09		-63.6	-74.1	-53.1
100 sq ft	1	4	17.2	68.6	0.823	0.180	48.0	37.5	58.5
			17.2	68.6	-0.923		-53.9	-64.4	-43.4
		5	17.2	68.6	0.823		48.0	37.5	58.5
			17.2	68.6	-1.05		-61.1	-71.6	-50.6
0 sq ft	1	4	17.2	68.6	0.753	0.180	43.9	33.4	54.4
			17.2	68.6	-0.853		-49.8	-60.3	-39.3
		5	17.2	68.6	0.753		43.9	33.4	54.4
			17.2	68.6	-0.906		-52.9	-63.4	-42.4
Roofing	A	1	17.2	68.6	0.700	0.180	40.8	30.3	51.3
			17.2	68.6	-1.80		-105	-115	-94.5
			17.2	68.6	-3.60		-210		
		2	17.2	68.6	0.700	0.180	40.8	30.3	51.3
			17.2	68.6	-2.40		-140	-150	-129
			17.2	68.6	-3.60		-210		
		3	17.2	68.6	0.700	0.180	40.8	30.3	51.3
			17.2	68.6	-2.60		-152	-162	-141
T1	A	1	17.2	68.6	0.300	0.180	17.5	7.00	28.0
			17.2	68.6	-0.882		-51.5	-62.0	-41.0
			17.2	68.6	-2.29		-133		
		2	17.2	68.6	0.300	0.180	17.5	7.00	28.0
			17.2	68.6	-1.39		-81.1	-91.6	-70.6
			17.2	68.6	-2.29		-133		
		3	17.2	68.6	0.300	0.180	17.5	7.00	28.0
			17.2	68.6	-1.50		-87.4	-97.9	-76.9
			17.2	68.6	-2.29		-133		

ASCE 7-22 Wind Load Report

Components & Cladding

October 16, 2024

This data was calculated using the components and cladding method.

Component Description	Surface	Zone	z (ft)	q (psf)	GCp	GCpi	Ext Pres (psf)	Net w/ +GCpi (psf)	Net w/ -GCpi (psf)
T2	A	1	17.2	68.6	0.300	0.180	17.5	7.00	28.0
			17.2	68.6	-0.882		-51.5	-62.0 38	-41.0
			17.2	68.6	-2.29		-133		
		2	17.2	68.6	0.300	0.180	17.5	7.00 56	28.0
			17.2	68.6	-1.39		-81.1	-91.6	-70.6
			17.2	68.6	-2.29		-133		
		3	17.2	68.6	0.300	0.180	17.5	7.00 50	28.0
			17.2	68.6	-1.50		-87.4	-97.9	-76.9
			17.2	68.6	-2.29		-133		
T3-T4	A	1	17.2	68.6	0.700	0.180	40.8	30.3 69	51.3
			17.2	68.6	-1.80		-105	-115	-94.5
			17.2	68.6	-3.60		-210		
		2	17.2	68.6	0.700	0.180	40.8	30.3 90	51.3
			17.2	68.6	-2.40		-140	-150	-129
			17.2	68.6	-3.60		-210		
		3	17.2	68.6	0.700	0.180	40.8	30.3 78	51.3
			17.2	68.6	-2.60		-152	-162	-141
			17.2	68.6	-3.60		-210		
T5	A	1	17.2	68.6	0.528	0.180	30.8	20.3	41.3
			17.2	68.6	-1.47		-85.7	-96.2	-75.2
			17.2	68.6	-3.13		-182		
		2	17.2	68.6	0.528	0.180	30.8	20.3	41.3
			17.2	68.6	-2.04		-119	-129	-108
			17.2	68.6	-3.13		-182		
		3	17.2	68.6	0.528	0.180	30.8	20.3	41.3
			17.2	68.6	-2.20		-128	-139	-118
			17.2	68.6	-3.13		-182		
T6	A	1	17.2	68.6	0.428	0.180	24.9	14.4	35.4
			17.2	68.6	-1.28		-74.5	-85.0	-64.0
			17.2	68.6	-2.85		-166		
		2	17.2	68.6	0.428	0.180	24.9	14.4	35.4
			17.2	68.6	-1.82		-106	-117	-95.9
			17.2	68.6	-2.85		-166		
		3	17.2	68.6	0.428	0.180	24.9	14.4	35.4
			17.2	68.6	-1.97		-115	-126	-105
			17.2	68.6	-2.85		-166		
T7	A	1	17.2	68.6	0.300	0.180	17.5	7.00	28.0
			17.2	68.6	-0.980		-57.2	-67.7	-46.7
			17.2	68.6	-2.43		-142		
		2	17.2	68.6	0.300	0.180	17.5	7.00	28.0
			17.2	68.6	-1.50		-87.4	-97.9	-76.9
			17.2	68.6	-2.43		-142		
		3	17.2	68.6	0.300	0.180	17.5	7.00	28.0
			17.2	68.6	-1.62		-94.3	-105	-83.8
			17.2	68.6	-2.43		-142		

ASCE 7-22 Wind Load Report

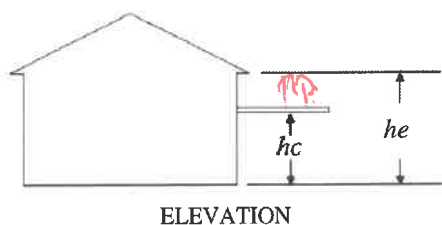
October 16, 2024

Components & Cladding

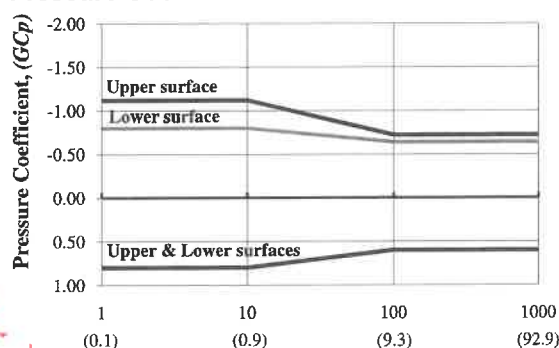
This data was calculated using the components and cladding method.

Component Description	Surface	Zone	z (ft)	q (psf)	GCp	GCpi	Ext Pres (psf)	Net w/ +GCpi (psf)	Net w/ -GCpi (psf)
T8	A	1	17.2	68.6	0.300	0.180	17.5	7.00	28.0
			17.2	68.6	-0.980		-57.2	-67.7	-46.7
			17.2	68.6	-2.43		-142		
		2	17.2	68.6	0.300	0.180	17.5	7.00	28.0
			17.2	68.6	-1.50		-87.4	-97.9	-76.9
			17.2	68.6	-2.43		-142		
		3	17.2	68.6	0.300	0.180	17.5	7.00	28.0
			17.2	68.6	-1.62		-94.3	-105	-83.8
			17.2	68.6	-2.43		-142		

Diagram



Pressure Coefficient



Notation

h_c = Mean canopy height, ft (m).

h_e = Mean eave height, ft (m).

(GC_p) = Pressure coefficients.

q_h = Velocity pressure evaluated at height $z = h$, lb/ft² (N/m²).

Notes

1. Pressures are based on the most critical values for all ratios of h_c/h_e .
2. Vertical scale denotes (GC_p) to be used with q_h .
3. Horizontal scale denotes effective wind area, ft² (m²).
4. Negative signs signify pressures acting away from the surface.

For roofing only

$q_z = 70.6$ PSF (See previous page)

$P = 70.6 \times 0.85 \times 1.2 = 72$ PSF.

Figure 30.9-1A. Pressure coefficients on separate surfaces of attached canopies on buildings with $h \leq 60$ ft ($h \leq 18.3$ m).

PART 5: NONBUILDING STRUCTURES

30.10 CIRCULAR BINS, SILOS, AND TANKS WITH $h \leq 120$ ft ($h \leq 36.6$ m)

Wind pressures on surfaces of isolated circular bins, silos, and tanks shall be calculated from Sections 30.10.1 through 30.10.5.

Grouped circular bins, silos, and tanks of similar size with center-to-center spacing greater than 2 diameters shall be treated as isolated structures. For spacings less than 1.25 diameters, the structures shall be treated as grouped and the wind pressure shall be determined from Section 30.10.6. For intermediate spacings, linear interpolation of the C_p (or C_f) values shall be used.

The steps required for the determination of wind loads for circular bins, silos, and tanks are shown in Table 30.10-1.

30.10.1 Design Wind Pressure Design wind pressure on C&C for isolated circular bins, silos, and tanks in (lb/ft²)(N/m²) shall be determined from the following equation:

$$p = q_h K_d [(GC_p) - (GC_{pi})] \quad (30.10-1)$$

where

q_h = Velocity pressure for all surfaces evaluated at mean roof height h

K_d = Wind directionality factor; see Section 26.6.

(GC_p) = External pressure coefficients given in

- Section 30.10.2 for walls
- Section 30.10.5 for underneath sides
- Section 30.10.4 for roofs

(GC_{pi}) = Internal pressure coefficient given in Table 26.13-1 and Section 30.11.3.

30.10.2 External Walls of Isolated Circular Bins, Silos, and Tanks The external pressures on the walls of circular bins, silos, and tanks shall be determined from the external pressure

Table 30.10-1. Steps to Determine C&C Wind Loads for Circular Bins, Silos, and Tanks.

Step 1: Determine risk category; see Table 1.5-1.

Step 2: Determine the basic wind speed, V , for applicable risk category; see Figure 26.5-1.

Step 3: Determine wind load parameters:

- Wind directionality factor, K_d ; see Section 26.6 and Table 26.6-1.
- Exposure Category B, C, or D; see Section 26.7.
- Topographic factor, K_{zt} ; see Section 26.8 and Figure 26.8-1.
- Ground elevation factor, K_e ; see Section 26.9 and Table 26.9-1.
- Enclosure classification; see Section 26.12.
- Internal pressure coefficient (GC_{pi}) ; see Section 26.13 and Section 30.11.3.

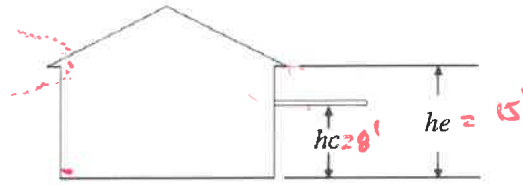
Step 4: Determine velocity pressure exposure coefficient, K_z or K_h ; see Table 26.10-1.

Step 5: Determine velocity pressure, q_h , Equation (26.10-1).

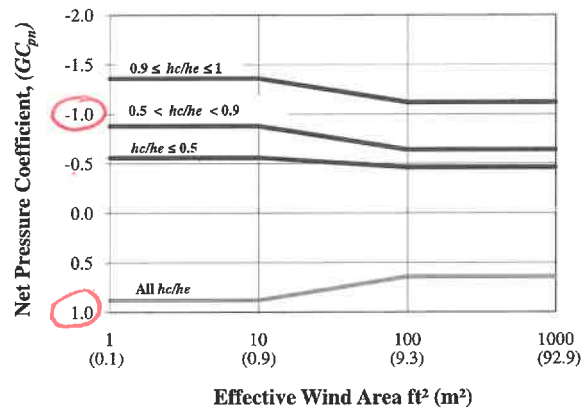
Step 6: Determine external pressure coefficient (GC_p) .

- Walls; see Sections 30.10.2 and 30.10.6.
- Roofs; see Sections 30.10.4 and 30.10.6.

Step 7: Calculate wind pressure, p , using Equation (30.10-1).

Diagram

ELEVATION

Notation h_c = Mean canopy height, ft (m). h_e = Mean eave height, ft (m). (GC_{pn}) = Net pressure coefficients. q_h = Velocity pressure evaluated at height $z = h$, lb/ft² (N/m²).**Net Pressure Coefficients****Notes**

1. Vertical scale denotes (GC_{pn}) to be used with q_h .
2. Horizontal scale denotes effective wind area, ft² (m²).
3. Negative and positive signs signify uplifting and downward pressures, respectively.
4. Each component shall be designed for maximum positive and negative pressures.
5. Use linear interpolation for intermediate values of h_c/h_e .

Figure 30.9-1B. Net pressure coefficients considering simultaneous contributions from upper and lower surfaces on attached canopies on buildings with $h \leq 60$ ft ($h \leq 18.3$ m).

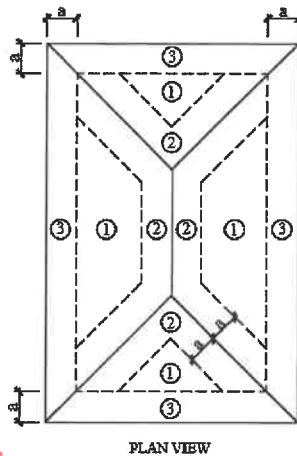
$$P = q_z \underbrace{K_d}_{0.85} \underbrace{(GC_{p_{net}})}_{\pm 1}$$

$$q_z = 0.00256 \times \underbrace{K_z}_{0.9} \times \underbrace{K_{ze}}_1 \times \cancel{K_e} \times \underbrace{V^2}_{175}$$

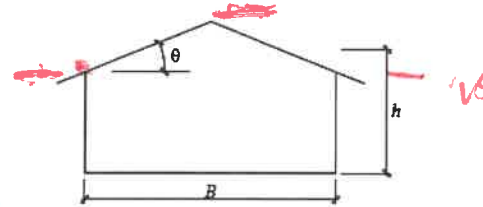
$$q_z = 70.6 \text{ PSF}$$

$$P = 70.6 \times 0.85 \times \pm 1 = \begin{matrix} +60 \\ -60 \end{matrix}$$

Diagrams



PLAN VIEW

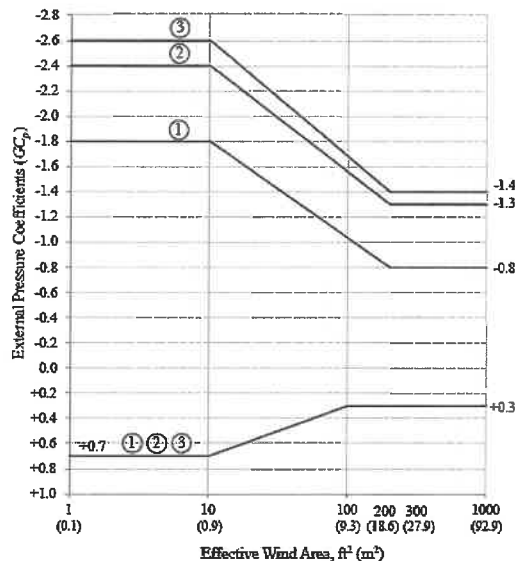


ELEVATION VIEW

Notation

- a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang dimensions.
- B = Horizontal dimension of building measured normal to wind direction, ft (m).
- h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10^\circ$. ← not apply $\theta = 13.8^\circ$
- θ = Angle of plane of roof from horizontal, degrees.

External Pressure Coefficients (GC_p)

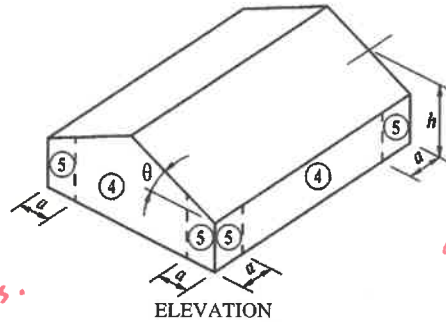


Notes

1. Vertical scale denotes (GC_p) to be used with q_h .
2. Horizontal scale denotes effective wind area A , ft² (m²).
3. Plus and minus signs signify pressures acting toward and away from the surfaces, respectively.
4. Each component shall be designed for maximum positive and negative pressures.
5. Values of (GC_p) for roof overhangs to be determined in accordance with Section 30.7 Roof Overhangs.

Figure 30.3-2E. Components and cladding [$h \leq 60$ ft ($h \leq 18.3$ m)]: external pressure coefficients, (GC_p), for enclosed and partially enclosed, and partially open buildings—hip roofs, $7^\circ < \theta \leq 20^\circ$.

Diagram



Notation

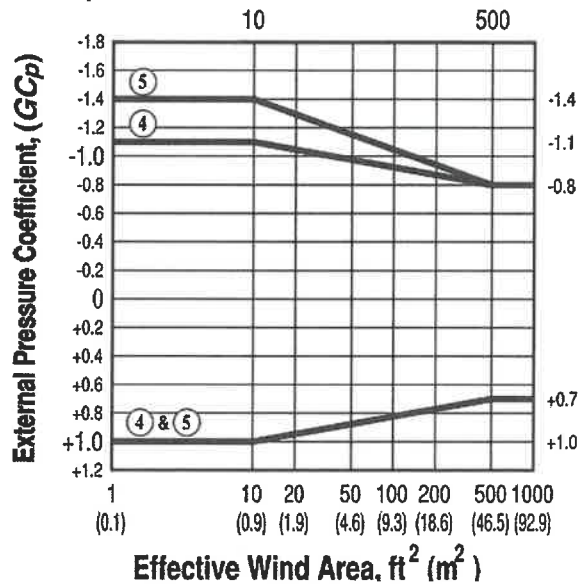
a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

Exception: For buildings with $\theta = 0^\circ$ to 7° and a least horizontal dimension greater than 300 ft (90 m), dimension a shall be limited to a maximum of $0.8h$.

h = Mean roof height, ft (m), except that eave height shall be used for $\theta \leq 10^\circ$.

θ = Angle of plane of roof from horizontal, degrees.

External Pressure Coefficient, (GC_p) - Walls



Notes

1. Vertical scale denotes (GC_p) to be used with q_h .
2. Horizontal scale denotes effective wind area A , ft^2 (m^2).
3. Plus and minus signs signify pressures acting toward and away from the surfaces, respectively.
4. Each component shall be designed for maximum positive and negative pressures.
5. Values of (GC_p) for walls shall be reduced by 10% when $\theta \leq 10^\circ$.

Figure 30.3-1. Components and cladding, $h \leq 60$ ft (18.3 m): external pressure coefficients (GC_p) for enclosed, partially enclosed, and partially open buildings—walls.

12.5.2 End Grain Factor, C_{eg}

12.5.2.1 Where lag screws are loaded in withdrawal from end grain, the reference withdrawal design values, W , shall be multiplied by the end grain factor, $C_{eg} = 0.75$.

12.5.2.2 Where dowel-type fasteners are inserted in the end grain of the main member, with the fastener axis parallel to the wood fibers, reference lateral design values, Z , shall be multiplied by the end grain factor, $C_{eg} = 0.67$.

12.5.2.3 Where dowel-type fasteners with $D \geq 1/4"$ are loaded laterally in the narrow edge of cross-laminated timber, the reference lateral design value, Z , shall be multiplied by the end grain factor, $C_{eg} = 0.67$, regardless of grain orientation.

Table 12.5.1C Edge Distance Requirements^{1,2}

Direction of Loading	Minimum Edge Distance
Parallel to Grain:	
where $l/D \leq 6$	1.5D
where $l/D > 6$	1.5D or $\frac{1}{2}$ the spacing between rows, whichever is greater
Perpendicular to Grain: ³	
loaded edge	4D
unloaded edge	1.5D

1. The l/D ratio used to determine the minimum edge distance shall be the lesser of:

- (a) length of fastener in wood main member $D = l_{m}/D$
- (b) total length of fastener in wood side member(s) $D = l_{s}/D$

2. Heavy or medium concentrated loads shall not be suspended below the neutral axis of a single sawn lumber or structural glued laminated timber beam except where mechanical or equivalent reinforcement is provided to resist tension stresses perpendicular to grain (see 3.8.2 and 11.1.3).

Table 12.5.1D Spacing Requirements Between Rows¹

Direction of Loading	Minimum Spacing
Parallel to Grain	1.5D
Perpendicular to Grain:	
where $l/D \leq 2$	2.5D
where $2 < l/D < 6$	$(5l - 10D) / 8$
where $l/D \geq 6$	5D

1. The l/D ratio used to determine the minimum edge distance shall be the lesser of:

- (a) length of fastener in wood main member $D = l_{m}/D$
- (b) total length of fastener in wood side member(s) $D = l_{s}/D$

12.5.3 Diaphragm Factor, C_{di}

Where nails or spikes are used in diaphragm construction, reference lateral design values, Z , are permitted to be multiplied by the diaphragm factor, $C_{di} = 1.1$.

12.5.4 Toe-Nail Factor, C_{tn}

12.5.4.1 Reference withdrawal design values, W , for toe-nailed connections shall be multiplied by the toe-nail factor, $C_{tn} = 0.67$. The wet service factor, C_M , shall not apply.

12.5.4.2 Reference lateral design values, Z , for toe-nailed connections shall be multiplied by the toe-nail factor, $C_{tn} = 0.83$.

Table 12.5.1E Edge and End Distance and Spacing Requirements for Lag Screws Loaded in Withdrawal and Not Loaded Laterally

Orientation	Minimum Distance/Spacing
Edge Distance	1.5D
End Distance	4D
Spacing	4D

Table 12.5.1F Perpendicular to Grain Distance Requirements for Outermost Fasteners in Structural Glued Laminated Timber Members

Fastener Type	Moisture Content		Maximum Distance Between Outer Rows
	At Time of Fabrication	In-Service	
All Fasteners	>16%	<16%	5"
	Any	>16%	5"
Bolts	<16%	<16%	10"
Lag Screws	<16%	<16%	6"
Drift Pins	<16%	<16%	6"

Table 12G BOLTS: Reference Lateral Design Values, Z , for Double Shear (three member) Connections^{1,2}

for sawn lumber or SCL main member with 1/4" ASTM A 36 steel side plates



Thickness		Bolt Diameter	G=0.67 Red Oak		G=0.55 Mixed Maple Southern Pine		G=0.50 Douglas Fir-Larch		G=0.49 Douglas Fir-Larch (N)		G=0.46 Douglas Fir(S) Hem-Fir(N)		G=0.43 Hem-Fir		G=0.42 Spruce-Pine-Fir		G=0.37 Redwood		G=0.36 Eastern Softwoods Spruce-Pine-Fir(S) Western Cedars Western Woods		G=0.35 Northern Species	
Main Member	Side Member		$Z_{ }$	$Z_{\perp}$	$Z_{ }$	$Z_{\perp}$	$Z_{ }$	$Z_{\perp}$	$Z_{ }$	$Z_{\perp}$	$Z_{ }$	$Z_{\perp}$	$Z_{ }$	$Z_{\perp}$	$Z_{ }$	$Z_{\perp}$	$Z_{ }$	$Z_{\perp}$	$Z_{ }$	$Z_{\perp}$	$Z_{ }$	$Z_{\perp}$
t_f	t_s	D	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1-1/2	1/4	1/2	1410	730	1150	550	1050	470	1030	460	970	420	900	380	880	370	780	310	760	290	730	290
		5/8	1760	810	1440	610	1310	530	1290	520	1210	470	1130	420	1100	410	970	350	950	330	910	320
		3/4	2110	890	1730	660	1580	590	1550	560	1450	520	1350	460	1320	450	1170	370	1140	360	1100	350
		7/8	2460	960	2020	720	1840	630	1800	600	1690	550	1580	500	1540	490	1360	410	1330	390	1280	370
		1	2810	1020	2310	770	2100	680	2060	650	1930	600	1800	540	1760	530	1560	440	1520	420	1460	410
1-3/4	1/4	1/2	1640	850	1350	640	1230	550	1200	530	1130	490	1050	450	1030	430	910	360	890	340	850	330
		5/8	2050	940	1680	710	1530	610	1500	600	1410	550	1310	490	1290	480	1130	400	1110	380	1070	370
		3/4	2460	1040	2020	770	1840	680	1800	660	1690	600	1580	540	1540	530	1360	430	1330	420	1280	410
		7/8	2870	1120	2350	840	2140	740	2110	700	1970	640	1840	580	1800	570	1590	470	1550	460	1490	430
		1	3280	1190	2690	890	2450	790	2410	750	2250	700	2100	630	2060	610	1820	510	1770	490	1710	470
2-1/2	1/4	1/2	1870	1210	1720	910	1650	790	1640	760	1590	700	1500	640	1470	610	1300	510	1270	490	1220	480
		5/8	2740	1340	2400	1020	2190	880	2150	860	2010	780	1880	700	1840	690	1620	580	1580	550	1520	530
		3/4	3520	1480	2880	1110	2630	980	2580	940	2410	860	2250	770	2200	750	1950	620	1900	600	1830	580
		7/8	4100	1600	3360	1200	3060	1050	3010	1010	2820	920	2630	830	2570	810	2270	680	2210	660	2130	610
		1	4690	1700	3840	1280	3500	1130	3440	1080	3220	1000	3000	900	2940	880	2590	730	2530	700	2440	680
3-1/2	1/4	1/2	1870	1240	1720	1100	1650	1030	1640	1010	1590	970	1540	890	1530	860	1450	720	1430	680	1410	670
		5/8	2740	1720	2510	1420	2410	1230	2390	1200	2330	1090	2260	980	2230	960	2110	810	2090	770	2060	740
		3/4	3800	2070	3480	1550	3340	1370	3320	1310	3220	1210	3120	1080	3080	1050	2720	870	2660	840	2560	810
		7/8	5060	2240	4630	1680	4290	1470	4210	1410	3940	1290	3680	1160	3600	1130	3180	950	3100	920	2990	860
		1	6520	2380	5380	1790	4900	1580	4810	1510	4510	1400	4200	1260	4110	1230	3630	1020	3540	980	3410	950

$$Z_{\perp} = 660 \times 2 = 1320$$

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Table 12K

LAG SCREWS: Reference Lateral Design Values, Z, for Single Shear (two member) Connections^{1,2,3,4}



for sawn lumber or SCL with ASTM A653, Grade 33 steel side plate (for $t_s < 1/4"$) or ASTM A 36 steel side plate (for $t_s = 1/4"$)

(tabulated lateral design values are calculated based on an assumed length of lag screw penetration, p , into the main member equal to $8D$)

Side Member Thickness	Lag Screw Diameter	G=0.67 Red Oak		G=0.55 Mixed Maple Southern Pine		G=0.5 Douglas Fir-Larch		G=0.49 Douglas Fir-Larch (N)		G=0.46 Douglas Fir(S) Hem-Fir(N)		G=0.43 Hem-Fir		G=0.42 Spruce-Pine-Fir		G=0.37 Redwood		G=0.36 Eastern Softwoods Spruce-Pine-Fir(S) Western Cedars Western Woods		G=0.35 Northern Species	
t_s in.	D in.	Z_{II} lbs.	Z_I lbs.	Z_{II} lbs.	Z_I lbs.	Z_{II} lbs.	Z_I lbs.	Z_{II} lbs.	Z_I lbs.	Z_{II} lbs.	Z_I lbs.	Z_{II} lbs.	Z_I lbs.	Z_{II} lbs.	Z_I lbs.	Z_{II} lbs.	Z_I lbs.	Z_{II} lbs.	Z_I lbs.	Z_{II} lbs.	Z_I lbs.
0.075 (14 gage)	1/4	170	130	160	120	150	110	150	110	150	100	140	100	140	100	130	90	130	90	130	90
	5/16	220	160	200	140	190	130	190	130	190	130	180	120	180	120	170	110	170	110	160	100
	3/8	220	160	200	140	200	130	190	130	190	120	180	120	180	120	170	110	170	100	170	100
0.105 (12 gage)	1/4	180	140	170	130	160	120	160	120	160	110	150	110	150	110	140	100	140	100	140	90
	5/16	230	170	210	150	200	140	200	140	190	130	190	130	190	120	180	110	170	110	170	110
	3/8	230	160	210	140	200	140	200	130	200	130	190	120	190	120	180	110	180	110	170	110
0.120 (11 gage)	1/4	190	150	180	130	170	120	170	120	160	120	160	110	160	110	150	100	150	100	140	100
	5/16	230	170	210	150	210	140	200	140	200	140	190	130	190	130	180	120	180	120	180	110
	3/8	240	170	220	150	210	140	210	140	200	130	200	130	190	120	180	110	180	110	180	110
0.134 (10 gage)	1/4	200	150	180	140	180	130	170	130	170	120	160	120	160	110	150	110	150	100	150	100
	5/16	240	180	220	160	210	150	210	140	200	140	200	130	200	130	190	120	180	120	180	120
	3/8	240	170	220	150	220	140	210	140	210	140	200	130	200	130	190	120	190	120	180	110
0.179 (7 gage)	1/4	220	170	210	150	200	150	200	140	190	140	190	130	190	130	180	120	170	120	170	120
	5/16	260	190	240	170	230	160	230	160	230	150	220	150	220	150	210	130	200	130	200	130
	3/8	270	190	250	170	240	160	240	160	230	150	220	140	220	140	210	130	210	130	200	130
0.239 (3 gage)	1/4	240	180	220	160	210	150	210	150	200	140	190	140	190	130	180	120	180	120	180	120
	5/16	300	220	280	190	270	180	260	180	260	170	250	160	250	160	230	150	230	150	230	140
	3/8	310	220	280	190	270	180	270	180	260	170	250	160	250	160	240	140	230	140	230	140
	7/16	420	290	390	260	380	240	370	240	360	230	350	220	350	220	330	200	330	200	320	190
	1/2	510	340	470	300	460	290	450	280	440	270	430	260	420	260	400	240	400	230	390	230
	5/8	770	490	710	430	690	400	680	400	660	380	640	370	630	360	600	330	590	330	580	320
	3/4	1110	670	1020	590	980	560	970	550	950	530	920	500	910	500	880	450	850	450	840	440
	7/8	1510	880	1390	780	1330	730	1320	710	1280	690	1250	650	1230	650	1170	590	1160	590	1140	570
	1	1940	1100	1780	960	1710	910	1700	890	1650	860	1600	820	1590	810	1500	740	1480	730	1460	710
	1 1/4	240	180	220	160	210	150	210	150	200	140	200	140	190	130	180	120	180	120	180	120
1/4	5/16	310	220	280	200	270	180	270	180	260	170	250	170	250	160	230	150	230	150	230	140
	3/8	320	220	290	190	280	180	270	180	270	170	260	160	250	160	240	150	240	140	230	140
	7/16	480	320	440	280	420	270	420	260	410	250	390	240	390	230	370	220	360	210	360	210
	1/2	580	390	540	340	520	320	510	320	500	310	480	290	480	290	460	270	450	260	440	260
	5/8	650	530	780	470	750	440	740	440	720	420	700	400	690	400	660	370	650	360	640	350
	3/4	1200	730	1100	640	1060	600	1050	590	1020	570	990	540	980	530	930	490	920	480	900	470
	7/8	1600	930	1470	820	1410	770	1400	750	1360	720	1320	690	1310	680	1240	630	1220	620	1200	600
	1	2040	1150	1870	1000	1800	950	1780	930	1730	900	1680	850	1660	840	1570	770	1550	760	1530	740

1. Tabulated lateral design values, Z , shall be multiplied by all applicable adjustment factors (see Table 11.3.1).
2. Tabulated lateral design values, Z , are for "reduced body diameter" lag screws (see Appendix Table L2) inserted in side grain with screw axis perpendicular to wood fibers; screw penetration, p , into the main member equal to $8D$; dowel bearing strengths, $F_{\perp}$, of 61,850 psi for ASTM A653, Grade 33 steel and 87,000 psi for ASTM A36 steel and screw bending yield strengths, $F_{\perp}$, of 70,000 psi for $D = 1/4"$, 60,000 psi for $D = 5/16"$, and 45,000 psi for $D \geq 3/8"$.
3. Where the lag screw penetration, p , is less than $8D$ but not less than $4D$, tabulated lateral design values, Z , shall be multiplied by $p/8D$ or lateral design values shall be calculated using the provisions of 12.3 for the reduced penetration.
4. The length of lag screw penetration, p , not including the length of the tapered tip, E (see Appendix Table L2), of the lag screw into the main member shall not be less than $4D$. See 12.1.4.6 for minimum length of penetration, p_{min} .

Table 12J LAG SCREWS: Reference Lateral Design Values (Z) for Single Shear (two member) Connections^{1,2,3,4}

for sawn lumber or SCL with both members of identical specific gravity
(tabulated lateral design values are calculated based on an assumed length of lag screw penetration, p , into the main member equal to $8D$)



Side Member Thickness t_s In.	Lag Screw Diameter D In.	G=0.43 Hem-Fir				G=0.42 Spruce-Pine-Fir				G=0.37 Redwood				G=0.36 Eastern Softwoods Spruce-Pine-Fir(S) Western Cedars Western Woods				G=0.35 Northern Species			
		$Z_{\perp}$ lbs.	$Z_{\parallel}$ lbs.	$Z_{\perp}$ lbs.	$Z_{\parallel}$ lbs.	$Z_{\perp}$ lbs.	$Z_{\parallel}$ lbs.	$Z_{\perp}$ lbs.	$Z_{\parallel}$ lbs.	$Z_{\perp}$ lbs.	$Z_{\parallel}$ lbs.	$Z_{\perp}$ lbs.	$Z_{\parallel}$ lbs.	$Z_{\perp}$ lbs.	$Z_{\parallel}$ lbs.	$Z_{\perp}$ lbs.	$Z_{\parallel}$ lbs.	$Z_{\perp}$ lbs.	$Z_{\parallel}$ lbs.	$Z_{\perp}$ lbs.	$Z_{\parallel}$ lbs.
1/2	1/4	110	80	80	70	110	80	80	70	100	70	70	60	100	70	70	60	90	70	70	60
	5/16	130	90	100	80	130	90	90	80	120	80	80	80	120	80	80	70	120	80	80	70
	3/8	140	90	100	80	130	80	90	80	120	60	90	60	120	60	80	60	120	60	80	60
5/8	1/4	120	80	90	80	110	80	90	70	110	70	80	70	100	70	80	60	100	70	70	60
	5/16	140	90	100	90	140	90	100	90	130	80	90	80	130	80	90	80	120	80	90	70
	3/8	140	90	100	80	140	90	100	80	130	80	80	70	130	70	80	70	120	70	80	70
3/4	1/4	130	90	100	80	120	80	90	80	110	80	80	70	110	70	80	70	110	70	80	70
	5/16	150	100	110	90	150	100	110	90	130	90	100	80	130	90	90	80	130	80	90	80
	3/8	150	100	110	90	150	90	110	90	140	90	100	80	130	80	90	70	130	80	90	70
1	1/4	140	100	110	90	140	100	100	90	130	90	100	80	130	80	90	80	130	80	90	70
	5/16	170	110	130	100	170	110	120	100	150	90	110	90	150	90	110	80	150	90	100	80
	3/8	170	100	120	100	170	100	120	90	150	90	110	80	150	90	110	80	150	90	100	80
1-1/4	1/4	140	110	110	100	140	100	100	100	130	100	100	90	130	90	90	90	130	90	90	80
	5/16	180	120	130	110	180	120	130	110	170	100	120	100	170	100	120	90	180	100	110	90
	3/8	190	120	130	110	180	110	130	100	170	100	120	80	170	100	120	90	170	90	110	80
1-1/2	1/4	140	110	110	100	140	100	100	100	130	100	100	90	130	90	90	90	130	90	90	80
	5/16	180	130	130	120	180	130	130	120	170	110	120	110	170	110	120	100	170	100	110	90
	3/8	190	130	130	120	180	130	130	110	170	110	120	100	170	110	120	100	170	100	110	90
	7/16	290	170	180	150	280	160	190	150	280	140	180	130	260	140	170	130	250	140	170	120
	1/2	350	190	240	180	350	190	240	170	310	170	210	150	310	160	210	150	300	160	200	140
	5/8	500	280	340	240	490	270	330	240	450	250	300	210	440	240	290	210	430	240	280	200
	3/4	700	360	450	330	690	350	440	330	630	250	400	290	620	280	390	280	610	270	380	270
	7/8	930	390	580	390	910	380	570	380	850	320	520	320	840	310	510	310	820	290	490	290
	1	1180	420	720	420	1160	410	710	410	1080	340	640	340	1070	330	630	330	1050	320	620	320
	1-3/4	140	110	110	100	140	100	100	100	130	100	100	90	130	90	90	90	130	90	90	80
	5/16	180	130	130	120	180	130	130	120	170	120	120	110	170	120	120	110	160	110	110	100
	3/8	190	130	130	120	180	130	130	110	170	120	120	100	170	120	120	100	170	110	110	100
2-1/2	1/4	140	110	110	100	140	100	100	100	130	100	100	90	130	90	90	90	130	90	90	80
	5/16	180	130	130	120	180	130	130	120	170	120	120	110	170	120	120	110	160	110	110	100
	3/8	190	130	130	120	180	130	130	110	170	120	120	100	170	120	120	100	170	110	110	100
	7/16	290	180	190	170	280	190	190	170	270	180	180	150	260	170	170	150	260	170	170	150
	1/2	360	240	240	210	360	240	240	210	340	220	220	190	340	210	220	190	330	200	210	180
	5/8	590	330	380	290	580	320	370	290	550	290	340	250	540	280	340	240	530	270	330	240
	3/4	890	430	550	380	880	420	540	370	800	380	500	320	780	370	490	320	760	360	480	310
	7/8	1130	560	730	470	1110	540	710	460	1010	490	640	420	990	480	620	410	970	470	600	390
	1	1390	680	870	580	1360	670	850	570	1240	570	760	510	1220	560	750	500	1190	530	730	490
	1-3/4	140	110	110	100	140	100	100	100	130	100	100	90	130	90	90	90	130	90	90	80
	5/16	180	130	130	120	180	130	130	120	170	120	120	110	170	120	120	110	160	110	110	100
	3/8	190	130	130	120	180	130	130	110	170	120	120	100	170	120	120	100	170	110	110	100
3-1/2	1/4	140	110	110	100	140	100	100	100	130	100	100	90	130	90	90	90	130	90	90	80
	5/16	180	130	130	120	180	130	130	120	170	120	120	110	170	120	120	110	160	110	110	100
	3/8	190	130	130	120	180	130	130	110	170	120	120	100	170	120	120	100	170	110	110	100
	7/16	290	180	190	170	290	180	190	170	270	180	190	150	260	170	170	150	260	170	170	150
	1/2	360	240	240	210	360	240	240	210	340	220	220	190	340	220	220	190	330	210	210	180
	5/8	590	380	380	320	580	370	370	320	550	340	340	290	540	330	340	290	530	320	330	280
	3/4	890	500	550	440	880	490	540	430	830	430	500	370	820	420	490	370	800	410	480	360
	7/8	1240	610	750	530	1220	600	740	520	1150	530	680	460	1140	520	670	450	1110	500	650	430
	1	1610	740	950	630	1600	720	940	620	1480	650	860	550	1450	630	850	540	1410	620	830	520
	1-3/4	140	110	110	100	140	100	100	100	130	100	100	90	130	90	90	90	130	90	90	80
	5/16	180	130	130	120	180	130	130	120	170	120	120	110	170	120	120	110	160	110	110	100
	3/8	190	130	130	120	180	130	130	110	170	120	120	100	170	120	120	100	170	110	110	100

- Tabulated lateral design values, Z , shall be multiplied by all applicable adjustment factors (see Table 11.3.1).
- Tabulated lateral design values, Z , are for "reduced body diameter" lag screws (see Appendix Table L.2) inserted in side grain with screw axis perpendicular to wood fibers; screw penetration, p , into the main member equal to $8D$; screw bending yield strengths, F_{yb} , of 70,000 psi for $D = 1/4"$, 60,000 psi for $D = 5/16"$, and 45,000 psi for $D \geq 3/8"$.
- Where the lag screw penetration, p , is less than $8D$ but not less than $4D$, tabulated lateral design values, Z , shall be multiplied by $p/8D$ or lateral design values shall be calculated using the provisions of 12.3 for the reduced penetration.
- The length of lag screw penetration, p , not including the length of the tapered tip, E (see Appendix Table L.2), of the lag screw into the main member shall not be less than $4D$. See 12.1.4.6 for minimum lengths of penetration, p_{min} .

Table 2.3.2 Frequently Used Load Duration Factors, C_D ¹

Load Duration	C_D	Typical Design Loads
Permanent	0.9	Dead Load
Ten years	1.0	Occupancy Live Load
Two months	1.15	Snow Load
Seven days	1.25	Construction Load
Ten minutes	1.6	Wind/Earthquake Load
Impact ²	2.0	Impact Load

1. Load duration factors shall not apply to reference modulus of elasticity, E , reference modulus of elasticity for beam and column stability, E_{min} , nor to reference compression perpendicular to grain design values, F_{c} , based on a deformation limit.

2. Load duration factors greater than 1.6 shall not be used in the design of structural members pressure-treated with water-borne preservatives (see Reference 30), or fire retardant chemicals. Load duration factors greater than 1.6 shall not be used in the design of connections or wood structural panels.

2.3.3 Temperature Factor, C_t

Reference design values shall be multiplied by the temperature factors, C_t , in Table 2.3.3 for structural members that will experience sustained exposure to elevated temperatures up to 150°F (see Appendix C).

2.3.4 Fire Retardant Treatment

The effects of fire retardant chemical treatment on strength shall be accounted for in the design. Adjusted design values, including adjusted connection design values, for lumber and structural glued laminated timber pressure-treated with fire retardant chemicals shall be obtained from the company providing the treatment and redrying service. Load duration factors greater than 1.6 shall not apply to structural members pressure-treated with fire retardant chemicals (see Table 2.3.2).

2.3.5 Format Conversion Factor, K_F (LRFD Only)

For LRFD, reference design values shall be multiplied by the format conversion factor, K_F , specified in Table 2.3.5. The format conversion factor, K_F , shall not apply for designs in accordance with ASD methods specified herein.

2.3.6 Resistance Factor, ϕ (LRFD Only)

For LRFD, reference design values shall be multiplied by the resistance factor, ϕ , specified in Table 2.3.6. The resistance factor, ϕ , shall not apply for designs in accordance with ASD methods specified herein.

2.3.7 Time Effect Factor, λ (LRFD Only)

For LRFD, reference design values shall be multiplied by the time effect factor, λ , specified in Appendix N.3.3. The time effect factor, λ , shall not apply for designs in accordance with ASD methods specified herein.

Table 2.3.3 Temperature Factor, C_t

Reference Design Values	In-Service Moisture Conditions ¹	C_t		
		$T \leq 100^\circ\text{F}$	$100^\circ\text{F} < T \leq 125^\circ\text{F}$	$125^\circ\text{F} < T \leq 150^\circ\text{F}$
F_c , E , E_{min}	Wet or Dry	1.0	0.9	0.9
F_b , F_v , F_c , and F_{c1}	Dry	1.0	0.8	0.7
	Wet	1.0	0.7	0.5

1. Wet and dry service conditions for sawn lumber, structural glued laminated timber, prefabricated wood I-joists, structural composite lumber, wood structural panels and cross-laminated timber are specified in 4.1.4, 5.1.4, 7.1.4, 8.1.4, 9.3.3, and 10.1.5 respectively.

Table N1 Format Conversion Factor, K_f (LRFD Only)

Application	Property	K_f
Member	F_b	2.54
	F_t	2.70
	F_c, F_n, F_s	2.88
	F_{ex}	2.40
	F_{ey}	1.67
	E_{min}	1.76
All Connections	(all design values)	3.32

N.3.2 Resistance Factor, ϕ (LRFD Only)

Reference design values shall be multiplied by the resistance factor, ϕ , as specified in Table N2 (see Reference 55).

Table N2 Resistance Factor, ϕ (LRFD Only)

Application	Property	Symbol	Value
Member	F_b	ϕ_b	0.85
	F_t	ϕ_t	0.80
	F_c, F_n, F_s	ϕ_c	0.75
	F_{ex}, F_{ey}	ϕ_c	0.90
	E_{min}	ϕ_c	0.85
All Connections	(all design values)	ϕ_c	0.65

N.3.3 Time Effect Factor, λ (LRFD Only)

Reference design values shall be multiplied by the time effect factor, λ , as specified in Table N3.

Table N3 Time Effect Factor, λ (LRFD Only)

Load Combination ²	λ
1.4D	0.6
1.2D + 1.6L + 0.5(L _r or S or R)	0.7 when L is from storage 0.8 when L is from occupancy 1.25 when L is from impact ¹
1.2D + 1.6(L _r or S or R) + (L or 0.5W)	0.8
1.2D + 1.0W + L + 0.5(L _r or S or R)	1.0
1.2D + 1.0E + L + 0.2S	1.0
0.9D + 1.0W	1.0
0.9D + 1.0E	1.0

1. Time effect factors, λ , greater than 1.0 shall not apply to connections or to structural members pressure-treated with water-borne preservatives (see Reference 30) or fire retardant chemicals.

2. Load combinations and load factors consistent with ASCE 7-16 are listed for ease of reference. Nominal loads shall be in accordance with N.1.2. D = dead load; L = live load; L_r = roof live load; S = snow load; R = rain load; W = wind load; and E = earthquake load.

9.3 Adjustment of Reference Design Values

9.3.1 General

Reference design values shall be multiplied by the adjustment factors specified in Table 9.3.1 to determine adjusted design values.

9.3.2 Load Duration Factor, C_D (ASD Only)

All reference strength design values ($F_b S$, $F_t A$, $F_v t_v$, $F_s(\text{lb}/Q)$, $F_c A$) shall be multiplied by load duration factors, C_D , as specified in 2.3.2.

9.3.3 Wet Service Factor, C_M , and Temperature Factor, C_t

Reference design values for wood structural panels are applicable to dry service conditions as specified in 9.1.4 where $C_M = 1.0$ and $C_t = 1.0$. When the service conditions differ from the specified conditions, adjustments for high moisture and/or high temperature shall be based on information from an approved source.

Table 9.3.1 Applicability of Adjustment Factors for Wood Structural Panels

		ASD only	ASD and LRFD				LRFD only		
		Load Duration Factor	Wet Service Factor	Temperature Factor	Panel Size Factor	Format Conversion Factor	Resistance Factor	Time Effect Factor	
						K _F	φ		
$F_b S' = F_b S$	x	C _D	C _M	C _t	C _s	2.54	0.85	λ	
$F_t A' = F_t A$	x	C _D	C _M	C _t	C _s	2.70	0.80	λ	
$F_v t_v' = F_v t_v$	x	C _D	C _M	C _t	-	2.88	0.75	λ	
$F_s(\text{lb}/Q)' = F_s(\text{lb}/Q)$	x	C _D	C _M	C _t	-	2.88	0.75	λ	
$F_c A' = F_c A$	x	C _D	C _M	C _t	-	2.40	0.90	λ	
$F_{cl}' = F_{cl}$	x	-	C _M	C _t	-	1.67	0.90	-	
$EI' = EI$	x	-	C _M	C _t	-	-	-	-	
$EA' = EA$	x	-	C _M	C _t	-	-	-	-	
$G_v t_v' = G_v t_v$	x	-	C _M	C _t	-	-	-	-	

ASD Method

From Table 6.5,

$$C_D = 1.00$$

From Ex. 6.11, the allowable tension capacity of the members is

$$\begin{aligned} T &= F'_t A_n \\ &= F'_t \left(A - \left(D + \frac{1}{16} \right) b \right) \\ &= \left(1300 \frac{\text{lbf}}{\text{in}^2} \right) \left(8.25 \text{ in}^2 - \left(\frac{3}{4} \text{ in} + \frac{1}{16} \text{ in} \right) (1.5 \text{ in}) \right) \\ &= 9140 \text{ lbf} \end{aligned}$$

The allowable capacity for eight bolts is

$$\begin{aligned} T &= n Z_{\parallel} C_M C_g C_{\Delta} C_D C_t \\ &= (8)(720 \text{ lbf})(0.7)(0.71)(0.76)(1.00)(1.0) \\ &= 2176 \text{ lbf} \quad [\text{governs}] \end{aligned}$$

LRFD Method

From Table 6.4, for dead load plus occupancy live load, λ is 0.8. From Ex. 6.11, the strength capacity of the members in tension is

$$\begin{aligned} T &= F'_t A_n \\ &= F'_t \left(A - \left(D + \frac{1}{16} \right) b \right) \\ &= \left(2246 \frac{\text{lbf}}{\text{in}^2} \right) \left(8.25 \text{ in}^2 - \left(\frac{3}{4} \text{ in} + \frac{1}{16} \text{ in} \right) (1.5 \text{ in}) \right) \\ &= 15,791 \text{ lbf} \end{aligned}$$

The strength lateral capacity for eight bolts is

$$\begin{aligned} T &= n Z_{\parallel} C_M C_g C_{\Delta} C_t K_F \lambda \phi \\ &= (8)(720 \text{ lbf})(0.7)(0.71)(0.76)(1.0)(3.32)(0.8)(0.65) \\ &= 3756 \text{ lbf} \quad [\text{governs}] \end{aligned}$$

Bolted Connections

Installation Requirements

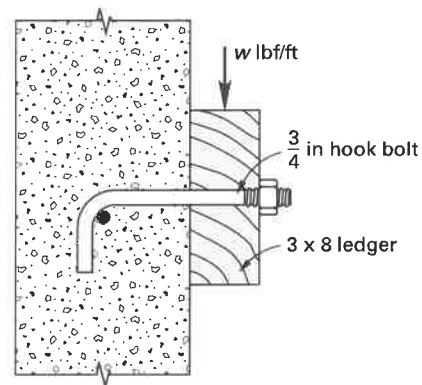
In accordance with NDS Sec. 12.1.3, bolt holes must be $\frac{1}{32}$ in to $\frac{1}{16}$ in larger than the bolt diameter, and a metal washer or plate is required between the wood and the nut and bolt head. To ensure that the full design values of bolts are attained, spacing and edge and end distances are specified in NDS Sec. 12.5 and are illustrated in Fig. 6.8.

Single Shear Connection

Reference design values for single shear connections are specified in NDS Sec. 12.3 and are tabulated in NDS Table 12A for two sawn lumber members of identical species, in NDS Table 12.B for a sawn lumber member with a steel side plate, in NDS Table 12.C for a glued laminated member with sawn lumber side member, in NDS Table 12D for a glued laminated member with a steel side plate, and in NDS Table 12.E for connections to concrete.

Example 6.13

A 3×8 select structural Douglas fir-larch ledger attached to a concrete wall with $\frac{3}{4}$ in hook bolts at 4 ft centers is shown. What is the maximum dead load plus occupancy live load that the ledger can support?



Solution

The applicable adjustment factors are

$$C_M = C_g = C_t = 1.0$$

From NDS Table 12E, the reference lateral design value of a $\frac{3}{4}$ in diameter bolt in a $2\frac{1}{2}$ in thick member loaded perpendicular to the grain and attached to a concrete wall is

$$Z_{\perp} = 800 \text{ lbf}$$

From NDS Table 12.5.1C, the minimum edge distance for the full bolt design value, for loading perpendicular to grain, is

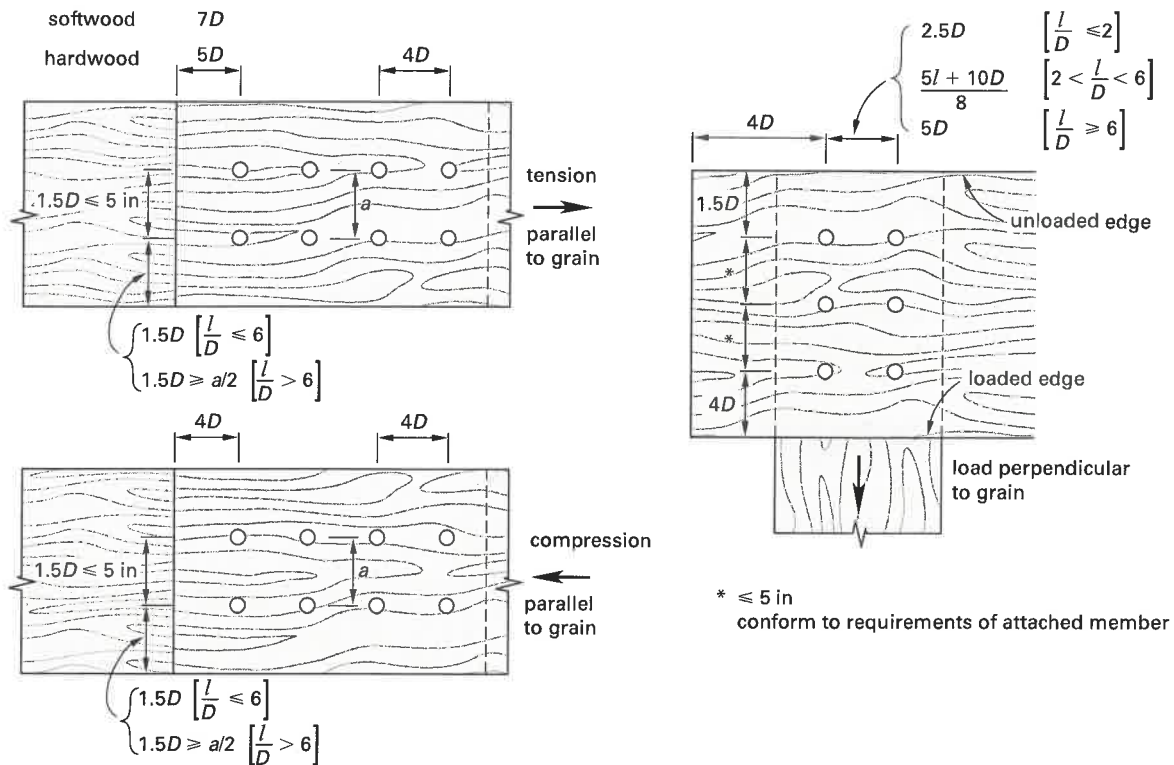
$$e_{q,\text{full}} = 4D = (4)(0.75 \text{ in}) = 3.0 \text{ in}$$

The actual edge distance is

$$\begin{aligned} e_q &= \frac{7.5 \text{ in}}{2} \\ &= 3.75 \text{ in} > e_{q,\text{full}} \quad [\text{satisfactory}] \end{aligned}$$

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Figure 6.8 Bolt Spacing Requirements for Full Design Values



l = lesser of length of bolt in main member or total length of bolt in side member(s)
 D = diameter of bolt

The geometry factor given by NDS Sec. 12.5.1 is

$$C_{\Delta} = 1.0$$

ASD Method

From Table 6.5, for dead load plus occupancy live load, the load duration factor is

$$C_D = 1.00$$

The adjusted allowable lateral design value is

$$\begin{aligned} Z'_{\perp} &= Z_{\perp} C_M C_g C_{\Delta} C_t C_D \\ &= (800 \text{ lbf})(1.0)(1.0)(1.0)(1.0)(1.00) \\ &= 800 \text{ lbf} \end{aligned}$$

The maximum allowable load that the ledger can support is

$$\begin{aligned} w &= \frac{Z'_{\perp}}{4} = \frac{800 \text{ lbf}}{4 \text{ ft}} \\ &= 200 \text{ lbf/ft} \end{aligned}$$

LRFD Method

From Table 6.4, for dead load plus occupancy live load, the time effect factor is

$$\lambda = 0.8$$

From NDS Table 11.3.1, the format conversion factor is

$$K_F = 3.32$$

The resistance factor given by NDS Table 11.3.1 is

$$\phi = 0.65$$

The adjusted factored lateral design value is

$$\begin{aligned} Z'_{\perp} &= Z_{\perp} C_M C_g C_{\Delta} C_t K_F \lambda \phi \\ &= (800 \text{ lbf})(1.0)(1.0)(1.0)(1.0)(3.32)(0.8)(0.65) \\ &= 1381 \text{ lbf} \end{aligned}$$

The maximum strength level load that the ledger can support is

$$w = \frac{Z'_{\perp}}{4} = \frac{1381 \text{ lbf}}{4 \text{ ft}} = 345 \text{ lbf/ft}$$

Double Shear Connection

Reference design values for double shear connections are tabulated in NDS Table 12F for three sawn lumber members of identical species, in NDS Table 12G for a

Timber

PROJECT Matzner Park SUBJECT Rafter connection to hip rafter. & to perimeter. SHEET NO. _____ OF _____
 BY _____ DATE Nov. 14/24. JOB NO. _____
 CHKD. BY _____ DATE _____

• farther connection to hip rafter.

$$C_M = 1 \quad C_g = 0.97 \text{ (two lag screws)}$$

$$Z'_L = Z_L \times C_M \overset{200}{C_g} \overset{0.8}{C_\Delta} \overset{4 \text{ screws}}{C_e} \overset{3.32}{k_F} \overset{0.8}{2} \overset{0.65}{\phi} \times 4 = 276 \times 4 = 1104$$

$\overset{200}{\uparrow}$ for 5/8 lag screw.
 (will use 4 of them).

$1104 > 270 \text{ lb OK}$
 $\uparrow$ Lag.
 4 screws.

Rafter connection to perimeter beam

550 for 1/2" bolt.

$$Z'_L = Z_L \overset{550}{C_M} \overset{0.97}{C_g} \overset{0.8}{C_\Delta} \overset{3.32}{C_e} \overset{0.8}{k_F} \overset{0.65}{2} \overset{0.65}{\phi} = 921 \text{ lb} > 390 \text{ lb (PS)} \text{ OK.}$$

Perimeter Beams to base plate

$$Z'_L = Z_L \overset{660}{C_M} \overset{0.97}{C_g} \overset{0.8}{C_\Delta} \overset{3.32}{C_e} \overset{0.8}{k_F} \overset{0.65}{2} \overset{0.65}{\phi} \times 2 \text{ bolts} = 2200 \text{ lb} > 1016 \text{ uplift OK}$$

$\overset{660}{(3/4" \text{ bolt})}$

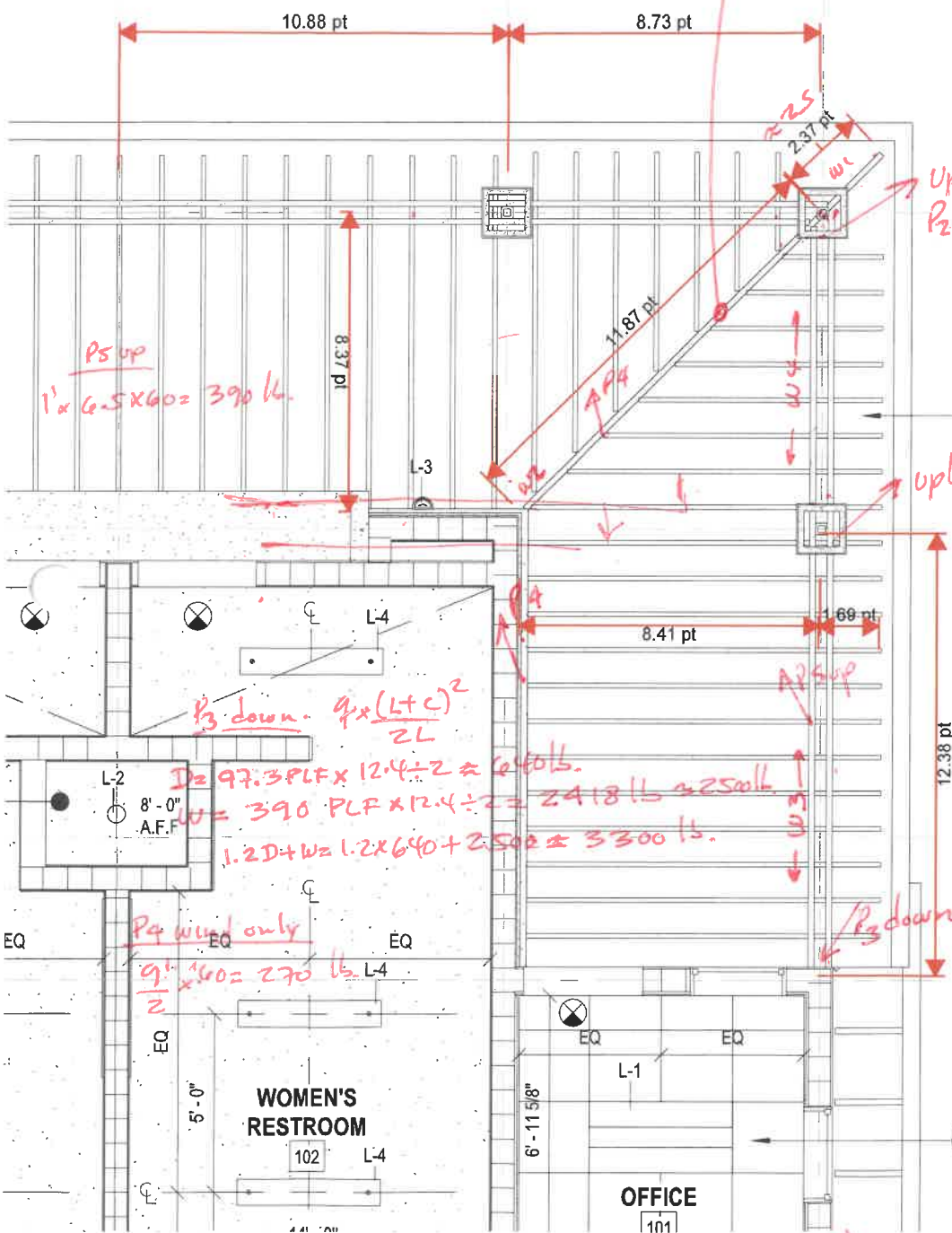
use 2 - 3/4" ϕ through bolts.

w_2 (For uplift)
 $D = 8.5' \times 10 \text{ PSF} = 85 \text{ PLF} \div 2 = 0.043 \text{ KLF}$
 $W = 8.5' \times (\pm 60) = 510 \text{ PLF} \div 2 = 0.255 \text{ KLF}$
 $Lr = 8.5' \times 20 = 170 \text{ PLF} \div 2 = 0.085$

Used on ENERCALC.

$C^2 = 2 \times 1.17$
 $C = \sqrt{2.34} = 1.65$
 OR
 $\frac{8.73}{11.87} = 0.735$
 $(2+2) \times 0.735 = 2.92 \approx 3'$
 TW

approx tw-
 $D = 3' \times 10 = 30 \text{ PLF}$
 $W = 3' \times \pm 60 = 180 \text{ PLF}$
 $Lr = 3' \times 20 = 60 \text{ PLF}$



$P_2(\text{uplift}) (0.9D - 1W)$
 $(0.9 \times 85 \text{ PLF} - 510) \times \frac{1}{6} \times 12' +$
 $2.5' \times (0.9 \times 30 - 180) = -866 - 383$
 $= -1250 \text{ lb}$
 not governs. uplift ultimate to check bolts.

$w_3 = \frac{7 \times (L+C)^2}{2L}$
 $D = 15 \times \frac{(8.5+2)^2}{6.5 \times 2} = 97.3 \text{ PLF}$

$Lr = 6.5 \times 20 = 130 \text{ PLF}$
 $W = 6.5 \times 60 = 390 \text{ PLF}$
 2 Beams on perimeter.

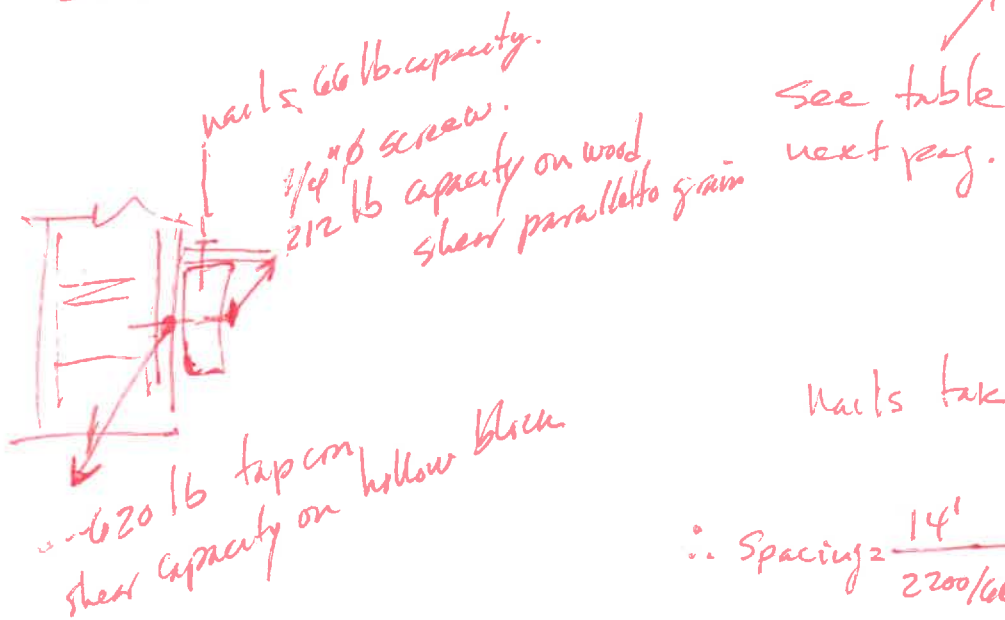
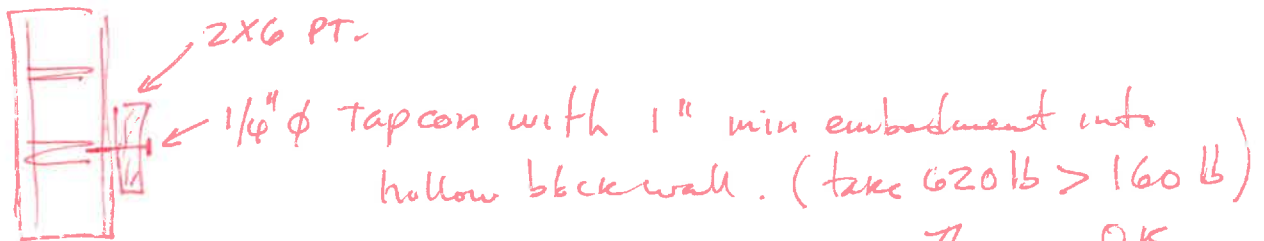
$D = 97 \div 2 = 0.048 \text{ KLF}$
 $Lr = 130 \div 2 = 0.065 \text{ KLF}$
 $W = 390 \div 2 = 0.195 \text{ KLF}$

$P_{1up} = 0.9D - 1W = (0.9 \times 97 \text{ PLF} - 1 \times 390 \text{ PLF}) \times 12' \div 2 = -1816 \text{ lb}$ total for both beams.
 ↑ uplift.
 governs check two bolts within this value for 2x12 perimeter beam and same for 3x8 hip rafter.

PROJECT _____ SUBJECT Ledger SHEAR SHEET NO. _____ OF _____
BY _____ DATE _____ JOB NO. _____
CHKD. BY _____ DATE _____

1- 1/4" ϕ fastener
SHEAR ON WOOD = $\sum C_1 C_2 C_3 C_4 K_F \lambda \phi z$

$= 140 \times 1 \times 0.88 \times 1 \times 3.32 \times 0.8 \times 0.65 = 212 \text{ lb.} > 160 \text{ lb per fastener}$
 $\uparrow$
For 1/4" ϕ screw.
ultimate capacity on wood.
OK
Force per screw.
See calcs. two pages ahead



$\therefore \text{Spacing} = \frac{14'}{2200/66} = 0.42' = 5" .1$
use nails 2" ϕ c.c.

ULTIMATE TENSION AND SHEAR VALUES (LBS/KN) IN CONCRETE

ANCHOR DIA In.(mm)	MIN. DEPTH OF EMBEDMENT In.(mm)	f' c = 2000 PSI (13.8 MPa)		f' c = 3000 PSI (20.7 MPa)		f' c = 4000 PSI (27.6 MPa)		f' c = 5000 PSI (34.5 MPa)	
		TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/16 (4.8)	1 (25.4)	600 (2.7)	720 (3.2)	625 (2.8)	720 (3.2)	650 (2.9)	720 (3.2)	800 (3.6)	860 (3.8)
	1-1/4 (31.8)	845 (3.7)	720 (3.2)	858 (3.8)	720 (3.2)	870 (3.9)	720 (3.2)	1,010 (4.5)	860 (3.8)
	1-1/2 (38.1)	1,090 (4.8)	860 (3.8)	1,090 (4.8)	860 (3.8)	1,090 (4.8)	860 (3.8)	1,220 (4.8)	860 (3.8)
	1-3/4 (44.5)	1,450 (6.5)	870 (3.9)	1,455 (6.5)	870 (3.9)	1,460 (6.5)	990 (4.4)	1,730 (7.7)	990 (4.4)
1/4 (6.4)	1 (25.4)	750 (3.3)	900 (4.0)	775 (3.4)	900 (4.0)	800 (3.6)	1,360 (6.1)	950 (4.2)	1,440 (6.4)
	1-1/4 (31.8)	1,050 (4.7)	900 (4.0)	1,160 (5.2)	900 (4.0)	1,270 (5.6)	1,360 (6.1)	1,515 (6.7)	1,440 (6.4)
	1-1/2 (38.1)	1,380 (6.1)	1,200 (5.3)	1,600 (7.2)	1,200 (5.3)	1,820 (8.1)	1,380 (6.1)	2,170 (9.7)	1,670 (7.4)
	1-3/4 (44.5)	2,020 (9.0)	1,670 (7.4)	2,200 (9.8)	1,670 (7.4)	2,380 (10.6)	1,670 (7.4)	2,770 (12.3)	1,670 (7.4)

Safe working loads for single installation under static loading should not exceed 25% of the ultimate load capacity.

ULTIMATE TENSION AND SHEAR VALUES (LBS/KN) IN HOLLOW BLOCK

ANCHOR DIA In.(mm)	ANCHOR EMBEDMENT In.(mm)	LIGHTWEIGHT BLOCK		MEDIUM WEIGHT BLOCK	
		TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/16 (4.8)	1 (25.4)	220 (1.0)	400 (1.8)	340 (1.5)	730 (3.2)
1/4 (6.4)	1 (25.4)	250 (1.1)	620 (1.8)	500 (2.2)	1,000 (4.4)

Safe working loads for single installation under static loading should not exceed 25% of the ultimate load capacity.

NOTE: 3/16" Tapcon requires 5/32" bit, 1/4" Tapcon requires 3/16" bit.

ALLOWABLE EDGE AND SPACING DISTANCES

PARAMETER	ANCHOR DIA. In.(mm)	NORMAL WEIGHT CONCRETE			CONCRETE MASONRY UNITS (CMU)		
		FULL CAPACITY (Critical Distance Inches)	REDUCED CAPACITY (Minimal Distance Inches)	LOAD REDUCTION FACTOR	FULL CAPACITY (Critical Distance Inches)	REDUCED CAPACITY (Minimal Distance Inches)	LOAD REDUCTION FACTOR
Spacing Between Anchors - Tension	3/16	3	1-1/2	0.73	3	1-1/2	1.00
	1/4	4	2	0.66	4	2	0.84
Spacing Between Anchors - Shear	3/16	3	1-1/2	0.83	3	1-1/2	1.00
	1/4	4	2	0.82	4	2	0.81
Edge Distance - Tension	3/16	1-7/8	1	0.83	3	2	0.91
	1/4	2-1/2	1-1/4	0.82	4	2	0.81
Edge Distance - Shear	3/16	2-1/4	1-1/8	0.70	3	2	0.93
	1/4	3	1-1/2	0.59	4	2	0.80

For SI: 1 inch = 25.4 mm

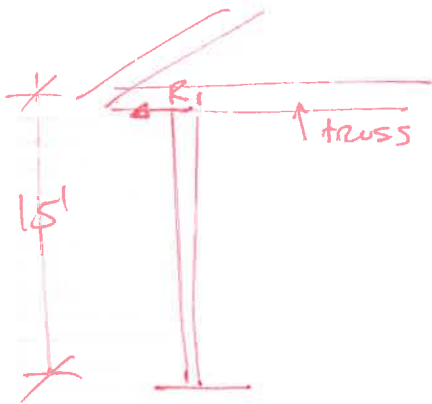
Table 11Q COMMON WIRE, BOX, or SINKER NAILS: Reference Lateral Design Values (Z) for Single Shear (two member) Connections^{1,2,3,4}

with wood structural panel side members with an effective $G = 0.50$

Side Member Thickness in.	Nail Diameter in.	Common Wire Nail Box Nail Sinker Nail	G=0.67 Red Oak	G=0.55 Mixed Maple Southern Pine	G=0.5 Douglas Fir-Larch	G=0.49 Douglas Fir-Larch (N)	G=0.46 Douglas Fir(S) Hem-Fir(N)	G=0.43 Hem-Fir	G=0.42 Spruce-Pine-Fir	G=0.37 Redwood (open grain)	G=0.36 Eastern Softwoods Spruce-Pine-Fir(S) Western Cedars Western Woods	G=0.35 Northern Species
in.	in.	Pennyweight	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
3/8	0.099	6d 7d	47	45	43	43	42	40	40	38	37	37
	0.113	6d 8d 8d	60	56	54	54	52	51	50	47	47	46
	0.120	10d	67	62	60	60	58	56	56	52	52	51
	0.128	10d	75	70	68	67	65	63	63	59	58	57
	0.131	8d	78	73	71	70	68	66	65	61	61	60
	0.135	16d 12d	83	78	75	74	72	70	69	65	64	63
	0.148	10d 20d 16d	94	88	85	84	82	79	78	73	72	71
	0.099	6d 7d	50	47	45	44	43	42	40	40	39	39
	0.113	6d 8d 8d	62	58	56	55	53	52	49	49	48	48
	0.120	10d	69	65	63	62	60	59	58	55	54	53
7/16	0.128	10d	77	72	70	69	68	66	65	61	60	59
	0.131	8d	80	75	73	72	70	68	67	63	63	62
	0.135	16d 12d	85	80	77	76	74	72	71	67	66	65
	0.148	10d 20d 16d	96	90	87	86	84	81	80	76	75	73
	0.162	16d 40d	114	106	102	101	99	96	95	89	88	86
	0.099	6d 7d	51	48	47	46	45	44	44	41	41	40
	0.113	6d 8d 8d	64	60	58	57	56	54	54	51	50	49
	0.120	10d	70	66	64	63	62	60	59	56	55	54
	0.128	10d	78	74	71	71	69	67	66	62	62	61
	0.131	8d	82	77	74	73	72	70	69	65	64	63
15/32	0.135	16d 12d	86	81	78	77	76	73	72	68	67	66
	0.148	10d 20d 16d	97	91	88	87	85	83	82	77	76	75
	0.162	16d 40d	115	108	104	103	100	97	96	90	89	88
	0.099	6d 7d	58	55	53	53	51	50	50	47	46	46
	0.113	6d 8d 8d	70	66	64	64	62	61	60	57	56	55
	0.120	10d	77	73	70	70	68	66	66	62	61	60
	0.128	10d	85	80	78	77	75	73	72	68	68	67
	0.131	8d	88	83	80	80	78	76	75	71	70	69
	0.135	16d 12d	93	87	84	84	82	79	79	74	73	72
	0.148	10d 20d 16d	104	98	95	94	92	89	88	83	82	81
19/32	0.162	16d 40d	121	114	110	109	107	103	102	96	95	94
	0.177	20d	137	128	124	123	120	116	115	108	107	105
	0.192	20d	142	133	128	127	124	120	119	112	111	109
	0.099	6d 7d	62	58	55	55	53	51	51	47	47	46
	0.113	6d 8d 8d	78	74	72	71	69	67	66	62	61	60
	0.120	10d	85	80	78	77	76	73	73	69	68	67
	0.128	10d	93	88	85	85	83	80	80	75	75	74
	0.131	8d	96	91	88	87	86	83	82	78	77	76
	0.135	16d 12d	101	95	92	91	89	87	86	81	81	79
	0.148	10d 20d 16d	113	106	103	102	100	97	96	91	90	89
1	0.162	16d 40d	130	122	118	117	115	111	110	104	103	102
	0.177	20d	145	137	132	131	128	124	123	116	115	113
	0.192	20d	150	141	136	135	132	128	127	120	118	116
	0.099	6d 7d	62	58	55	55	53	51	51	47	47	46
	0.113	6d 8d 8d	81	75	72	71	69	67	66	62	61	60
	0.120	10d	92	85	81	81	78	76	75	69	69	67
	0.128	10d	104	97	93	92	89	86	85	78	78	77
	0.131	8d	109	101	97	96	93	90	89	83	82	80
	0.135	16d 12d	116	108	103	102	99	96	94	88	87	85
	0.148	10d 20d 16d	132	123	118	116	113	109	108	100	99	97
1-1/8	0.162	16d 40d	158	147	141	139	135	131	129	120	119	116
	0.177	20d	181	170	163	161	157	151	149	139	137	135
	0.192	20d	186	176	170	168	163	157	155	145	143	140
	0.128	10d	104	97	93	92	89	86	85	79	78	77
	0.131	8d	109	101	97	96	93	90	89	83	82	80
	0.135	16d 12d	116	108	103	102	99	96	94	88	87	85
	0.148	10d 20d 16d	132	123	118	116	113	109	108	100	99	97
	0.162	16d 40d	158	147	141	139	135	131	129	120	119	116
	0.177	20d	181	170	163	161	157	151	149	139	137	135
	0.192	20d	186	176	170	168	163	157	155	145	143	140
1-1/4	0.148	10d 20d 16d	132	123	118	116	113	109	108	100	99	97
	0.162	16d 40d	158	147	141	139	135	131	129	120	119	116
	0.177	20d	183	170	163	161	157	151	149	139	137	135
	0.192	20d	191	177	170	168	163	157	155	145	143	140

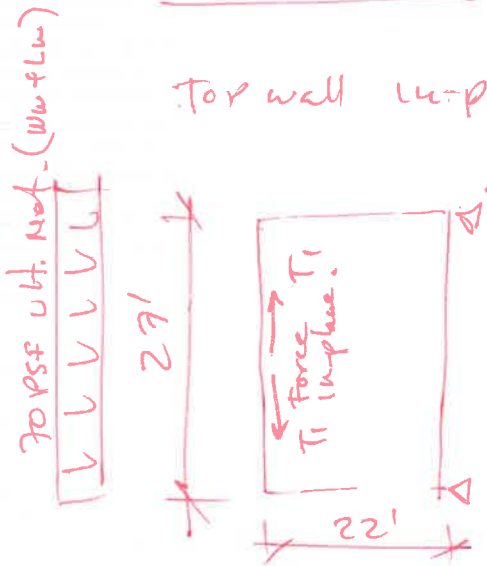
1. Tabulated lateral design values (Z) shall be multiplied by all applicable adjustment factors (see Table 10.3.1).
2. Tabulated lateral design values (Z) are for common wire, box, and sinker nails (see Appendix L) inserted in side grain with nail axis perpendicular to wood fibers; minimum nail penetration, p , into the main member equal to $10D$ and nail bending yield strengths (F_{yb}): $F_{yb} = 100,000$ psi for $0.099" \leq D \leq 0.142"$; $F_{yb} = 90,000$ psi for $0.142" < D \leq 0.177"$; $F_{yb} = 80,000$ psi for $0.177" < D \leq 0.236"$.
3. When $6D \leq p < 10D$, tabulated lateral design values (Z) shall be multiplied by $p/10D$.
4. Nail length is insufficient to provide $10D$ penetration. Tabulated lateral design values (Z) shall be adjusted per footnote 3.
5. Tabulated lateral design values (Z) shall be permitted to apply for greater side member thickness when adjusted per footnote 3.

PROJECT _____ SUBJECT Wall Top Recept. SHEET NO. _____ OF _____
BY _____ DATE _____ JOB NO. _____
CHKD. BY _____ DATE _____



$R_1 = \frac{15'}{2} \times 40 \times 2' = 600 \text{ lb.}$
service out of plane.

$\frac{1}{3} \times \frac{15^2}{3} = 75 \text{ SF} \Rightarrow \text{Wind} = -66 \text{ PSF} \times 0.6 = 40 \text{ PSF}$
Net Service.



Top wall in-plane force.

$UDL = 70 \times \left(\frac{15}{2} + 35 \right) = 770 \text{ PLF. ult.}$
 462 PLF serv.

$M = 462 \times \frac{27^2}{8} = 42.1 \text{ k-F.}$

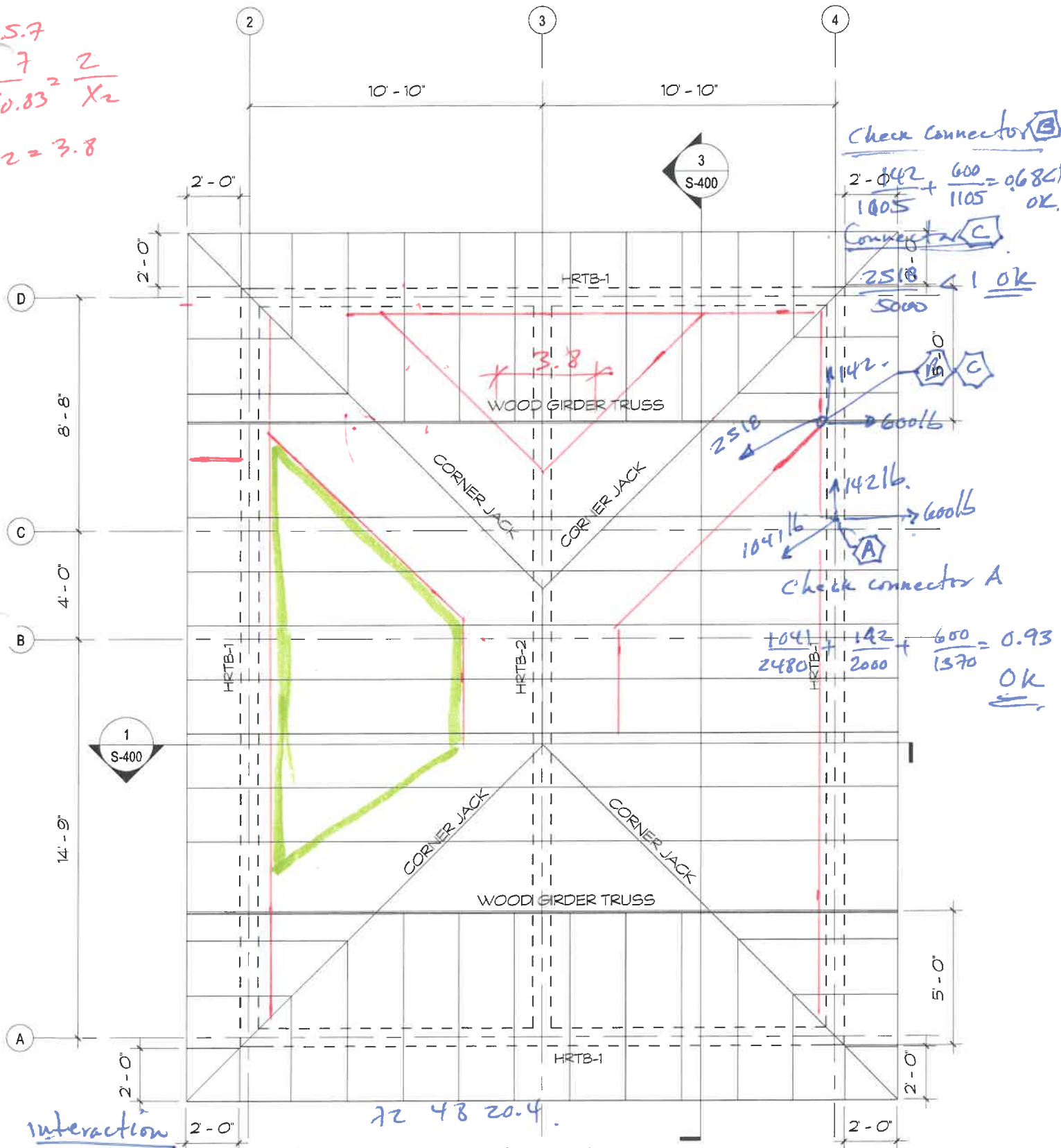
$T_1 = \frac{42.1 \text{ k-F}}{22'} = 1.92 \text{ k.}$

$\frac{1.92}{27} \times 2 = 0.142 \text{ k} = 142 \text{ lb. per connection.}$
Service.

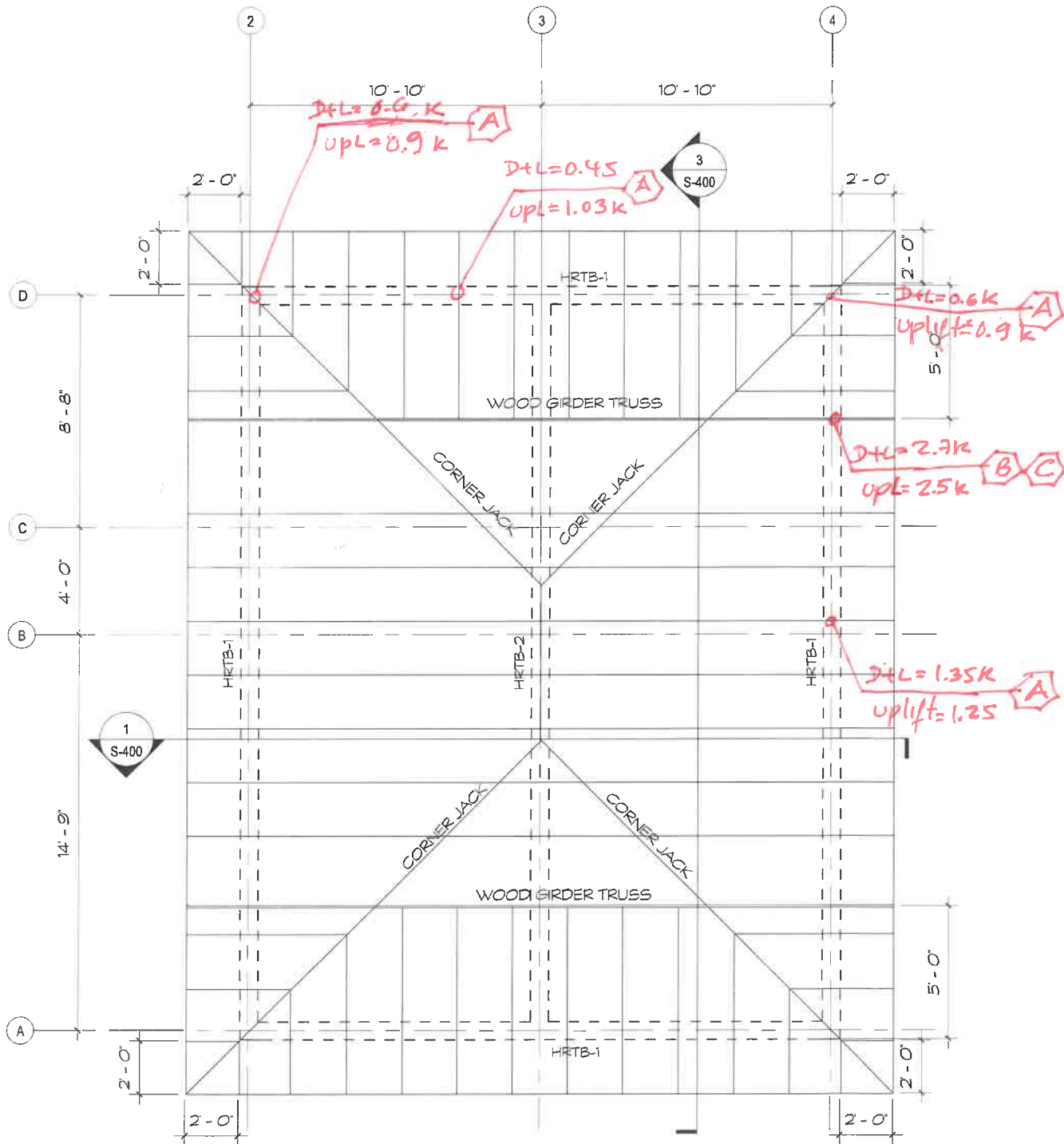
$$\frac{5.7}{10.83} = \frac{x}{3}, x = 1.6$$

$$\frac{5.7}{10.83} = \frac{2}{x_2}$$

$$x_2 = 3.8$$



ROOF FRAMING PLAN PARTIAL 1



$$\frac{5.7}{10.85} = \frac{x}{3'} \quad x = 1.6$$

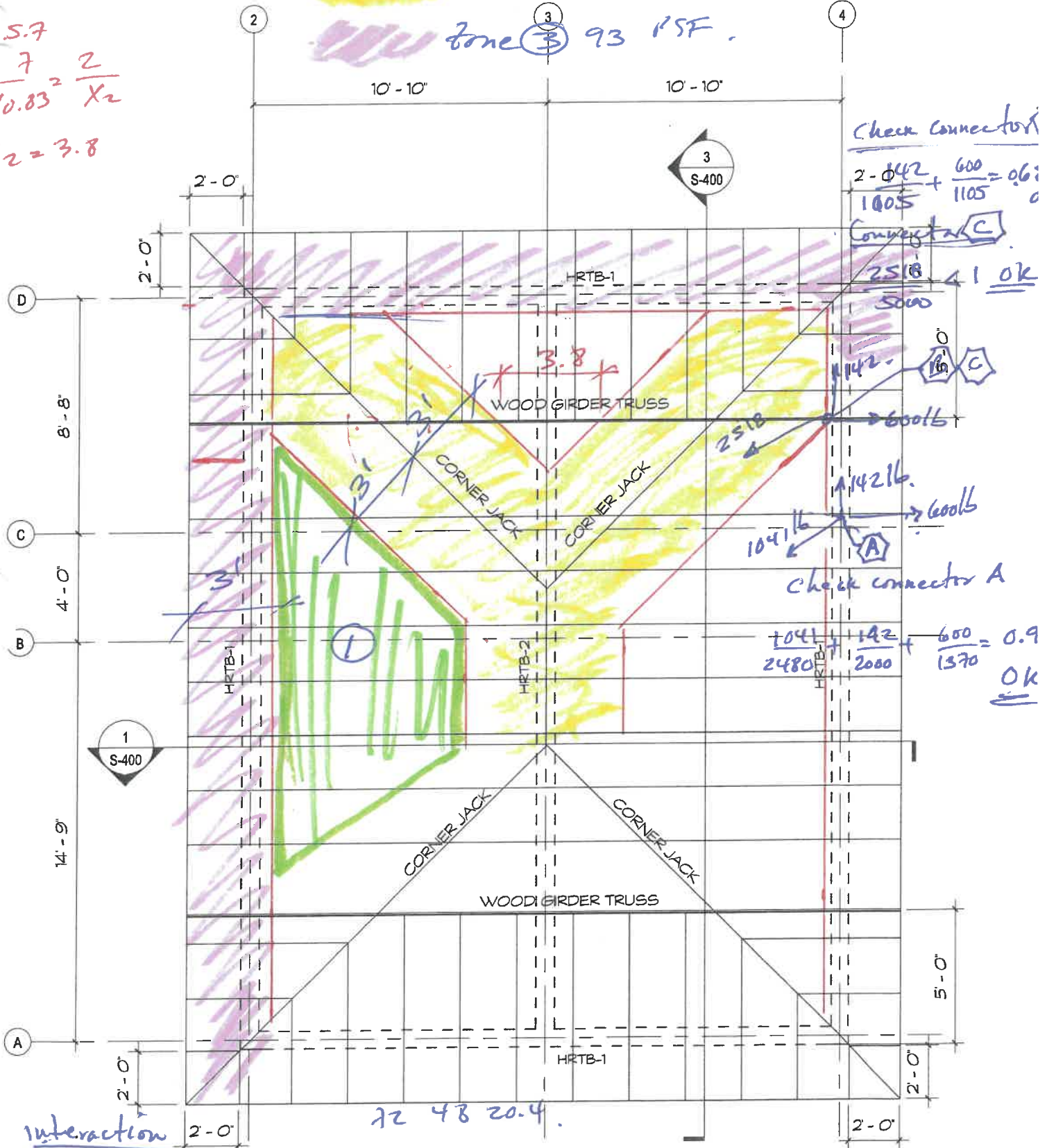
$$\frac{5.7}{10.85} = \frac{2}{x_2}$$

$$x_2 = 3.8$$

Zone ① 63 PSF

Zone ② 84 PSF

Zone ③ 93 PSF



Interaction

$$T_2 = P \quad 0-10' \text{ from edge} - 72 \times 0.6 \times 2' = 86.4$$

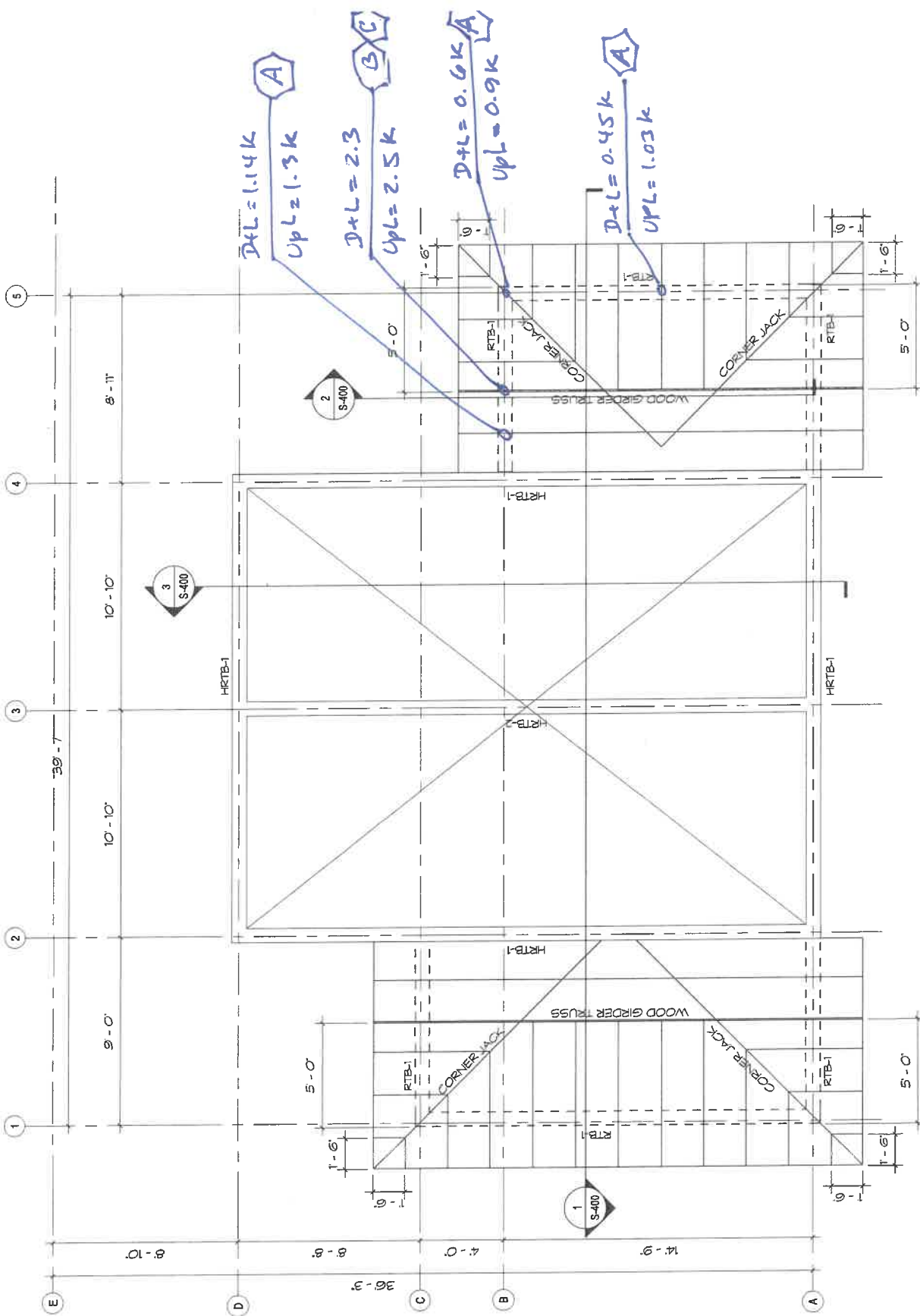
$$10-12' - 48 \times 0.6 \times 2' = 58$$

$$20.4 \times 0.6 \times 2' = 25$$

overhang.

$$81 \times 0.6 \times 2 = 98$$

1 ROOF FRAMING PLAN PARTIAL 1



2 ROOF FRAMING PLAN PARTIAL 2

Scale: 1/4" = 1'-0"

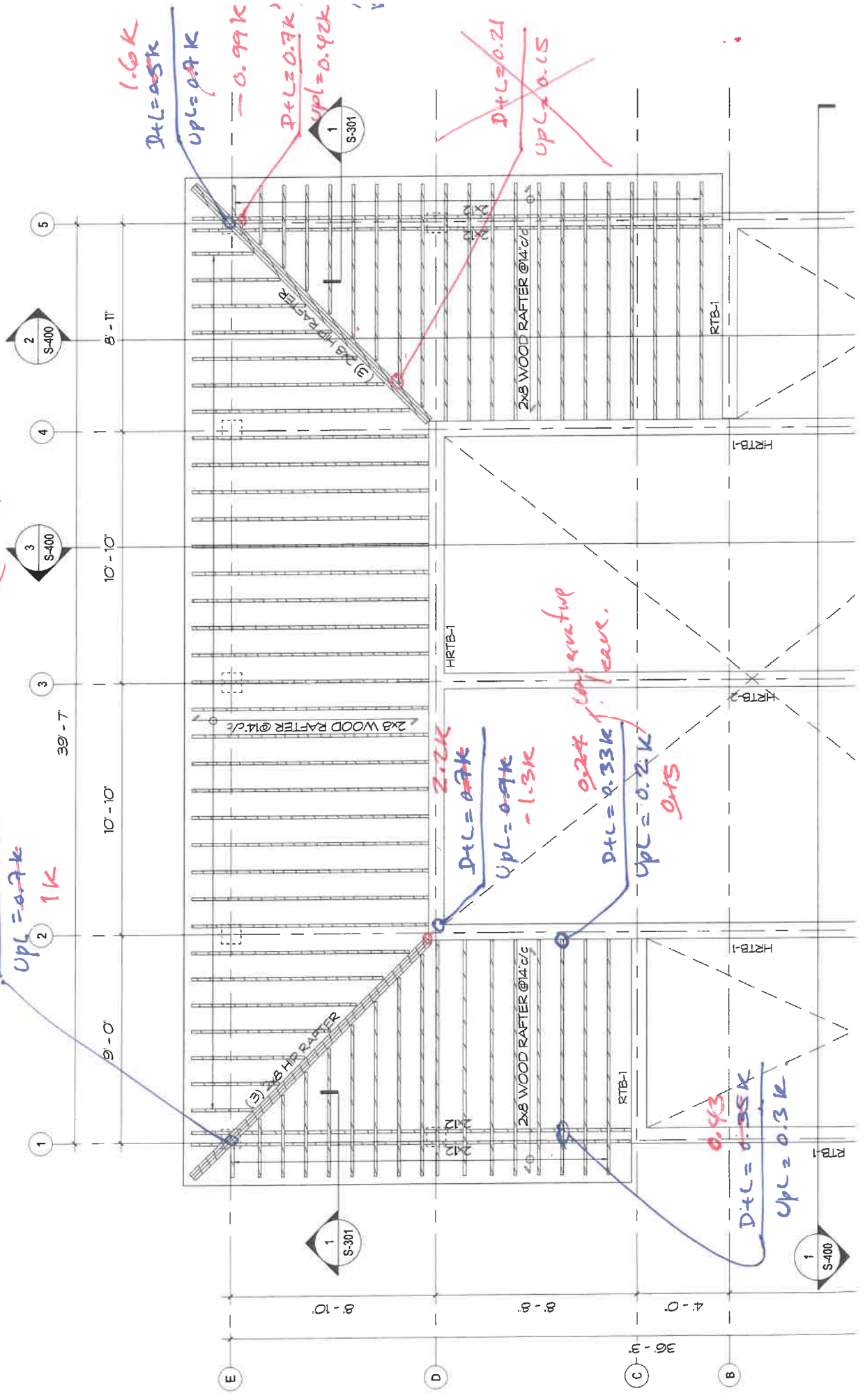
S-200



2

Wind allworbe
(w x 0.6)

1.5k
D+L = 0.5k
Upl = 0.7k
1k



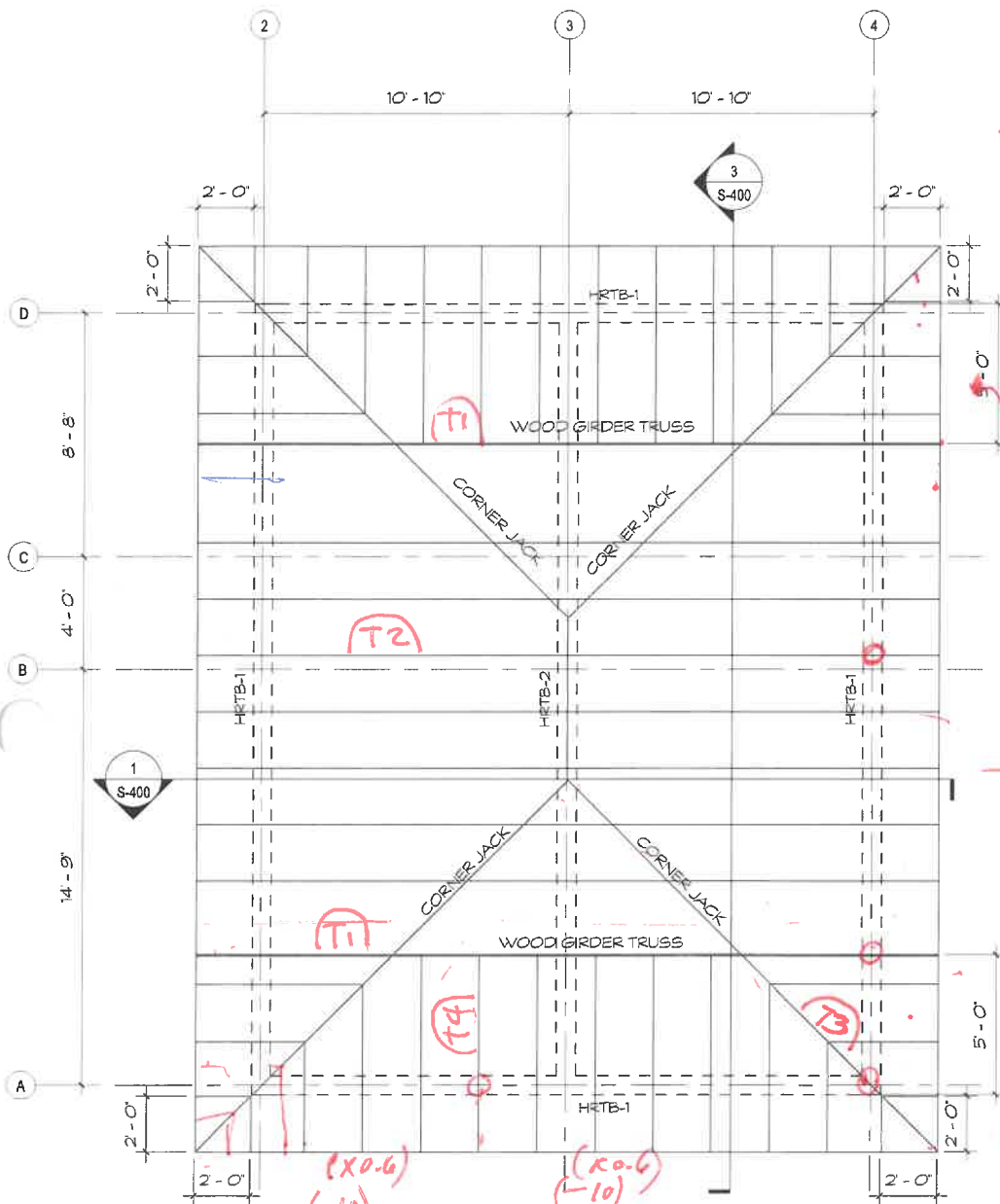
Uplift reaction

Combo $0.6D + 0.6W = (W - 10 \text{ PSF}) \times 0.6$
 $\uparrow 10 \text{ PSF}$

4

5

6



T.A
 $T1 = \left(\frac{2'}{2} + \frac{5'}{2} \right) \cdot (-22' + 4) = 91 \text{ SF}$

$T2 = 2' \times (22 + 2) = 48 \text{ SF}$

$T3 = \frac{X' \times 10.9'}{3} = \text{Use } T4 \text{ (area)}$

$T4 = 2' \times 5' + 2 \times 2' = 14 \text{ SF}$
 $\times 6'$

LIVE + DEAD

$20 + 30 = 50 \text{ PSF}$

Reactions:

$T1 = \frac{(22 + 2.5) \times 50 \times 4'}{2} = 2.7 \text{ K}$

$T2 = 13.5 \times 50 \times 2' = 1.35 \text{ K}$

$T3 = \frac{1}{6} \times 50 \times 6' \times 6' + \frac{50 \times 2' \times 3'}{\text{cant.}}$
 $= 0.6 \text{ K}$

$11' T4 = \left(\frac{5'}{2} + 2' \right) \times 50 \times 2' = 0.45 \text{ K}$

$T4 \text{ UDL} \Rightarrow Z2 = 2 \times 150 = 160$
 $Z3 = 162 \times 2' = 183$

1 ROOF FRAMING PLAN PARTIAL 1

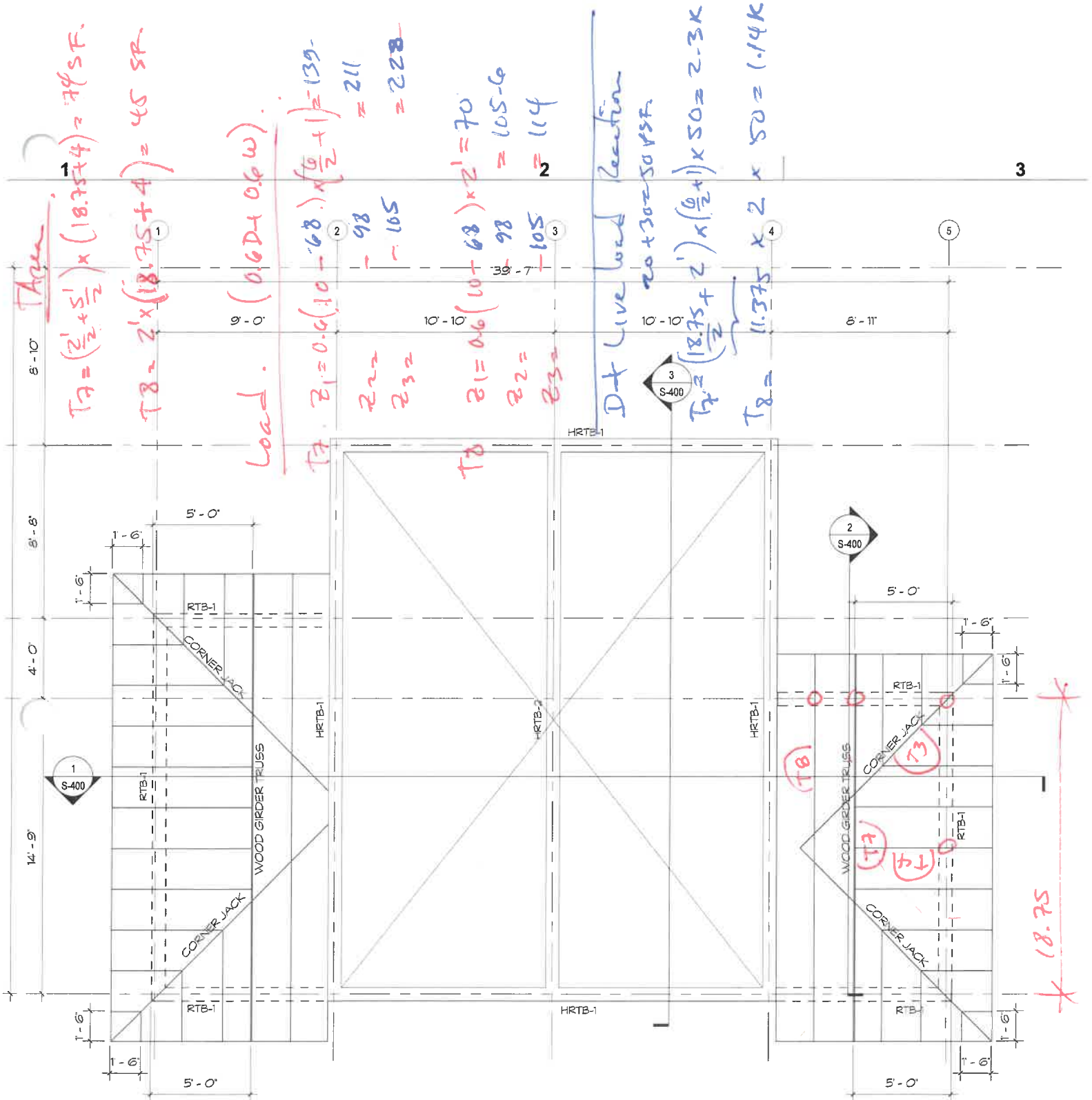
S-200

Scale: 1/4" = 1'-0"

$T1 \text{ UDL} \Rightarrow Z1 = \left(\frac{6'}{2} + 1' \right) \times 62 = 125$
 $Z2 = 4' \times 92 = 197$
 $Z3 = 4' \times 98 = 211$

$T2 \text{ UDL} \Rightarrow Z1 = 2' \times 62 = 62.4$
 $Z2 = 2 \times 91.6 = 98$
 $Z3 = 2 \times 98 = 105.6$

$T3 \text{ UDL} \Rightarrow Z2 = \frac{5'}{2} \times 150 = 210$
 $Z3 = 162 \times 2.5 = 114$
 $\text{cantilever } Z3 = 2 \times 162 = 183$
 $Z3 = 162 \times \frac{2.5}{2} = 57$

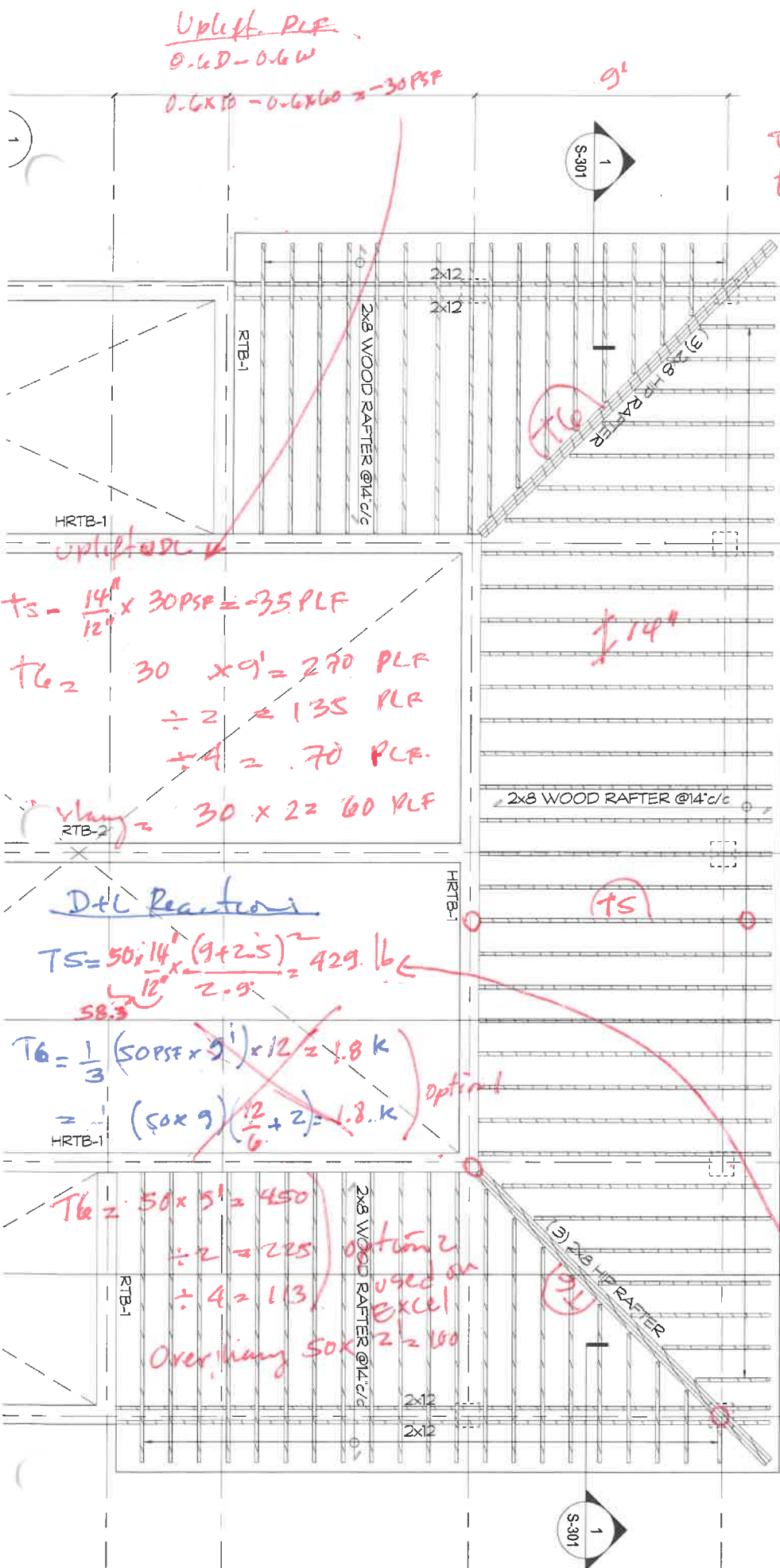


2 ROOF FRAMING PLAN PARTIAL 2
 S-200 Scale: 1/4" = 1'-0"

2 ROOF FRAMING PLAN PARTIAL 2

S-200

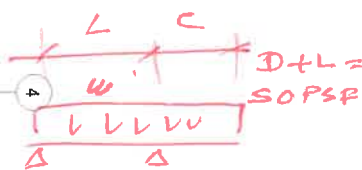
Scale: 1/4" = 1'-0"



Uplift
 $0.6D - 0.6W$
 $= 0.6 \times (10 - W)$
 $= 0.6 \times (10 - 60 \text{ PSF}) = -30 \text{ PSF}$

Reaction uplift with 60 PSF
 $T_5 = \frac{-30 \times (9 + 2.5)^2}{2 \times 9} = 257.1$

$T_6 = \frac{1}{3} (30) \cdot (9 \times \frac{9}{2}) = 405$
 $\frac{1}{6} 30 \cdot 9 \times \frac{9}{2} = 202$



$R \times L = W \times (L+C) \times \frac{L+C}{2}$
 $R \times L = \frac{W \times (L+C)^2}{2 \cdot L}$
 $R = \frac{W \times (L+C)^2}{2 \cdot L}$

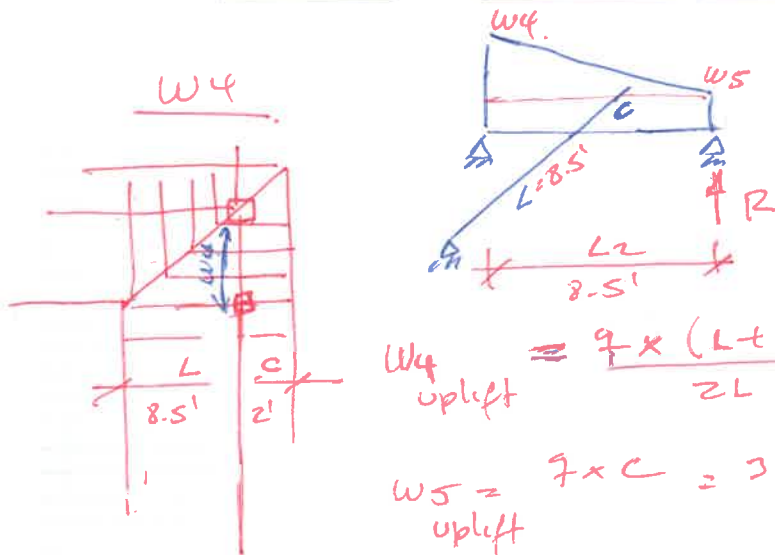
PROJECT Matzner Park

SUBJECT Perimeter Beam
Corner UDL. SHEET NO. _____ OF _____

BY _____ DATE _____

JOB NO. _____

CHKD. BY _____ DATE _____



Service Reaction $0.6D + 0.6W$ -
 $0.6D - 0.6W$ uplift.
 $0.6 \times (10 - 60) = -30$ PSF. net.

$$w_{4 \text{ uplift}} = \frac{q \times (L + C)^2}{2L} = \frac{30 \times (8.5' + 2')^2}{2 \times 8.5} = 195 \text{ PLF.}$$

$$w_5 = 7 \times C = 30 \times 2 = 60 \text{ PLF.}$$

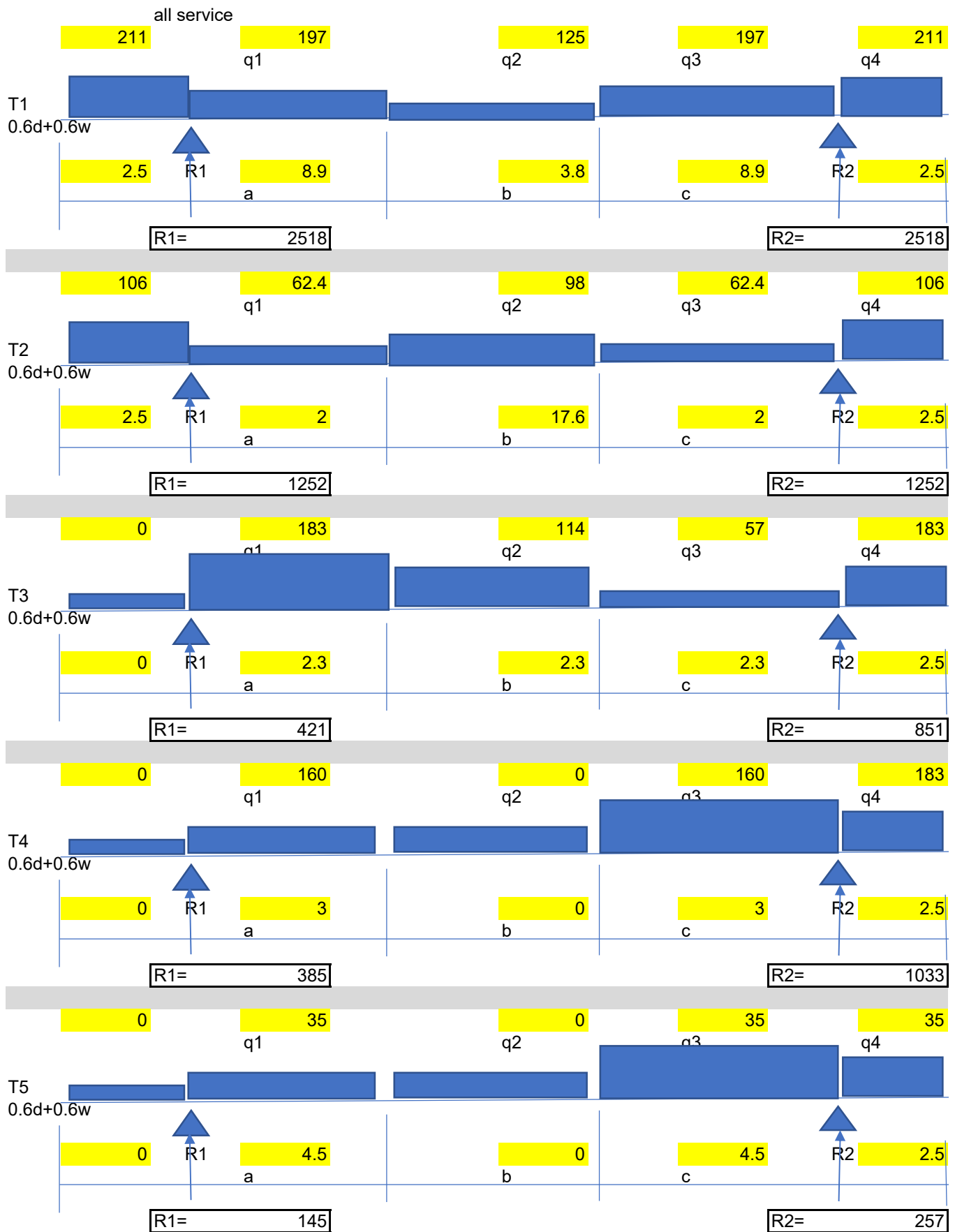
$$R_{\text{uplift}} = L_2 \times w_5 + (w_4 - w_5) \times \frac{L_2}{6} = \frac{8.5' \times 60}{2} + \frac{(195 - 60) \times 8.5'}{6} = 225 + 192 = 420 \text{ lb. uplift}$$

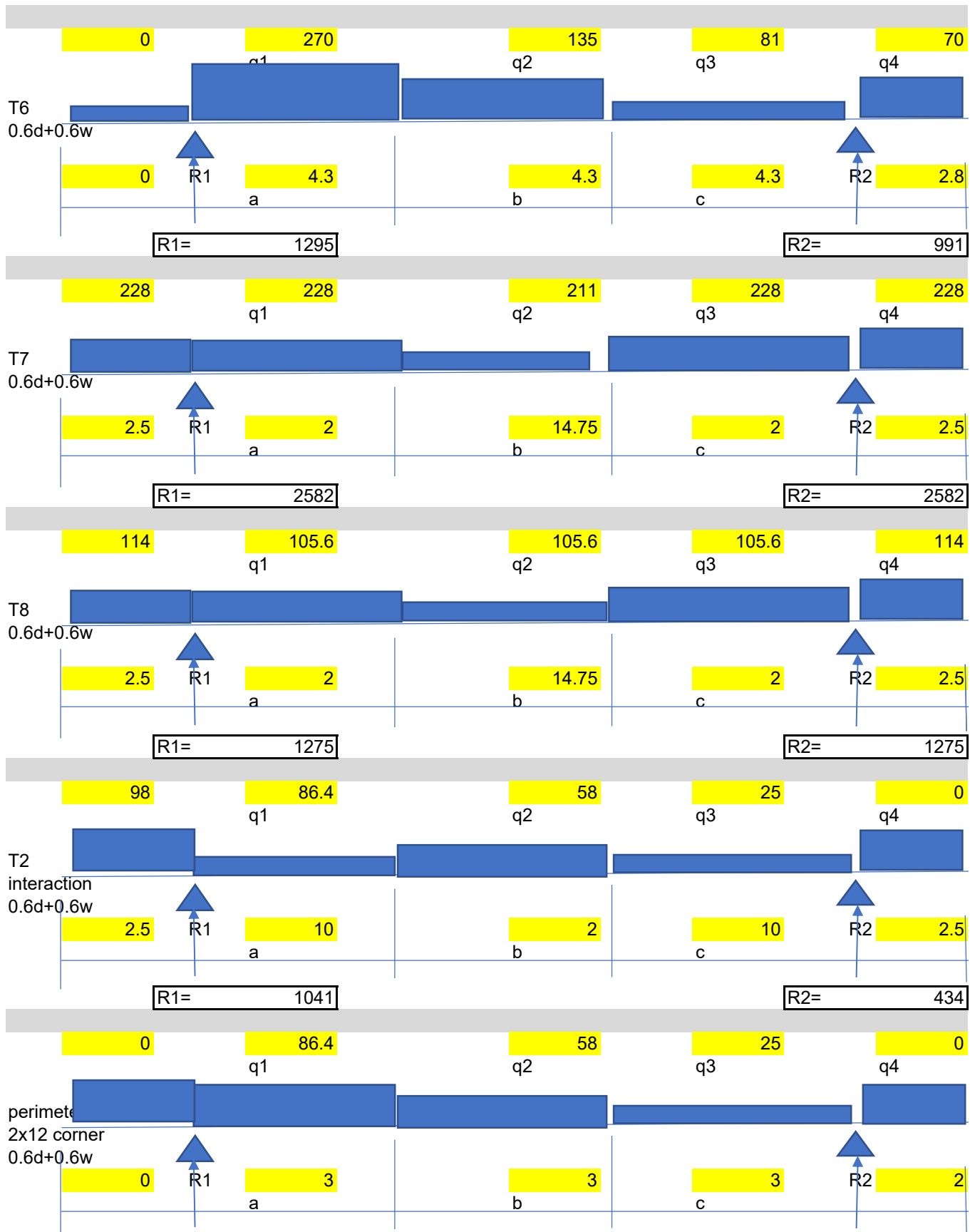
Service Reaction $D + L = 20 + 30 = 50$
 Gravity

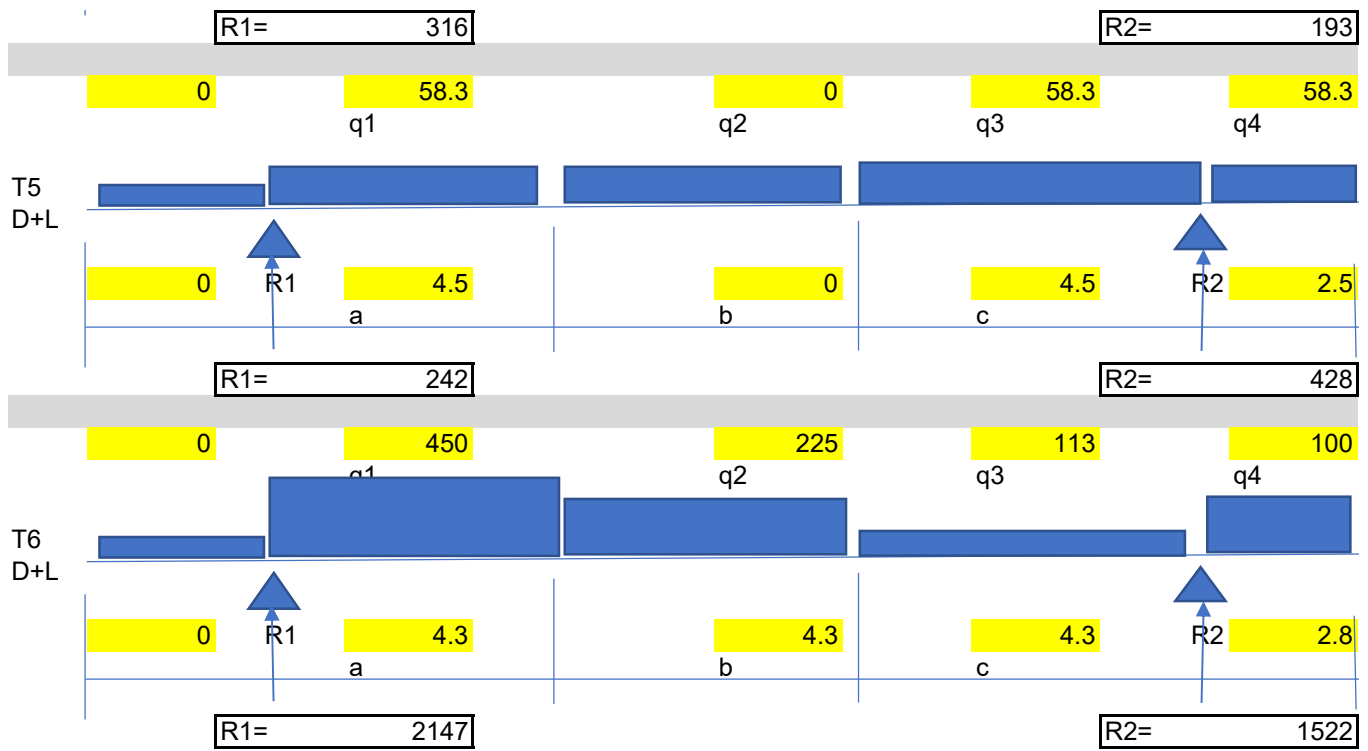
$$w_{4 \text{ gravity}} = \frac{50 \times (8.5' + 2')^2}{2 \times 8.5} = 325$$

$$w_5 \text{ gravity} = 50 \times 2 = 100$$

$$R_{\text{gravity}} = \frac{100 \times 8.5'}{2} + \frac{(325 - 100) \times 8.5'}{6} = 425 + 226 = 652 \text{ lb. Gravity}$$









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E-mail:			

1. Project information

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

Project description:
Location:
Fastening description:

2. Input Data & Anchor Parameters

General

Design method: ACI 318-19
Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place
Material: AWS Type A
Diameter (inch): 0.500
Effective Embedment depth, h_{ef} (inch): 6.000
Anchor category: -
Anchor ductility: Yes
 h_{min} (inch): 7.25
 C_{min} (inch): 1.25
 S_{min} (inch): 2.00

Base Material

Concrete: Normal-weight
Concrete thickness, h (inch): 8.00
State: Cracked
Compressive strength, f'_c (psi): 4000
 $\Psi_{c,v}$: 1.0
Reinforcement condition: Supplementary reinforcement not present
Supplemental edge reinforcement: Not applicable
Reinforcement provided at corners: No
Ignore concrete breakout in tension: No
Ignore concrete breakout in shear: No
Ignore 6do requirement: No
Build-up grout pad: No

Base Plate

Length x Width x Thickness (inch): 13.50 x 6.00 x 0.25
Yield stress: 36000 psi

Profile type/size: HSS2X1X1/8

Recommended Anchor

Anchor Name: Headed Stud - 1/2"Ø AWS Type A Headed Stud



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

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Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: No

Anchors subjected to sustained tension: Not applicable

Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: No

Strength level loads:

N_{ua} [lb]: 0

V_{uax} [lb]: 5000

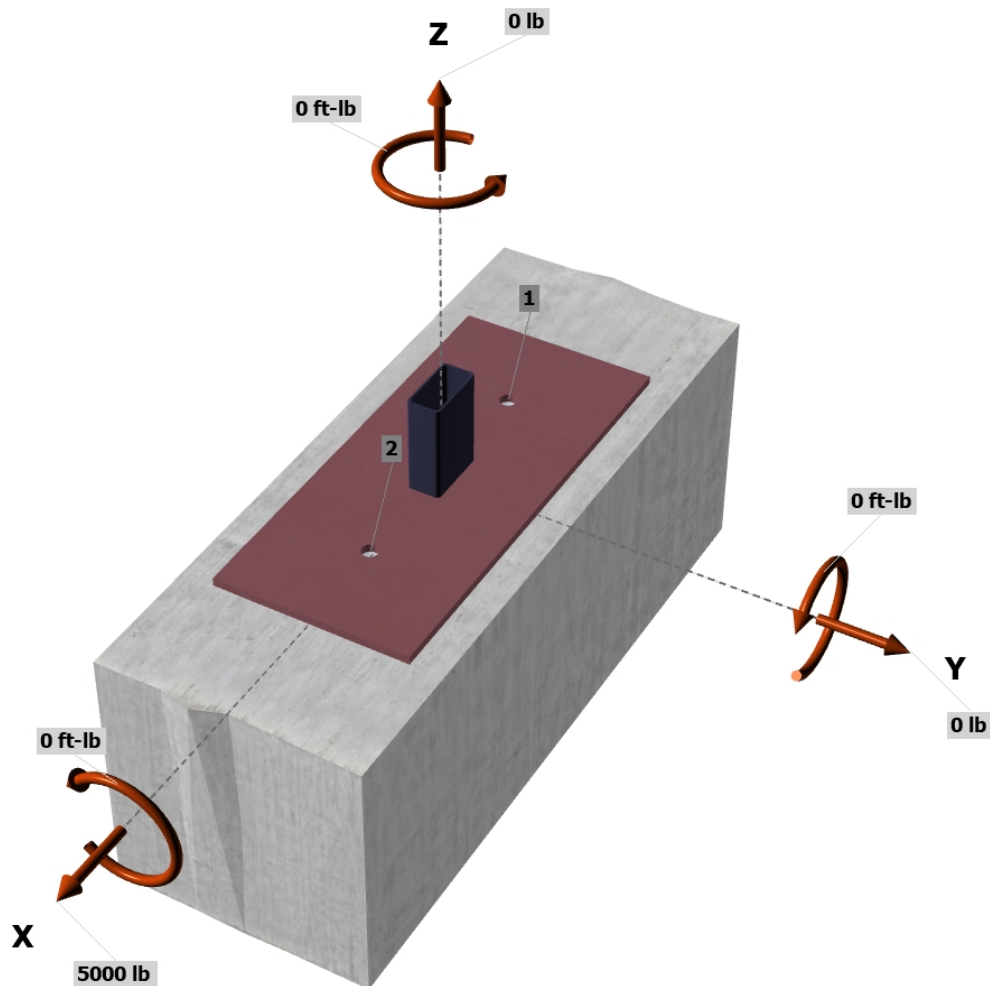
V_{uay} [lb]: 0

M_{ux} [ft-lb]: 0

M_{uy} [ft-lb]: 0

M_{uz} [ft-lb]: 0

<Figure 1>



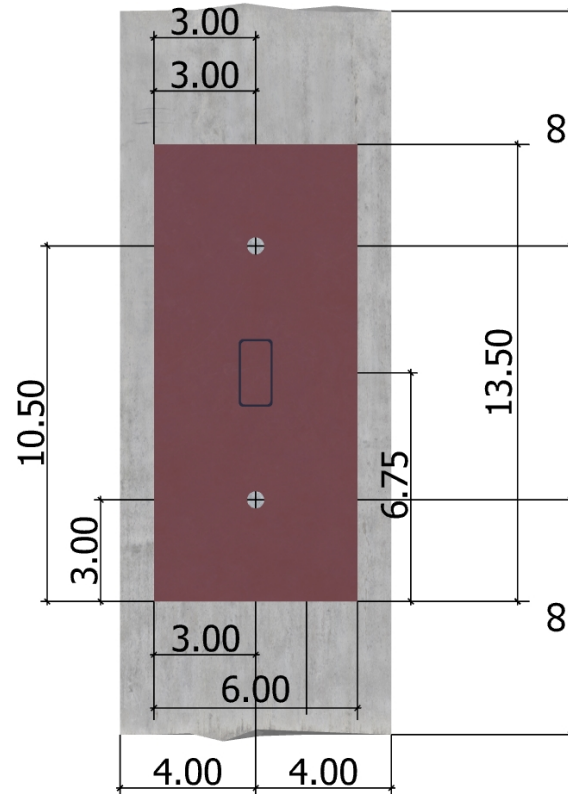
Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

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<Figure 2>





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3. Resulting Anchor Forces

Anchor	Tension load, N _{ua} (lb)	Shear load x, V _{uax} (lb)	Shear load y, V _{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	0.0	2500.0	0.0	2500.0
2	0.0	2500.0	0.0	2500.0
Sum	0.0	5000.0	0.0	5000.0

Maximum concrete compression strain (‰): 0.00

Maximum concrete compression stress (psi): 0

Resultant tension force (lb): 0

Resultant compression force (lb): 0

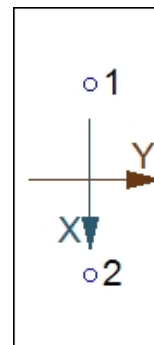
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00

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

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

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

<Figure 3>



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

V _{sa} (lb)	ϕ_{grout}	ϕ	$\phi_{grout}\phi V_{sa}$ (lb)
11975	1.0	0.65	7784

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

Shear parallel to edge in y-direction:

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

l _e (in)	d _a (in)	λ_a	f' _c (psi)	c _{a1} (in)	V _{bx} (lb)
4.00	0.500	1.00	4000	4.00	3796

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

A _{Vc} (in ²)	A _{Vco} (in ²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V _{bx} (lb)	ϕ	ϕV_{cbgy} (lb)
117.00	72.00	1.000	1.000	1.000	1.000	3796	0.70	8636

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

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

K _{cp}	A _{Nc} (in ²)	A _{Nco} (in ²)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N _b (lb)	ϕ	ϕV_{cpg} (lb)
2.0	204.00	324.00	1.000	0.833	1.000	1.000	22308	0.70	16387

11. Results

Interaction of Tensile and Shear Forces (Sec. 17.8)

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

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Shear	Factored Load, V_{ua} (lb)	Design Strength, ϕV_n (lb)	Ratio	Status
Steel	2500	7784	0.32	Pass
 Concrete breakout y+	5000	8636	0.58	Pass (Governs)
Pryout	5000	16387	0.31	Pass

1/2"Ø AWS Type A Headed Stud with hef = 6.000 inch meets the selected design criteria.

12. Warnings

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



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1. Project information

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

Project description:
Location:
Fastening description:

2. Input Data & Anchor Parameters

General

Design method: ACI 318-19
Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place
Material: AWS Type A
Diameter (inch): 0.500
Effective Embedment depth, h_{ef} (inch): 6.000
Anchor category: -
Anchor ductility: Yes
 h_{min} (inch): 7.25
 C_{min} (inch): 1.25
 S_{min} (inch): 2.00

Base Material

Concrete: Normal-weight
Concrete thickness, h (inch): 8.00
State: Cracked
Compressive strength, f'_c (psi): 4000
 $\Psi_{c,v}$: 1.0
Reinforcement condition: Supplementary reinforcement not present
Supplemental edge reinforcement: Not applicable
Reinforcement provided at corners: No
Ignore concrete breakout in tension: No
Ignore concrete breakout in shear: No
Ignore 6do requirement: No
Build-up grout pad: No

Base Plate

Length x Width x Thickness (inch): 9.00 x 9.00 x 0.25
Yield stress: 36000 psi

Profile type/size: HSS2X1X1/8

Recommended Anchor

Anchor Name: Headed Stud - 1/2"Ø AWS Type A Headed Stud



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

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Address:			
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E-mail:			

Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: No

Anchors subjected to sustained tension: Not applicable

Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: No

Strength level loads:

N_{ua} [lb]: 1000

V_{uax} [lb]: 0

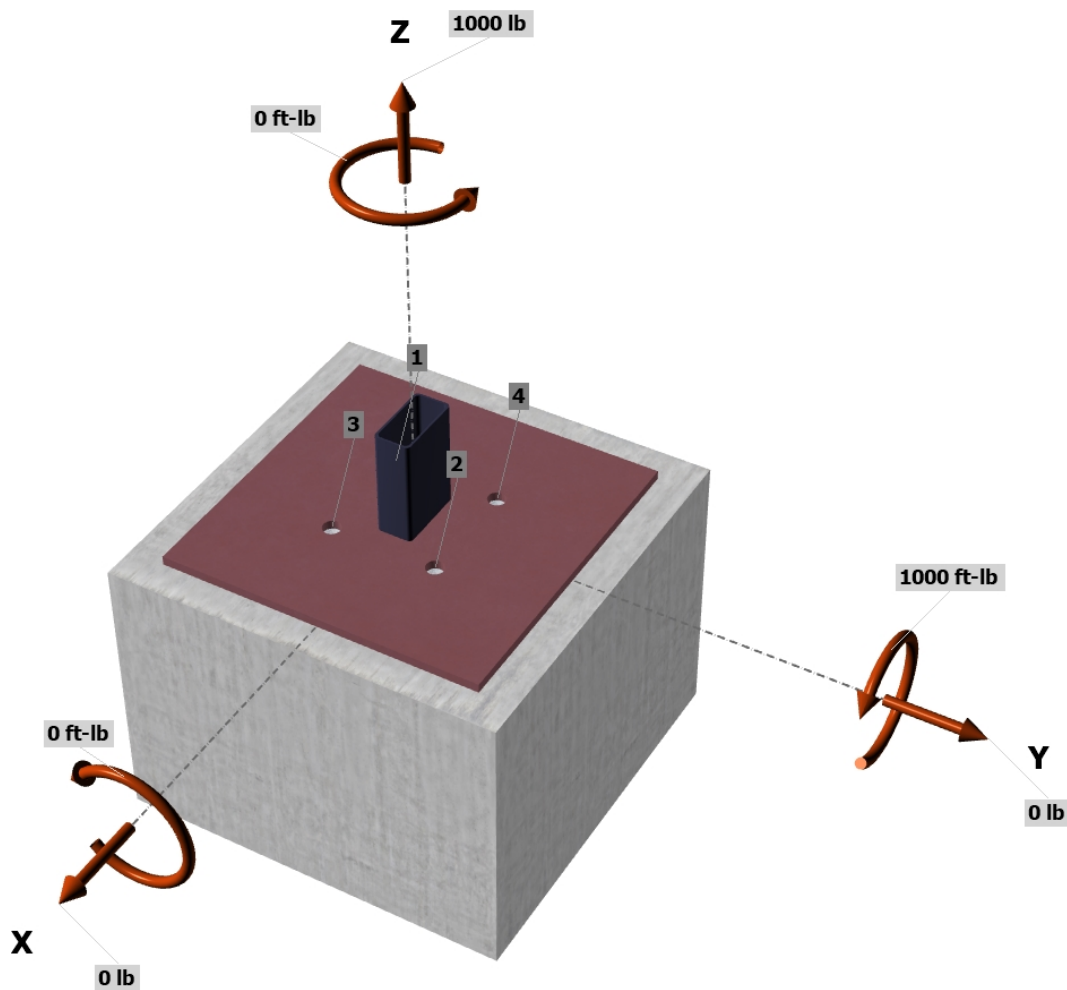
V_{uay} [lb]: 0

M_{ux} [ft-lb]: 0

M_{uy} [ft-lb]: 1000

M_{uz} [ft-lb]: 0

<Figure 1>



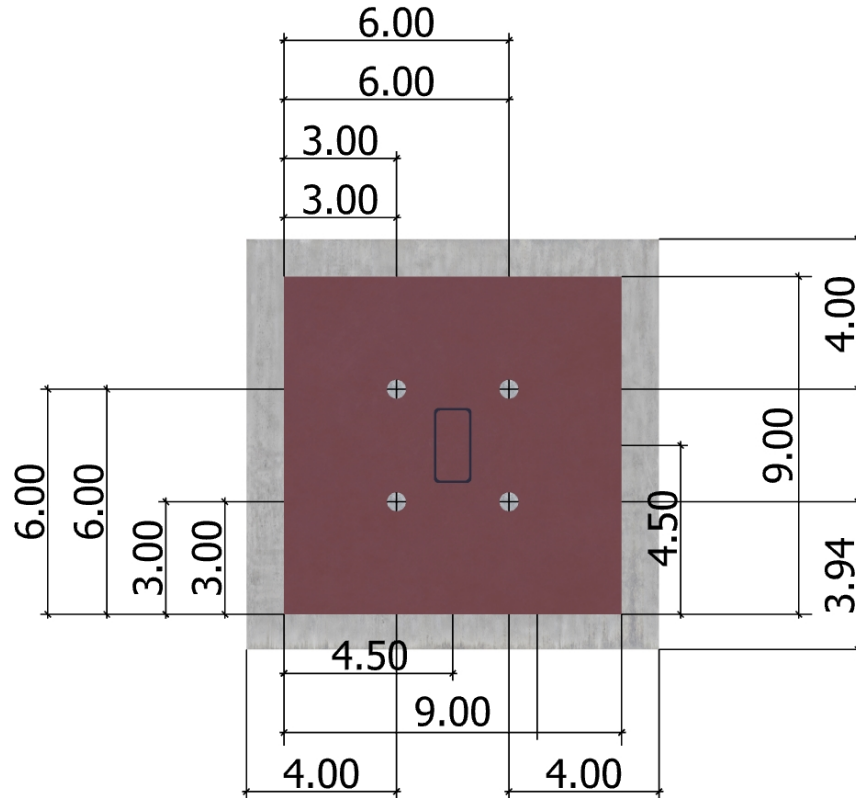
Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

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<Figure 2>





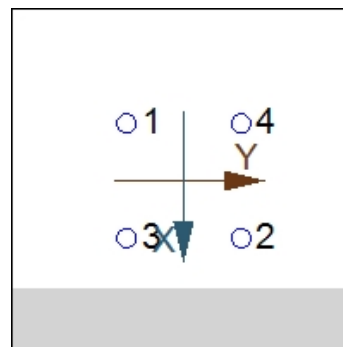
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3. Resulting Anchor Forces

Anchor	Tension load, N _{ua} (lb)	Shear load x, V _{uax} (lb)	Shear load y, V _{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	1286.7	0.0	0.0	0.0
2	395.3	0.0	0.0	0.0
3	395.3	0.0	0.0	0.0
4	1286.7	0.0	0.0	0.0
Sum	3364.0	0.0	0.0	0.0

Maximum concrete compression strain (‰): 0.07
Maximum concrete compression stress (psi): 315
Resultant tension force (lb): 3364
Resultant compression force (lb): 2364
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00
Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.79

<Figure 3>



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

N _{sa} (lb)	φ	φN _{sa} (lb)
11975	0.75	8981

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

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

k _c	λ _a	f' _c (psi)	h _{ef} (in)	N _b (lb)
24.0	1.00	4000	2.667	6610

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

A _{Nc} (in ²)	A _{Nco} (in ²)	c _{a,min} (in)	Ψ _{ec,N}	Ψ _{ed,N}	Ψ _{c,N}	Ψ _{cp,N}	N _b (lb)	φ	φN _{cbg} (lb)
120.31	64.00	3.94	0.834	0.995	1.00	1.000	6610	0.70	7221

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

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

Ψ _{c,P}	A _{brg} (in ²)	f' _c (psi)	φ	φN _{pn} (lb)
1.0	0.59	4000	0.70	13194



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11. Results

Interaction of Tensile and Shear Forces (Sec. 17.8)

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	1287	8981	0.14	Pass
Concrete breakout	3364	7221	0.47	Pass (Governs)
Pullout	1287	13194	0.10	Pass

1/2"Ø AWS Type A Headed Stud with hef = 6.000 inch meets the selected design criteria.

12. Warnings

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



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1. Project information

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

Project description:
Location:
Fastening description:

2. Input Data & Anchor Parameters

General

Design method: ACI 318-19
Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place
Material: AWS Type A
Diameter (inch): 0.500
Effective Embedment depth, h_{ef} (inch): 6.000
Anchor category: -
Anchor ductility: Yes
 h_{min} (inch): 7.25
 C_{min} (inch): 1.25
 S_{min} (inch): 2.00

Base Material

Concrete: Normal-weight
Concrete thickness, h (inch): 8.00
State: Cracked
Compressive strength, f'_c (psi): 4000
 $\Psi_{c,v}$: 1.0
Reinforcement condition: Supplementary reinforcement not present
Supplemental edge reinforcement: Not applicable
Reinforcement provided at corners: No
Ignore concrete breakout in tension: No
Ignore concrete breakout in shear: No
Ignore 6do requirement: No
Build-up grout pad: No

Base Plate

Length x Width x Thickness (inch): 9.00 x 9.00 x 0.25
Yield stress: 36000 psi

Profile type/size: HSS2X1X1/8

Recommended Anchor

Anchor Name: Headed Stud - 1/2"Ø AWS Type A Headed Stud



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

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Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: No

Anchors subjected to sustained tension: Not applicable

Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: No

Strength level loads:

N_{ua} [lb]: 4000

V_{uax} [lb]: 0

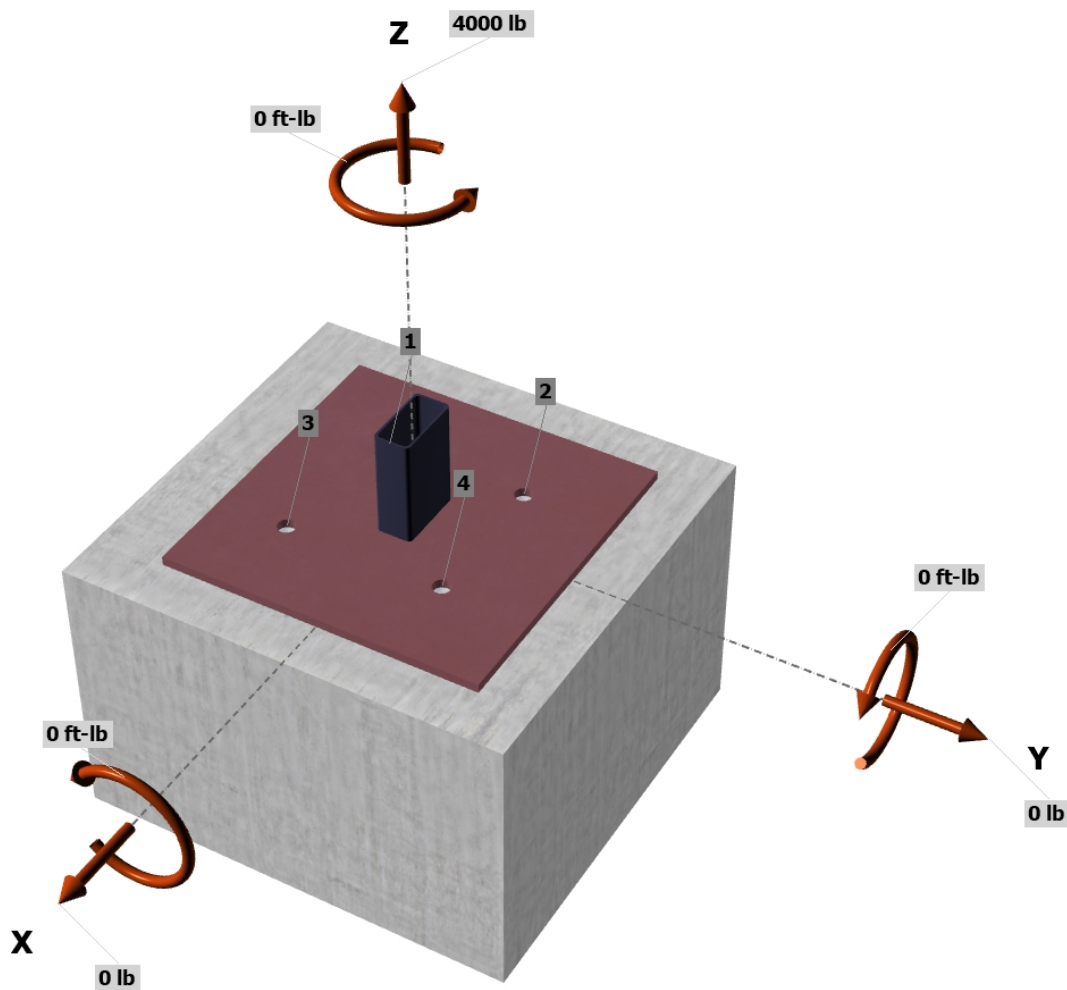
V_{uay} [lb]: 0

M_{ux} [ft-lb]: 0

M_{uy} [ft-lb]: 0

M_{uz} [ft-lb]: 0

<Figure 1>

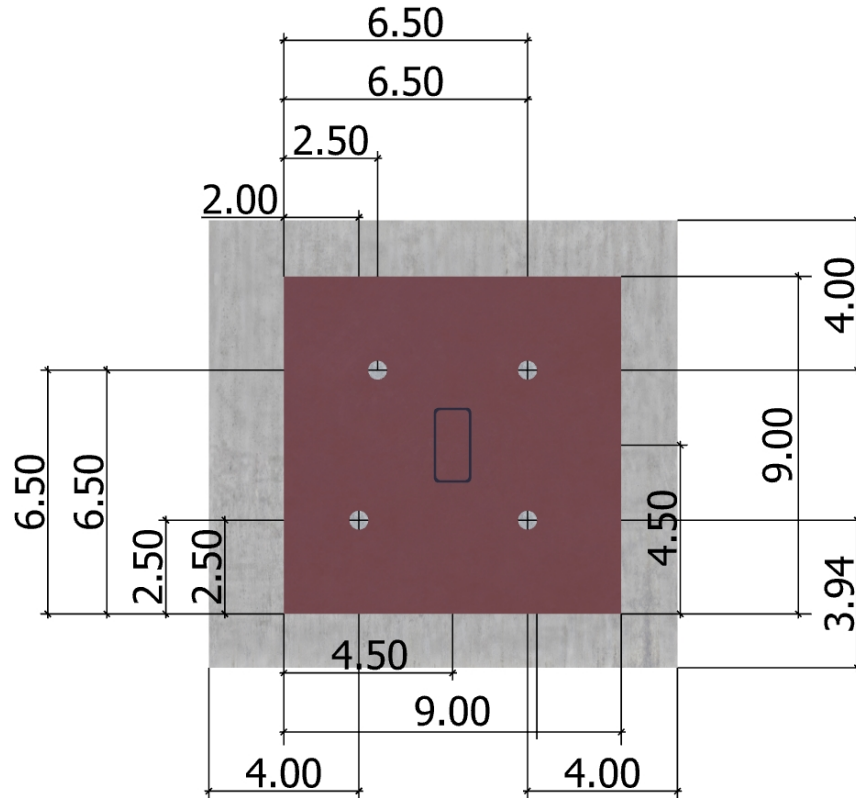


Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

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<Figure 2>

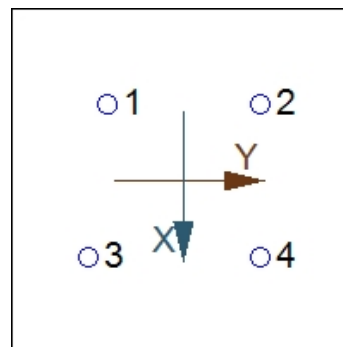


3. Resulting Anchor Forces

Anchor	Tension load, N _{ua} (lb)	Shear load x, V _{uax} (lb)	Shear load y, V _{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	945.4	0.0	0.0	0.0
2	1054.5	0.0	0.0	0.0
3	938.7	0.0	0.0	0.0
4	1061.4	0.0	0.0	0.0
Sum	4000.0	0.0	0.0	0.0

Maximum concrete compression strain (‰): 0.00
Maximum concrete compression stress (psi): 0
Resultant tension force (lb): 4000
Resultant compression force (lb): 0
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.12
Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00

<Figure 3>



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

N _{sa} (lb)	φ	φN _{sa} (lb)
11975	0.75	8981

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

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

k _c	λ _a	f' _c (psi)	h _{ef} (in)	N _b (lb)
24.0	1.00	4000	2.667	6610

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

A _{Nc} (in ²)	A _{Nco} (in ²)	c _{a,min} (in)	Ψ _{ec,N}	Ψ _{ed,N}	Ψ _{c,N}	Ψ _{cp,N}	N _b (lb)	φ	φN _{cbg} (lb)
147.21	64.00	3.94	0.970	0.995	1.00	1.000	6610	0.70	10275

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

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

Ψ _{c,P}	A _{brg} (in ²)	f' _c (psi)	φ	φN _{pn} (lb)
1.0	0.59	4000	0.70	13194



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11. Results

Interaction of Tensile and Shear Forces (Sec. 17.8)

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	1061	8981	0.12	Pass
Concrete breakout	4000	10275	0.39	Pass (Governs)
Pullout	1061	13194	0.08	Pass

1/2"Ø AWS Type A Headed Stud with hef = 6.000 inch meets the selected design criteria.

12. Warnings

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



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Customer contact name:
Customer e-mail:
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Project description:
Location:
Fastening description:

2. Input Data & Anchor Parameters

General

Design method: ACI 318-19
Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place
Material: AWS Type A
Diameter (inch): 0.500
Effective Embedment depth, h_{ef} (inch): 6.000
Anchor category: -
Anchor ductility: Yes
 h_{min} (inch): 7.25
 C_{min} (inch): 1.25
 S_{min} (inch): 2.00

Base Material

Concrete: Normal-weight
Concrete thickness, h (inch): 8.00
State: Cracked
Compressive strength, f'_c (psi): 4000
 $\Psi_{c,v}$: 1.0
Reinforcement condition: Supplementary reinforcement not present
Supplemental edge reinforcement: Not applicable
Reinforcement provided at corners: No
Ignore concrete breakout in tension: No
Ignore concrete breakout in shear: No
Ignore 6do requirement: No
Build-up grout pad: No

Base Plate

Length x Width x Thickness (inch): 9.00 x 9.00 x 0.25
Yield stress: 36000 psi

Profile type/size: HSS2X1X1/8

Recommended Anchor

Anchor Name: Headed Stud - 1/2"Ø AWS Type A Headed Stud





Company:		Date:	9/8/2022
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Project:			
Address:			
Phone:			
E-mail:			

Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: No

Anchors subjected to sustained tension: Not applicable

Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: No

Strength level loads:

N_{ua} [lb]: 4000

V_{uax} [lb]: 0

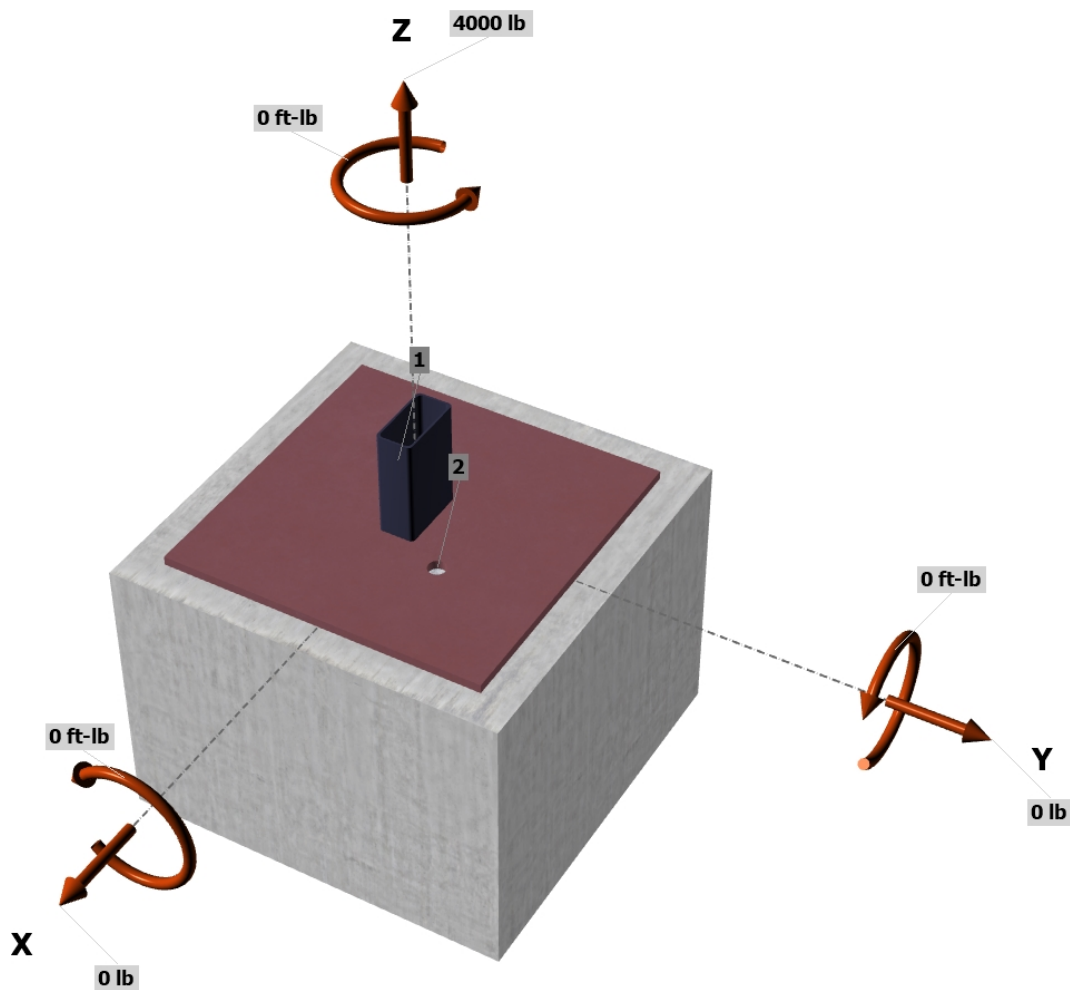
V_{uay} [lb]: 0

M_{ux} [ft-lb]: 0

M_{uy} [ft-lb]: 0

M_{uz} [ft-lb]: 0

<Figure 1>



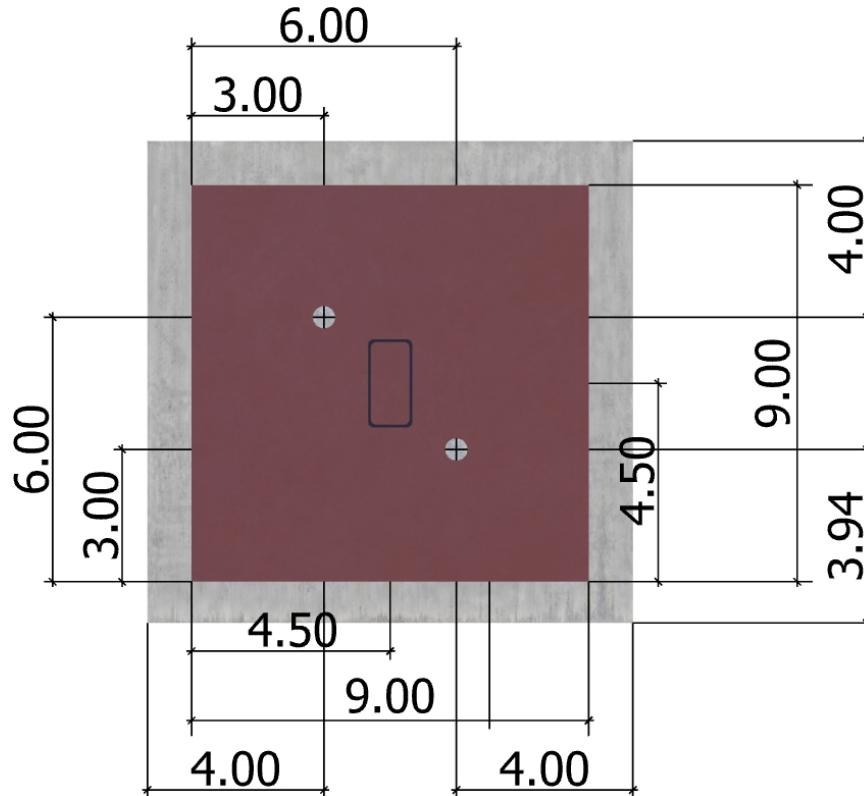
Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

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



Company:		Date:	9/8/2022
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Address:			
Phone:			
E-mail:			

<Figure 2>



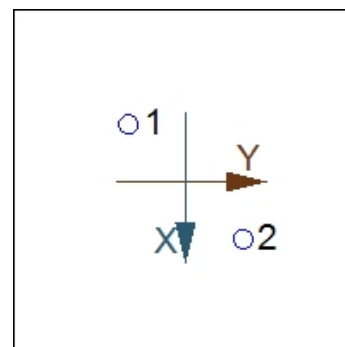
Company:		Date:	9/8/2022
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Phone:			
E-mail:			

3. Resulting Anchor Forces

Anchor	Tension load, N_{ua} (lb)	Shear load x, V_{uax} (lb)	Shear load y, V_{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	2000.0	0.0	0.0	0.0
2	2000.0	0.0	0.0	0.0
Sum	4000.0	0.0	0.0	0.0

Maximum concrete compression strain (%): 0.00
Maximum concrete compression stress (psi): 0
Resultant tension force (lb): 4000
Resultant compression force (lb): 0
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00
Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00

<Figure 3>



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

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
11975	0.75	8981

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

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

k_c	λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	4000	2.667	6610

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

A_{Nc} (in ²)	A_{Nco} (in ²)	$c_{a,min}$ (in)	$\psi_{ec,N}$	$\psi_{ed,N}$	$\psi_{c,N}$	$\psi_{cp,N}$	N_b (lb)	ϕ	ϕN_{cbg} (lb)
102.50	64.00	3.94	1.000	0.995	1.00	1.000	6610	0.70	7375

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

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

$\psi_{c,P}$	A_{brg} (in ²)	f'_c (psi)	ϕ	ϕN_{pn} (lb)
1.0	0.59	4000	0.70	13194



Anchor Designer™
Software
Version 3.1.2209.3

Company:		Date:	9/8/2022
Engineer:		Page:	5/5
Project:			
Address:			
Phone:			
E-mail:			

11. Results

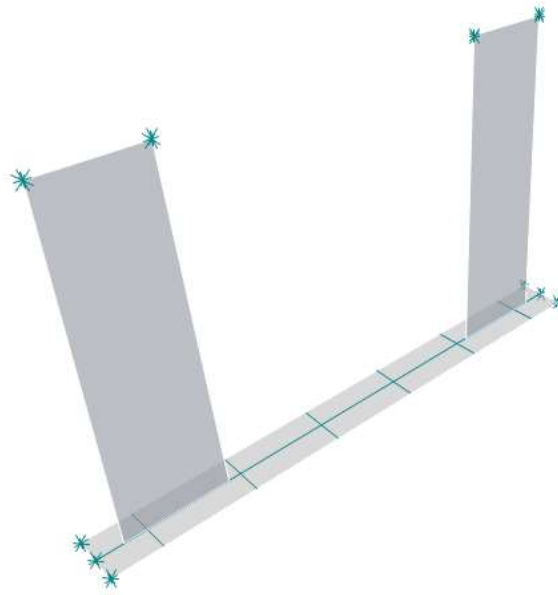
Interaction of Tensile and Shear Forces (Sec. 17.8)

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	2000	8981	0.22	Pass
Concrete breakout	4000	7375	0.54	Pass (Governs)
Pullout	2000	13194	0.15	Pass

1/2"Ø AWS Type A Headed Stud with hef = 6.000 inch meets the selected design criteria.

12. Warnings

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



Foundation check

Gary Matzner Park

Model File: fund check, Revision

11/18/2024

1 Properties

This chapter provides property information for materials, frame sections, shell sections, and links.

1.1 Spring Properties

Table 1.1 - Spring Property Definitions - Area Springs

Name	Subgrade Modulus kip/in/in2	Nonlinear Option	Color	Notes
SOIL1	0.15	Compression Only	Cyan	

2 Assignments

This chapter provides a listing of the assignments applied to the model.

2.1 Shell Assignments

Table 2.1 - Area Assignments - Area Springs

UniqueName	Spring Property
16	SOIL1
3	SOIL1

3 Loads

This chapter provides loading information as applied to the model.

3.1 Load Combinations

Table 3.1 - Load Combination Definitions

Name	Type	Is Auto	Load Name	SF	Notes
0.9D-W	Linear Add	No	D	0.9	DW12
0.9D-W			SD	0.9	
0.9D-W	Linear Add	No	Wind(case)	-1	
0.9D+W			D	0.9	DW11
0.9D+W	Linear Add	No	SD	0.9	
0.9D+W			Wind(case)	1	
1.2D+1.0L-W	Linear Add	No	D	1.2	DW6
1.2D+1.0L-W			L	1	
1.2D+1.0L-W	Linear Add	No	SD	1.2	
1.2D+1.0L-W			Wind(case)	-1	
1.2D+1.0L+0.5Lr-W	Linear Add	No	D	1.2	DW8
1.2D+1.0L+0.5Lr-W			L	1	
1.2D+1.0L+0.5Lr-W	Linear Add	No	Lr	0.5	
1.2D+1.0L+0.5Lr-W			SD	1.2	
1.2D+1.0L+0.5Lr-W	Linear Add	No	Wind(case)	-1	
1.2D+1.0L+0.5Lr+W			D	1.2	DW7
1.2D+1.0L+0.5Lr+W	Linear Add	No	L	1	
1.2D+1.0L+0.5Lr+W			Lr	0.5	
1.2D+1.0L+0.5Lr+W	Linear Add	No	SD	1.2	
1.2D+1.0L+0.5Lr+W			Wind(case)	1	
1.2D+1.0L+W	Linear Add	No	D	1.2	DW5
1.2D+1.0L+W			L	1	
1.2D+1.0L+W	Linear Add	No	SD	1.2	
1.2D+1.0L+W			Wind(case)	1	
1.2D+1.6L	Linear Add	No	D	1.2	DW2
1.2D+1.6L			L	1.6	
1.2D+1.6L	Linear Add	No	SD	1.2	
1.2D+1.6L+0.5Lr			D	1.2	DW3
1.2D+1.6L+0.5Lr	Linear Add	No	L	1.6	
1.2D+1.6L+0.5Lr			Lr	0.5	
1.2D+1.6L+0.5Lr	Linear Add	No	SD	1.2	
1.2D+1.6Lr-0.5W			D	1.2	DW10
1.2D+1.6Lr-0.5W	Linear Add	No	Lr	1.6	
1.2D+1.6Lr-0.5W			SD	1.2	
1.2D+1.6Lr-0.5W	Linear Add	No	Wind(case)	-0.5	
1.2D+1.6Lr+0.5W			D	1.2	DW9
1.2D+1.6Lr+0.5W	Linear Add	No	Lr	1.6	
1.2D+1.6Lr+0.5W			SD	1.2	
1.2D+1.6Lr+0.5W	Linear Add	No	Wind(case)	0.5	
1.2D+1.6Lr+1.0L			D	1.2	DW4
1.2D+1.6Lr+1.0L	Linear Add	No	L	1	

Table 3.1 - Load Combination Definitions (continued)

Name	Type	Is Auto	Load Name	SF	Notes
1.2D+1.6Lr+1.0L			Lr	1.6	
1.2D+1.6Lr+1.0L			SD	1.2	
1.4D+1.4SD	Linear Add	No	D	1.4	DW _{al} 1
1.4D+1.4SD			SD	1.4	
DConS1	Linear Add	Yes	D	1.4	Dead [Strength]
DConS1			SD	1.4	
DConS2	Linear Add	Yes	D	1.2	Dead + Live [Strength]
DConS2			L	1.6	
DConS2			SD	1.2	
DConS3	Linear Add	Yes	D	1.2	Dead + Live + Wind + Snow [Strength]
DConS3			L	1	
DConS3			SD	1.2	
DConS3			Wind(case)	1	
DConS4	Linear Add	Yes	D	1.2	Dead + Live - Wind + Snow [Strength]
DConS4			L	1	
DConS4			SD	1.2	
DConS4			Wind(case)	-1	
DConS5	Linear Add	Yes	D	0.9	Dead (min) + Wind [Strength]
DConS5			SD	0.9	
DConS5			Wind(case)	1	
DConS6	Linear Add	Yes	D	0.9	Dead (min) - Wind [Strength]
DConS6			SD	0.9	
DConS6			Wind(case)	-1	
Live only	Linear Add	No	L	1	
Live only			Lr	1	
service1...D	Linear Add	No	D	1	
service1...D			SD	1	
service2...D+L	Linear Add	No	D	1	
service2...D+L			L	1	
service2...D+L			SD	1	
service4...D+0.75L+0.75Lr	Linear Add	No	D	1	
service4...D+0.75L+0.75Lr			L	0.75	
service4...D+0.75L+0.75Lr			Lr	0.75	
service4...D+0.75L+0.75Lr			SD	1	
service5...D-0.6W	Linear Add	No	D	1	
service5...D-0.6W			Wind(case)	-0.6	
service5...D-0.6W			SD	1	
service5...D+0.6W	Linear Add	No	D	1	
service5...D+0.6W			Wind(case)	0.6	
service5...D+0.6W			SD	1	
service6...D+0.75L+0.75*0.6W+0.75Lr	Linear Add	No	D	1	
service6...D+0.75L+0.75*0.6W+0.75Lr			L	0.75	
service6...D+0.75L+0.75*0.6W+0.75Lr			Wind(case)	0.45	
service6...D+0.75L+0.75*0.6W+0.75Lr			Lr	0.75	
service6...D+0.75L+0.75*0.6W+0.75Lr			SD	1	
service6(-1/12)...D+0.75L-0.75*0.6W+0.75Lr	Linear Add	No	D	1	

Table 3.1 - Load Combination Definitions (continued)

Name	Type	Is Auto	Load Name	SF	Notes
service6(-1/12)...D+0.75L-0.75*0.6W+0.75Lr			L	0.75	
service6(-1/12)...D+0.75L-0.75*0.6W+0.75Lr			Wind(case)	-0.45	
service6(-1/12)...D+0.75L-0.75*0.6W+0.75Lr			Lr	0.75	
service6(-1/12)...D+0.75L-0.75*0.6W+0.75Lr			SD	1	
service7...0.6D-0.6W	Linear Add	No	D	0.6	
service7...0.6D-0.6W			Wind(case)	-0.6	
service7...0.6D-0.6W			SD	0.6	
service7...0.6D+0.6W	Linear Add	No	D	0.6	
service7...0.6D+0.6W			Wind(case)	0.6	
service7...0.6D+0.6W			SD	0.6	

4 Design Data

This chapter provides design data and results.

4.1 Concrete Slab Design

Table 4.1 - Concrete Slab Design Summary - Span Definition Data

StripObject	SpanID	SpanLength in	StartDist in	EndDist in	GlobalX1 in	GlobalY1 in	GlobalX2 in	GlobalY2 in
CSB1	Span 1	10	12	242	47.8735	182.4324	57.8735	182.4324
CSB1	Span 2	38	22	204	57.8735	182.4324	95.8735	182.4324
CSB1	Span 3	6	60	198	95.8735	182.4324	101.8735	182.4324
CSB1	Span 4	44	66	154	101.8735	182.4324	145.8735	182.4324
CSB1	Span 5	44	110	110	145.8735	182.4324	189.8735	182.4324
CSB1	Span 6	44	154	66	189.8735	182.4324	233.8735	182.4324
CSB1	Span 7	6	198	60	233.8735	182.4324	239.8735	182.4324
CSB1	Span 8	38	204	22	239.8735	182.4324	277.8735	182.4324
CSB1	Span 9	10	242	12	277.8735	182.4324	287.8735	182.4324
CSA1	Span 1	24	0	0	57.8735	170.4324	57.8735	194.4324
SA1	Span 1	24	0	0	101.8735	170.4324	101.8735	194.4324
SA2	Span 1	24	0	0	145.8735	170.4324	145.8735	194.4324
SA3	Span 1	24	0	0	189.8735	170.4324	189.8735	194.4324
SA4	Span 1	24	0	0	233.8735	170.4324	233.8735	194.4324
SA5	Span 1	24	0	0	277.8735	170.4324	277.8735	194.4324

Table 4.2 - Concrete Slab Design Summary - Flexure and Shear Data (Part 1 of 2)

StripObject	SpanID	TopCombo	BotCombo	VCombo	Location	F _{Top} Moment kip-ft	F _{Top} Area in ²	F _{Top} AMin in ²	F _{Bot} Moment kip-ft	F _{Bot} Area in ²	F _{Bot} AMin in ²
CSB1	Span 1	DConS5	DConS3	DConS6	Start	-1.0903	0.0872	0.5184	0.4736	0.0775	0
CSB1	Span 1				Middle	0	0	0	0	0	0
CSB1	Span 1	DConS5	DConS3	DConS6	End	-0.8856	0.0491	0	1.431	0.0707	0.5184
CSB1	Span 2	DConS5	DConS3	DConS6	Start	-0.8856	0.0491	0	1.431	0.0707	0.5184
CSB1	Span 2				Middle	0	0	0	0	0	0
CSB1	Span 2	DConS4	DConS5	DConS6	End	-33.9931	0.8963	0	33.0215	0.9943	0.5184
CSB1	Span 3	DConS4	DConS5	DConS6	Start	-33.9931	0.8963	0	33.0215	0.9943	0.5184
CSB1	Span 3				Middle	0	0	0	0	0	0
CSB1	Span 3	DConS4	DConS5	DConS6	End	-31.8448	0.8367	0	29.6909	0.8879	0.5184
CSB1	Span 4	DConS4	DConS5	DConS6	Start	-31.8448	0.8367	0	29.6909	0.8879	0.5184
CSB1	Span 4				Middle	0	0	0	0	0	0
CSB1	Span 4	DConS4	DConS5	DConS6	End	-15.2377	0.3926	0.5184	4.4973	0.1315	0
CSB1	Span 5	DConS4	DConS5	DConS6	Start	-15.2377	0.3926	0.5184	4.4973	0.1315	0
CSB1	Span 5				Middle	0	0	0	0	0	0
CSB1	Span 5	DConS3	DConS6	DConS6	End	-15.2381	0.3928	0.5184	4.4977	0.1314	0
CSB1	Span 6	DConS3	DConS6	DConS6	Start	-15.2381	0.3928	0.5184	4.4977	0.1314	0
CSB1	Span 6				Middle	0	0	0	0	0	0
CSB1	Span 6	DConS3	DConS6	DConS6	End	-31.8453	0.8369	0	29.6914	0.8878	0.5184
CSB1	Span 7	DConS3	DConS6	DConS6	Start	-31.8453	0.8369	0	29.6914	0.8878	0.5184
CSB1	Span 7				Middle	0	0	0	0	0	0
CSB1	Span 7	DConS3	DConS6	DConS6	End	-33.9936	0.8965	0	33.022	0.9943	0.5184
CSB1	Span 8	DConS3	DConS6	DConS6	Start	-33.9936	0.8965	0	33.022	0.9943	0.5184

Table 4.2 - Concrete Slab Design Summary - Flexure and Shear Data (Part 1 of 2, continued)

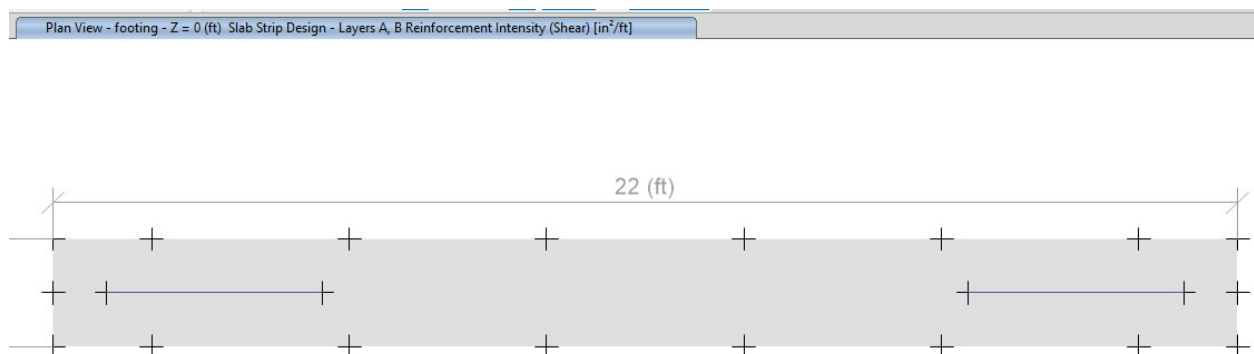
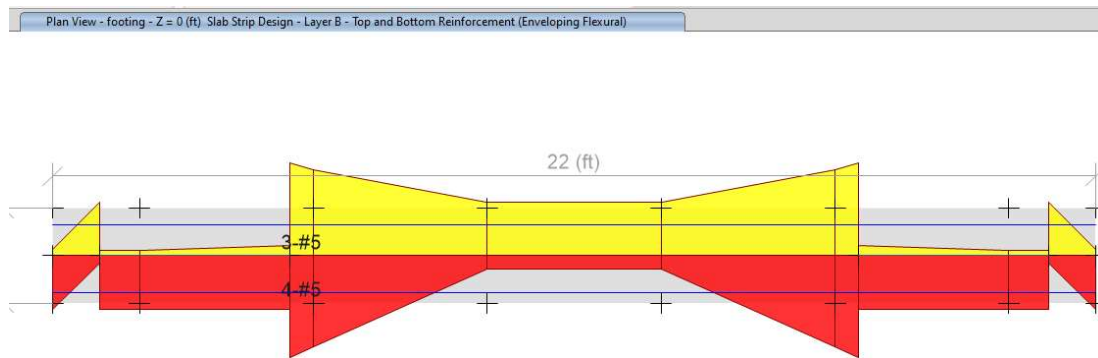
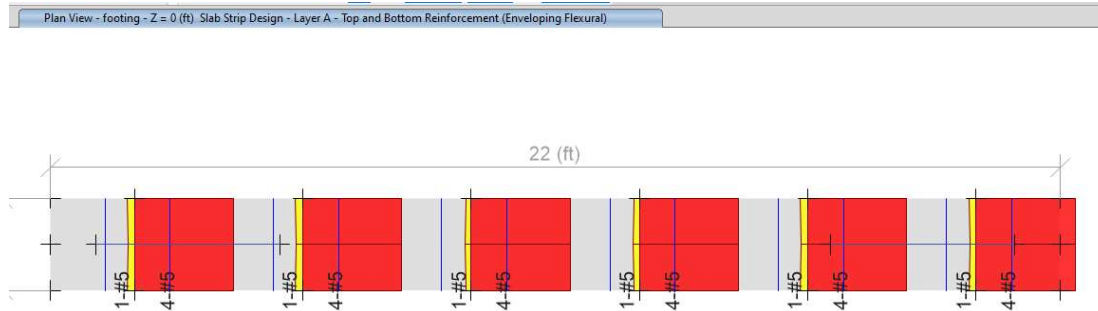
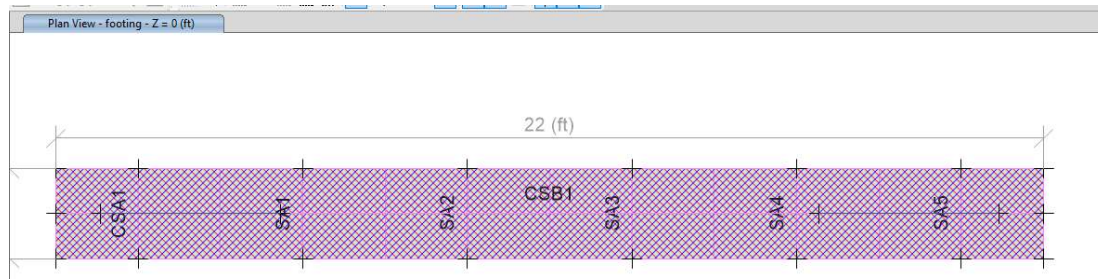
Strip	Object	Span	ID	TopCombo	BotCombo	VCombo	Location	FTop	Moment	FTop	Area	FTop	AMin	FBot	Moment	FBot	Area	FBot	AMin
								kip-ft		in2		in2		kip-ft		in2		in2	
CSB1		Span 8					Middle	0		0		0		0		0		0	
CSB1		Span 8	DConS6	DConS4	DConS6		End	-0.8878		0.0492		0		1.4282		0.0708		0.5184	
CSB1		Span 9	DConS6	DConS4	DConS6		Start	-0.8878		0.0492		0		1.4282		0.0708		0.5184	
CSB1		Span 9					Middle	0		0		0		0		0		0	
CSB1		Span 9	DConS6	DConS4	DConS6		End	-1.0898		0.087		0.5184		0.4732		0.0773		0	
CSA1		Span 1	DConS5	DConS4			Start	-2.3324		0.0715		0		2.6956		0.0815		0.9504	
CSA1		Span 1	DConS5	DConS4	DConS6		Middle	-2.2535		0.063		0		5.2075		0.1382		0.9504	
CSA1		Span 1	DConS5	DConS4	DConS6		End	-2.3324		0.0715		0		2.6956		0.0815		0.9504	
SA1		Span 1	DConS6	DConS3			Start	-2.9918		0.0718		0		3.4367		0.0926		0.9504	
SA1		Span 1	DConS6	DConS3	DConS6		Middle	-2.9177		0.0688		0		4.2877		0.1123		0.9504	
SA1		Span 1	DConS6	DConS3	DConS6		End	-2.9918		0.0718		0		3.4367		0.0926		0.9504	
SA2		Span 1	DConS4	DConS5			Start	-2.1098		0.052		0		1.8077		0.0521		0.9504	
SA2		Span 1	DConS6	DConS3	DConS6		Middle	-2.4986		0.0607		0		2.7448		0.0747		0.9504	
SA2		Span 1	DConS4	DConS5	DConS6		End	-2.1098		0.052		0		1.8077		0.0521		0.9504	
SA3		Span 1	DConS3	DConS6			Start	-2.1098		0.052		0		1.8077		0.0522		0.9504	
SA3		Span 1	DConS5	DConS4	DConS6		Middle	-2.4987		0.0607		0		2.7449		0.0747		0.9504	
SA3		Span 1	DConS3	DConS6	DConS6		End	-2.1099		0.052		0		1.8078		0.0522		0.9504	
SA4		Span 1	DConS5	DConS4			Start	-2.992		0.0719		0		3.4369		0.0927		0.9504	
SA4		Span 1	DConS5	DConS4	DConS6		Middle	-2.918		0.0688		0		4.2879		0.1123		0.9504	
SA4		Span 1	DConS5	DConS4	DConS6		End	-2.9919		0.0719		0		3.4368		0.0927		0.9504	
SA5		Span 1	DConS6	DConS3			Start	-2.3329		0.0713		0		2.696		0.0815		0.9504	
SA5		Span 1	DConS6	DConS3	DConS6		Middle	-2.2542		0.0629		0		5.2078		0.1382		0.9504	
SA5		Span 1	DConS6	DConS3	DConS6		End	-2.3329		0.0713		0		2.6961		0.0815		0.9504	

Table 4.2 - Concrete Slab Design Summary - Flexure and Shear Data (Part 2 of 2)

Strip	Object	Span	ID	TopCombo	BotCombo	VCombo	VForce	VArea	Status	Layer
							kip	in2/ft		
CSB1		Span 1	DConS5	DConS3	DConS6		1.924	0	OK	B
CSB1		Span 1					0	0	OK	B
CSB1		Span 1	DConS5	DConS3	DConS6		0.494	0	OK	B
CSB1		Span 2	DConS5	DConS3	DConS6		0.494	0	OK	B
CSB1		Span 2					0	0	OK	B
CSB1		Span 2	DConS4	DConS5	DConS6		0.786	0	OK	B
CSB1		Span 3	DConS4	DConS5	DConS6		0.786	0	OK	B
CSB1		Span 3					0	0	OK	B
CSB1		Span 3	DConS4	DConS5	DConS6		4.897	0	OK	B
CSB1		Span 4	DConS4	DConS5	DConS6		4.897	0	OK	B
CSB1		Span 4					0	0	OK	B
CSB1		Span 4	DConS4	DConS5	DConS6		4.524	0	OK	B
CSB1		Span 5	DConS4	DConS5	DConS6		4.524	0	OK	B
CSB1		Span 5					0	0	OK	B
CSB1		Span 5	DConS3	DConS6	DConS6		4.524	0	OK	B
CSB1		Span 6	DConS3	DConS6	DConS6		4.524	0	OK	B
CSB1		Span 6					0	0	OK	B
CSB1		Span 6	DConS3	DConS6	DConS6		7.047	0	OK	B
CSB1		Span 7	DConS3	DConS6	DConS6		7.047	0	OK	B

Table 4.2 - Concrete Slab Design Summary - Flexure and Shear Data (Part 2 of 2, continued)

StripObject	SpanID	TopCombo	BotCombo	VCombo	VForce kip	VArea in ² /ft	Status	Layer
CSB1	Span 7				0	0	OK	B
CSB1	Span 7	DConS3	DConS6	DConS6	7.047	0	OK	B
CSB1	Span 8	DConS3	DConS6	DConS6	7.047	0	OK	B
CSB1	Span 8				0	0	OK	B
CSB1	Span 8	DConS6	DConS4	DConS6	0.658	0	OK	B
CSB1	Span 9	DConS6	DConS4	DConS6	0.658	0	OK	B
CSB1	Span 9				0	0	OK	B
CSB1	Span 9	DConS6	DConS4	DConS6	0.658	0	OK	B
CSA1	Span 1	DConS5	DConS4		0	0	OK	A
CSA1	Span 1	DConS5	DConS4	DConS6	2.424	0	OK	A
CSA1	Span 1	DConS5	DConS4	DConS6	2.424	0	OK	A
SA1	Span 1	DConS6	DConS3		0	0	OK	A
SA1	Span 1	DConS6	DConS3	DConS6	0.339	0	OK	A
SA1	Span 1	DConS6	DConS3	DConS6	0.339	0	OK	A
SA2	Span 1	DConS4	DConS5		0	0	OK	A
SA2	Span 1	DConS6	DConS3	DConS6	0.412	0	OK	A
SA2	Span 1	DConS4	DConS5	DConS6	0.412	0	OK	A
SA3	Span 1	DConS3	DConS6		0	0	OK	A
SA3	Span 1	DConS5	DConS4	DConS6	0.942	0	OK	A
SA3	Span 1	DConS3	DConS6	DConS6	0.942	0	OK	A
SA4	Span 1	DConS5	DConS4		0	0	OK	A
SA4	Span 1	DConS5	DConS4	DConS6	1.854	0	OK	A
SA4	Span 1	DConS5	DConS4	DConS6	1.854	0	OK	A
SA5	Span 1	DConS6	DConS3		0	0	OK	A
SA5	Span 1	DConS6	DConS3	DConS6	0.19	0	OK	A
SA5	Span 1	DConS6	DConS3	DConS6	0.19	0	OK	A



ACI 318-14 Concrete Strip Design

Geometric Properties	Material Properties
Combination = Overall	Concrete Comp. Strength =
Envelope	Concrete Modulus =
Strip Label = CSB1	Longitudinal Rebar Yield =
Length = 22 ft	
Distance to Top Rebar Center =	
Distance to Bot Rebar Center =	

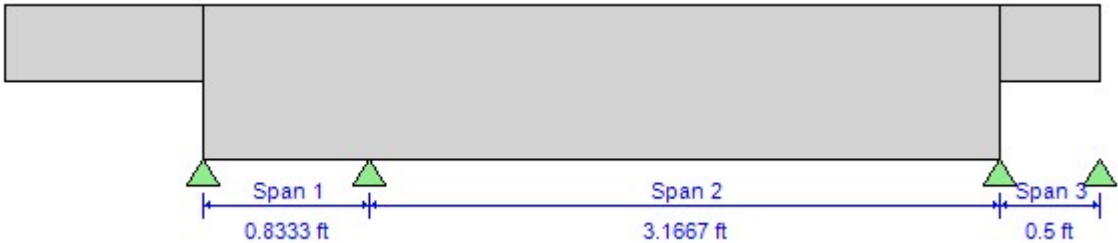


Figure 4-1-

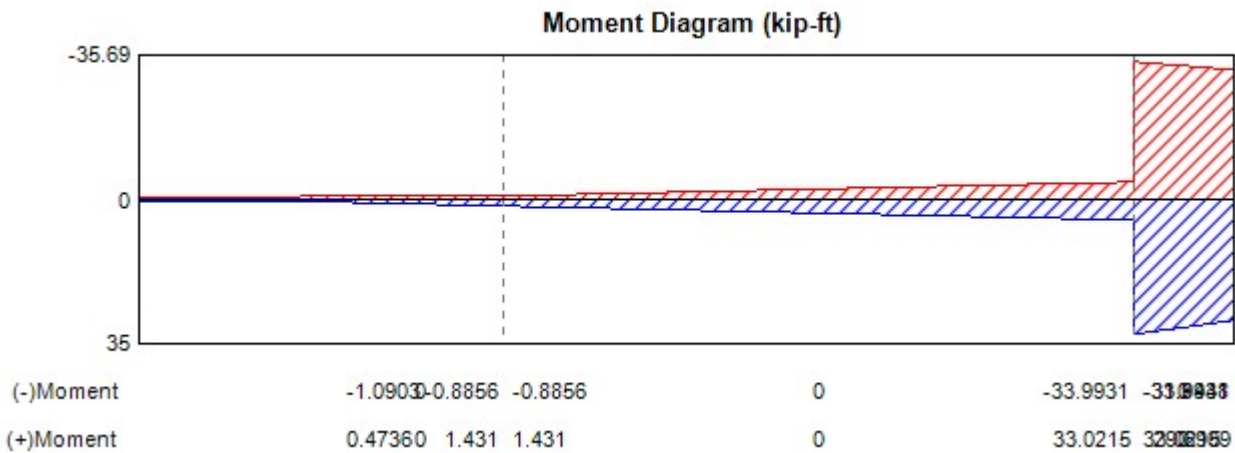


Figure 4-2-

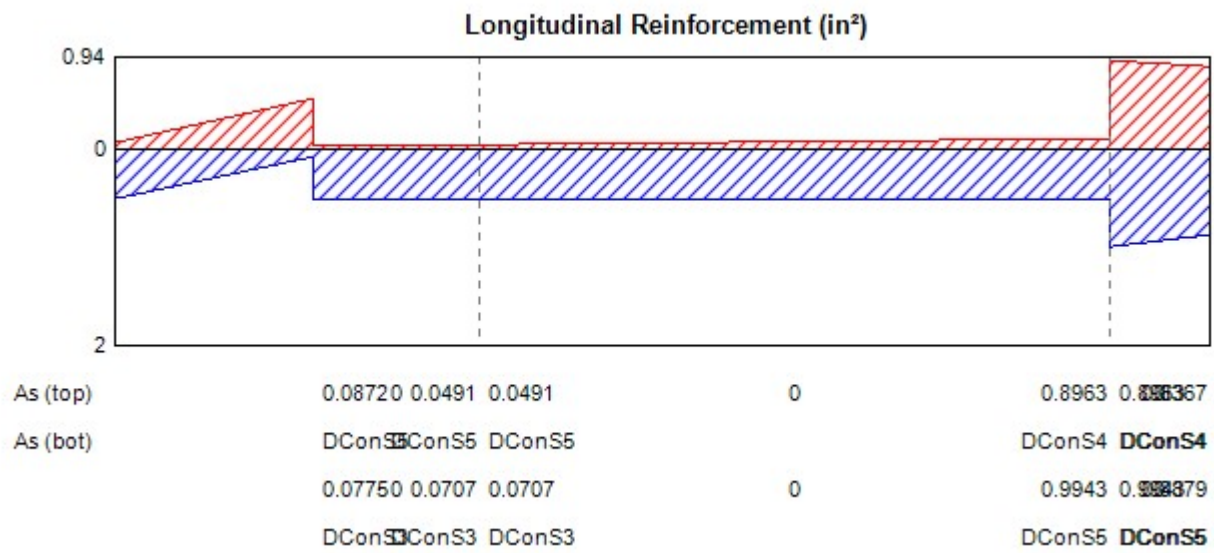


Figure 4-3-

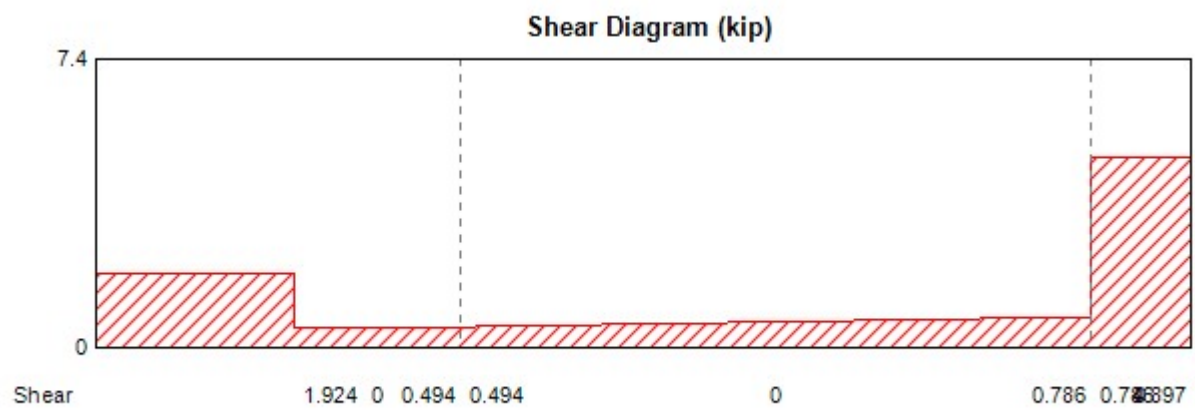


Figure 4-4-

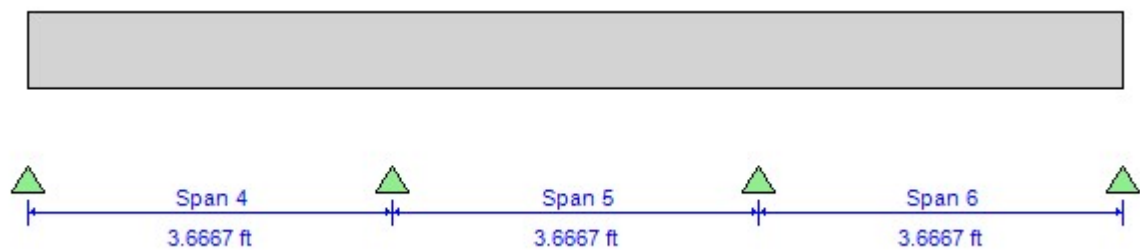


Figure 4-5-

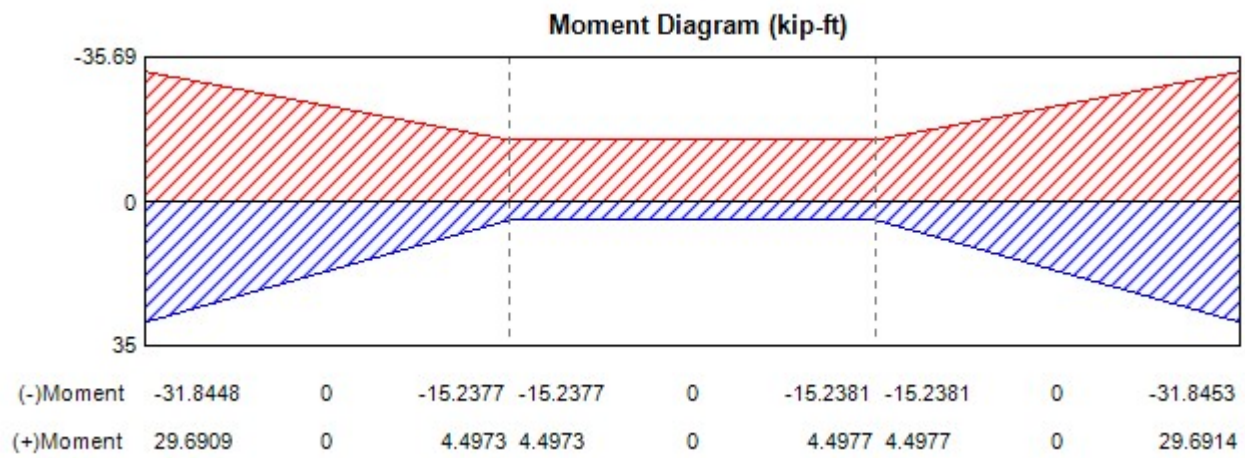


Figure 4-6-

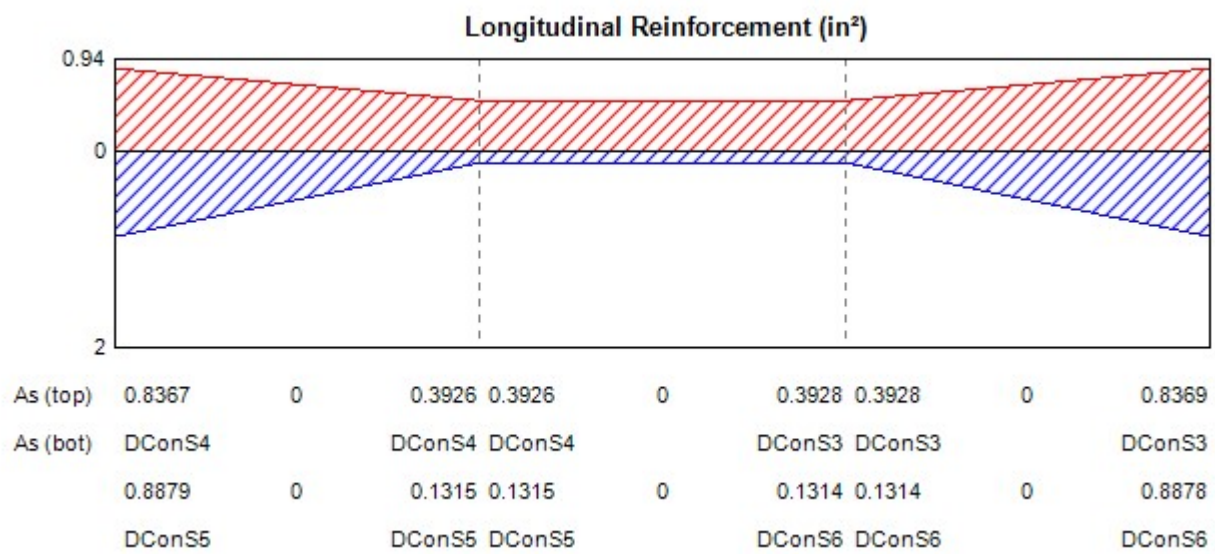


Figure 4-7-

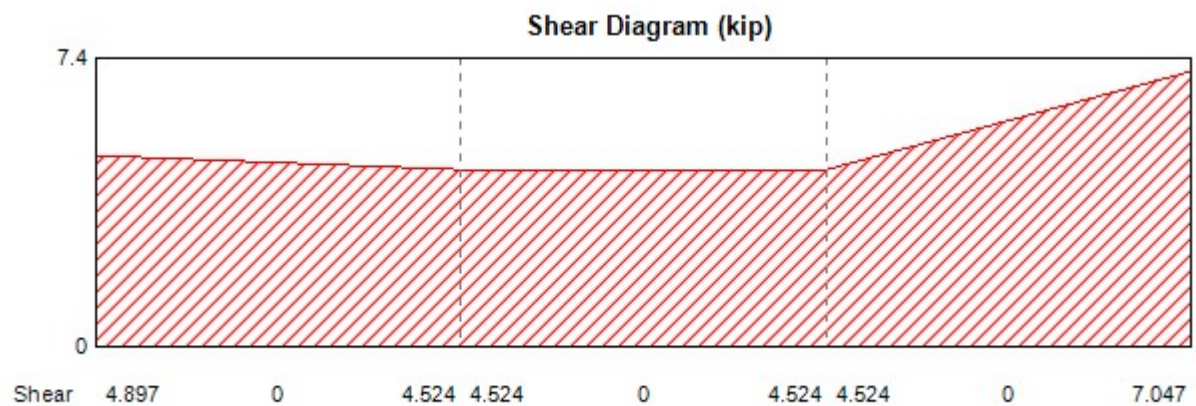


Figure 4-8-

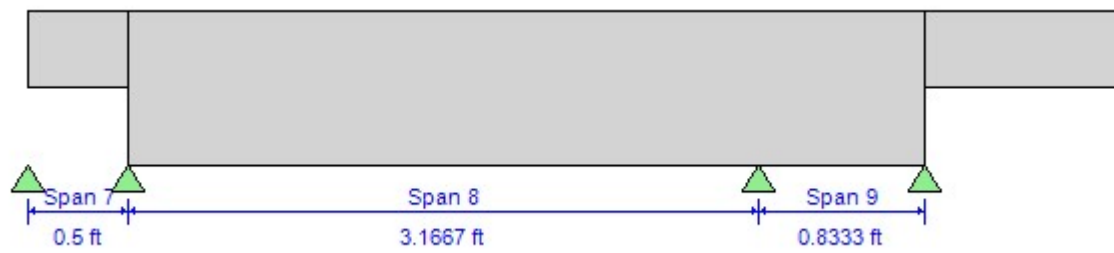


Figure 4-9-

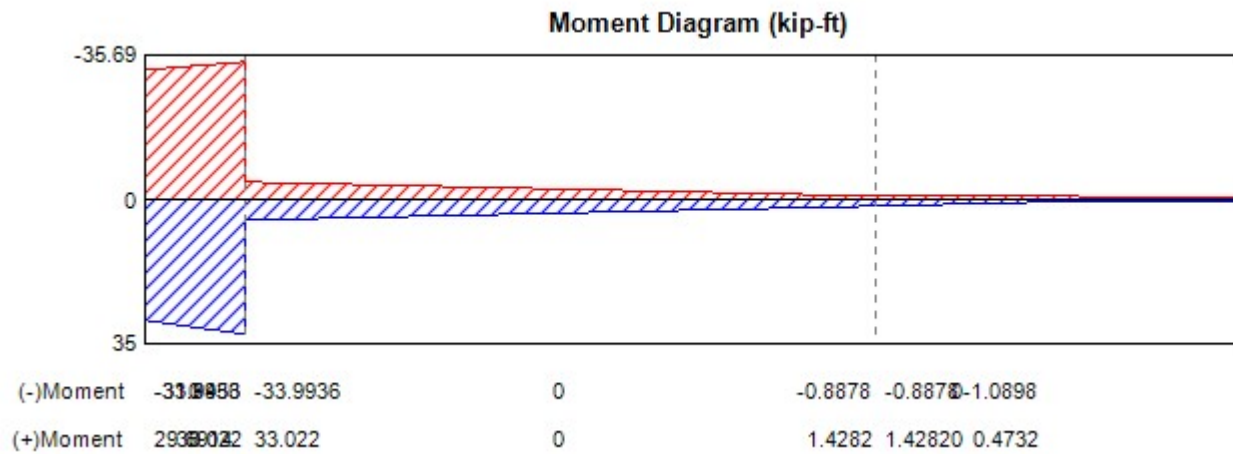


Figure 4-10-

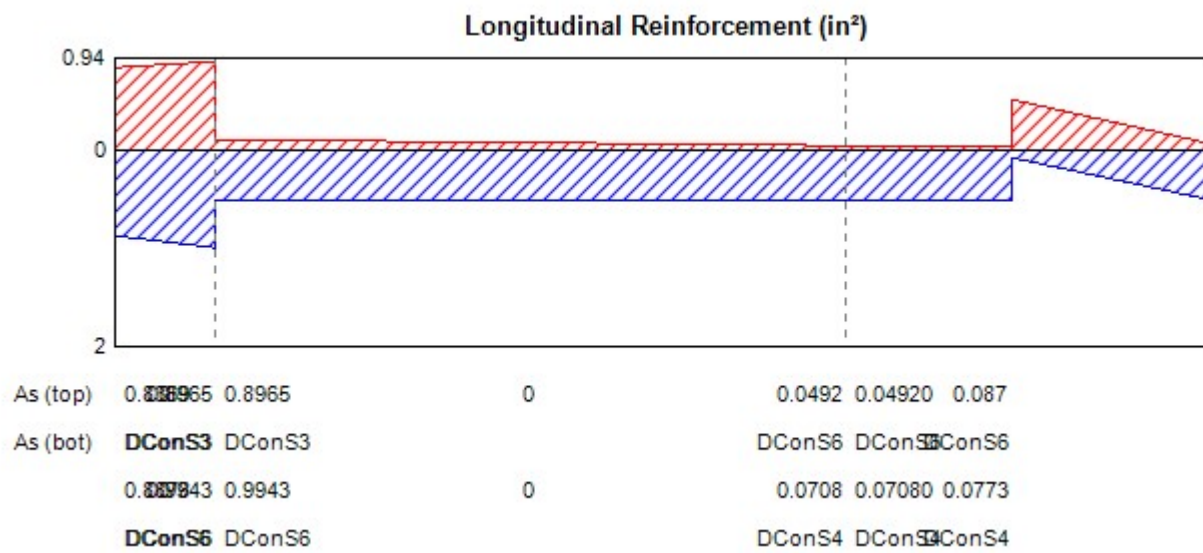


Figure 4-11-

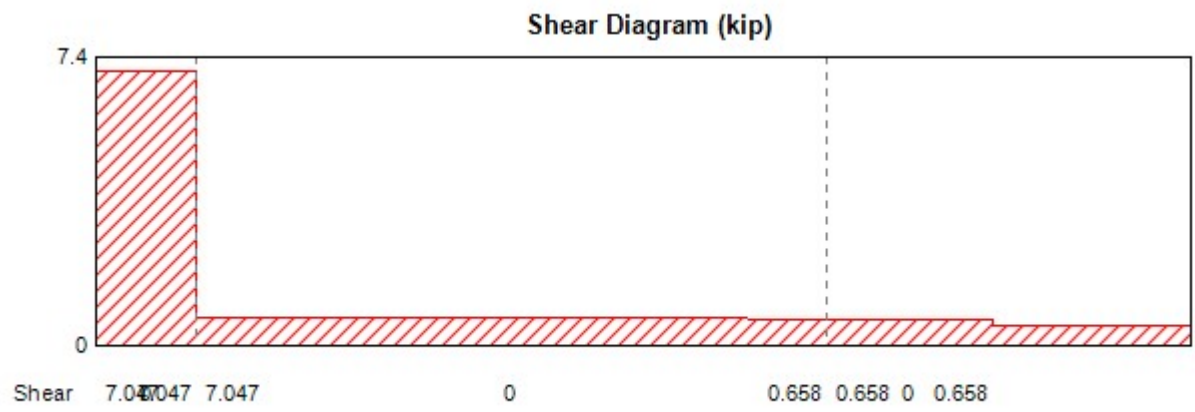


Figure 4-12-

ACI 318-14 Concrete Strip Design

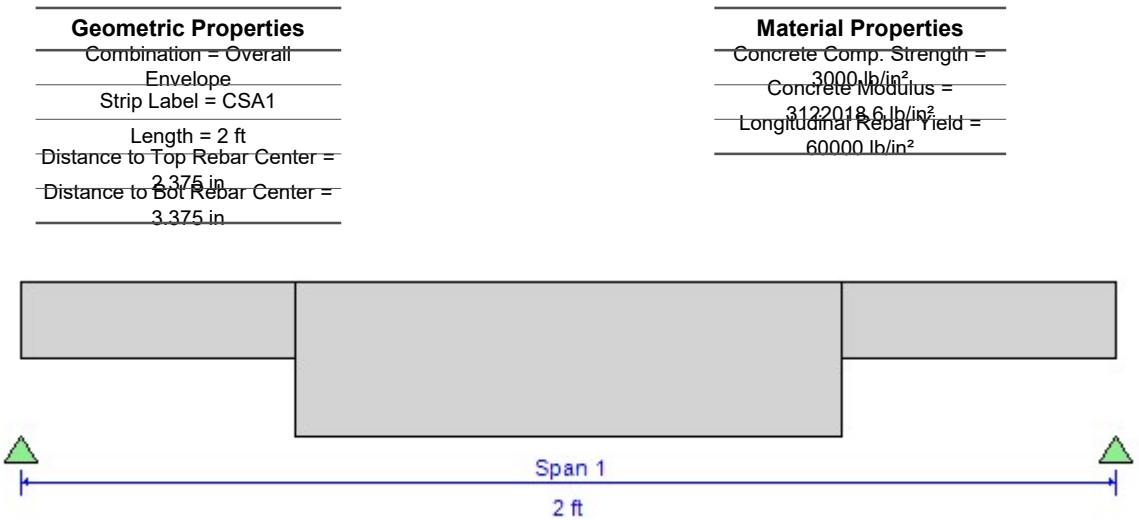


Figure 4-13-

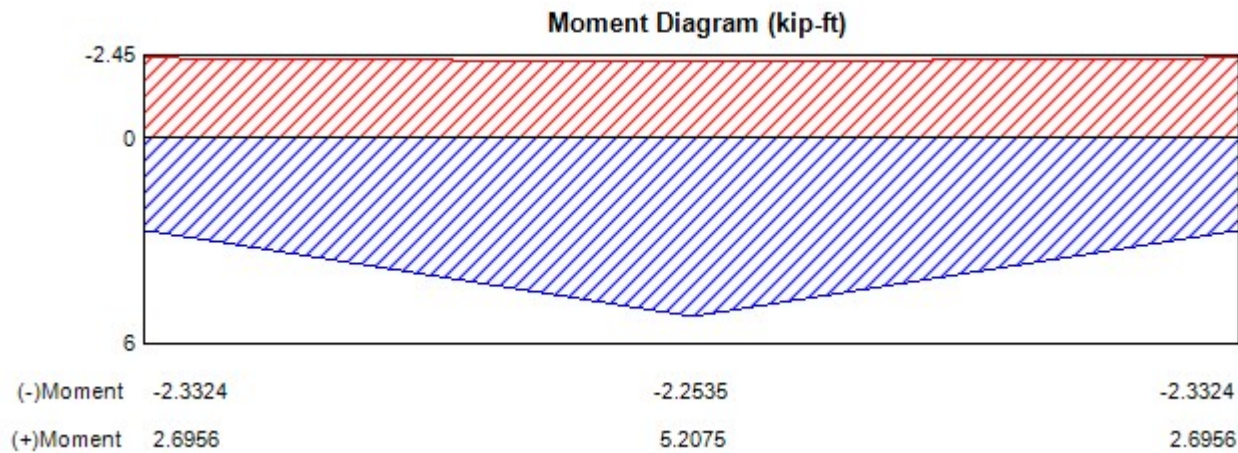


Figure 4-14-

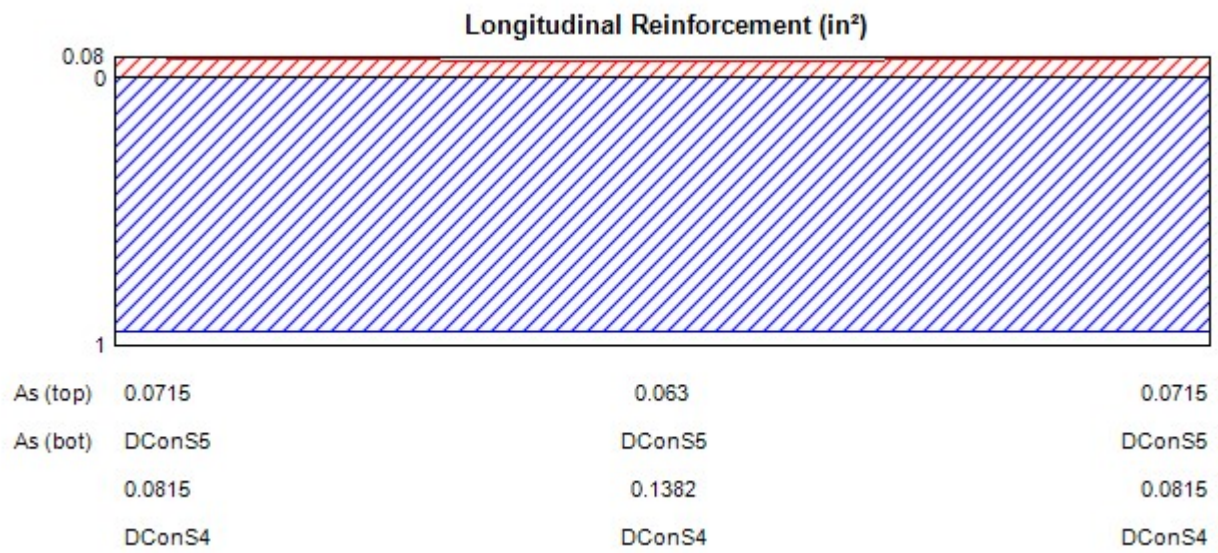


Figure 4-15-

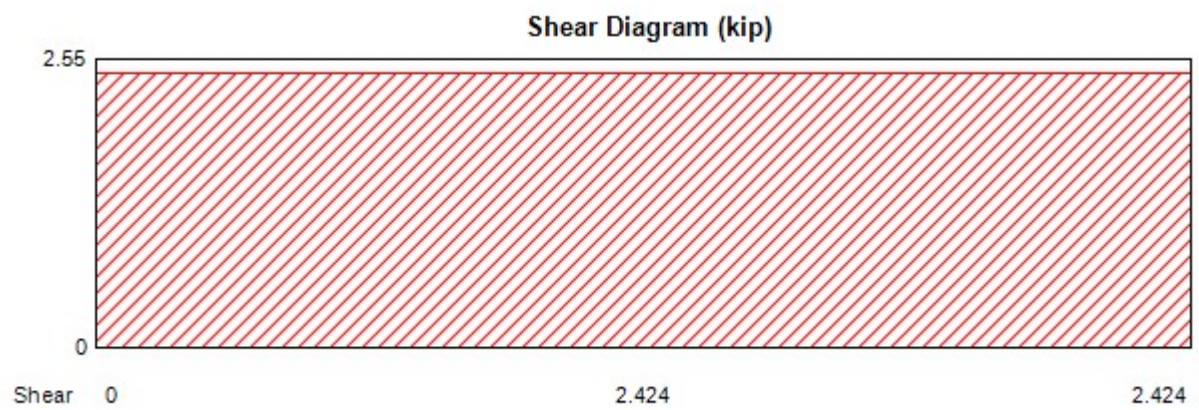


Figure 4-16-

ACI 318-14 Concrete Strip Design

Geometric Properties	Material Properties
Combination = Overall	Concrete Comp. Strength =
Envelope	Concrete Modulus =
Strip Label = SA1	Longitudinal Rebar Yield =
Length = 2 ft	
Distance to Top Rebar Center =	
Distance to Bot Rebar Center =	

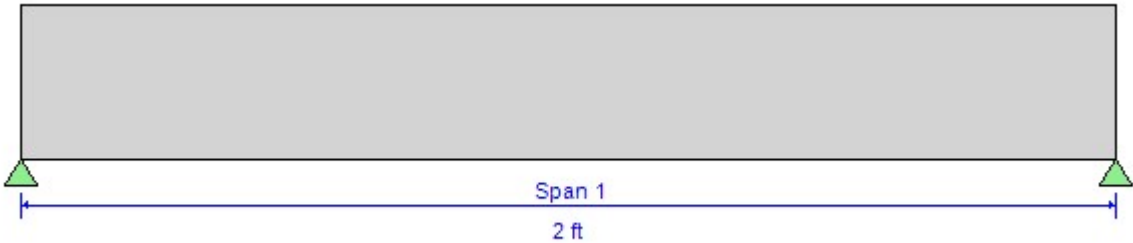


Figure 4-17-

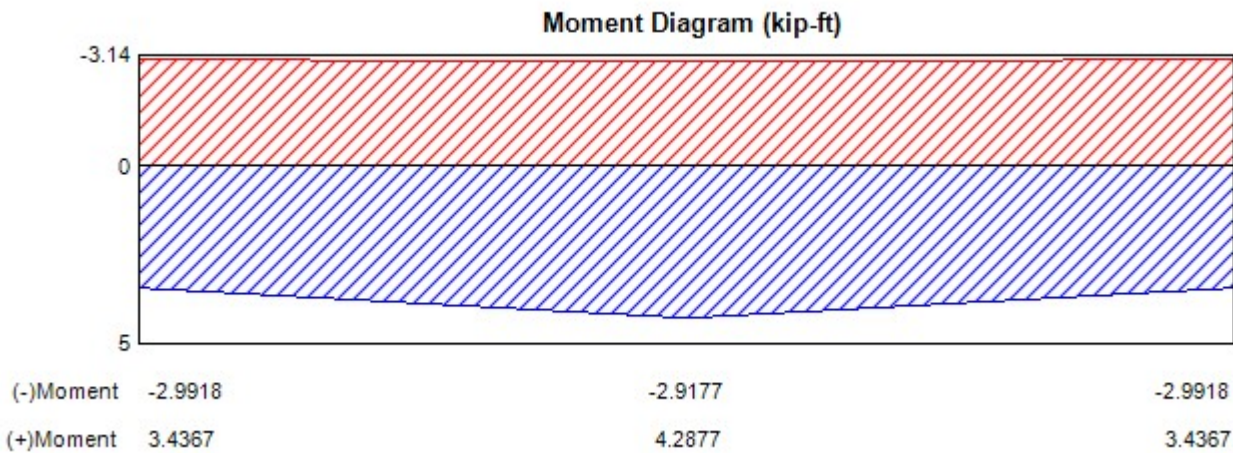


Figure 4-18-

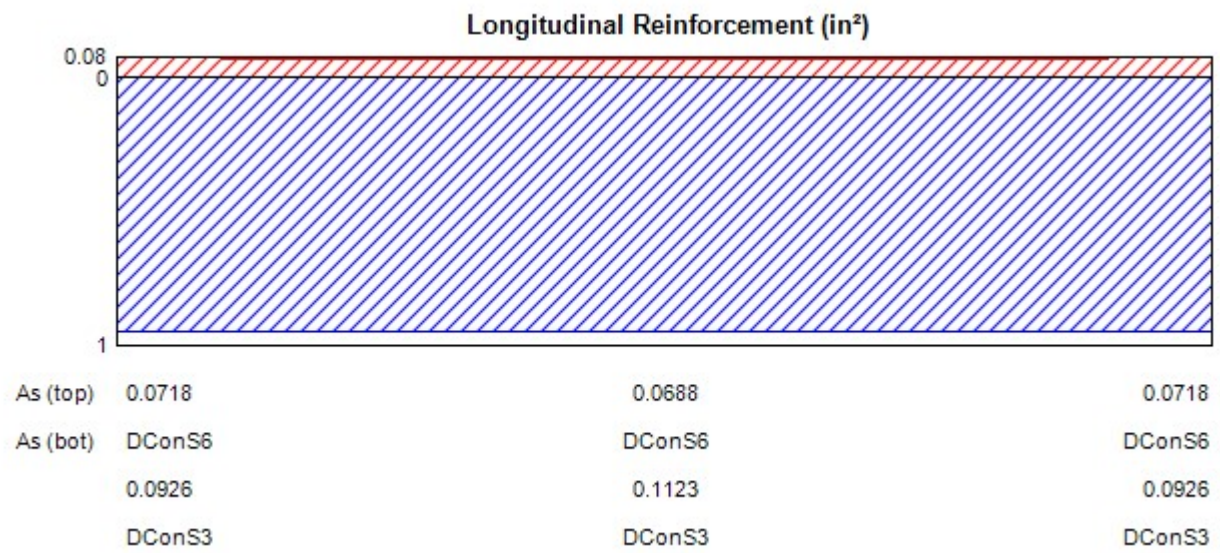


Figure 4-19-

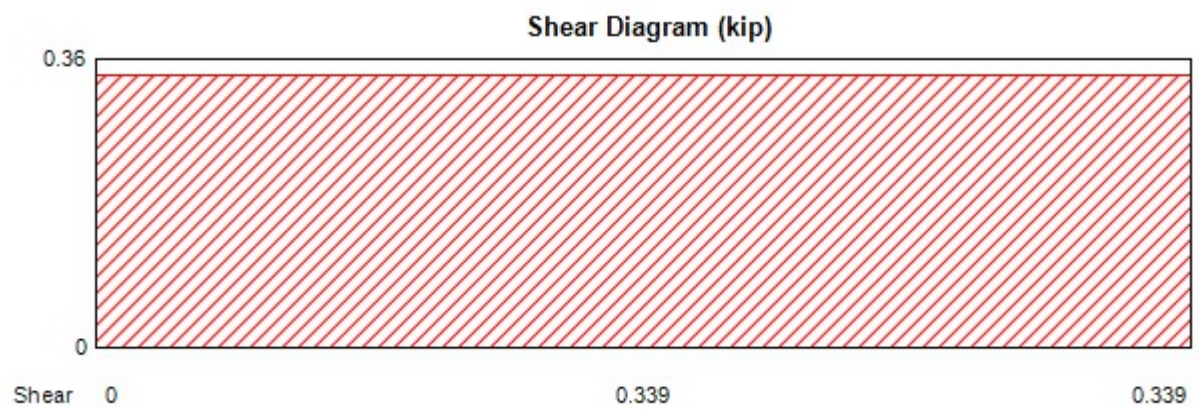


Figure 4-20-

ACI 318-14 Concrete Strip Design

Geometric Properties	Material Properties
Combination = Overall	Concrete Comp. Strength =
Envelope	Concrete Modulus =
Strip Label = SA2	Longitudinal Rebar Yield =
Length = 2 ft	
Distance to Top Rebar Center =	
Distance to Bot Rebar Center =	

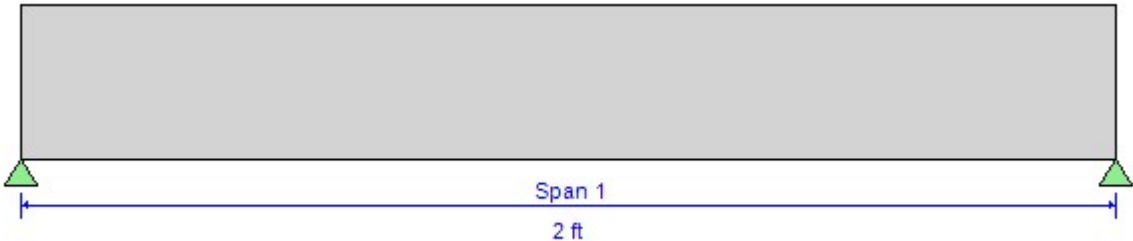


Figure 4-21-

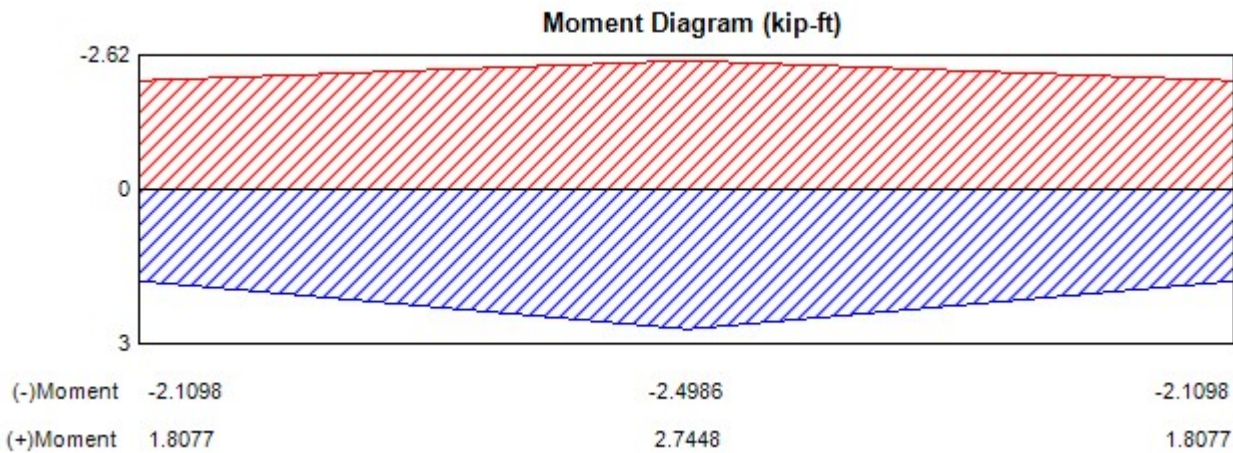


Figure 4-22-

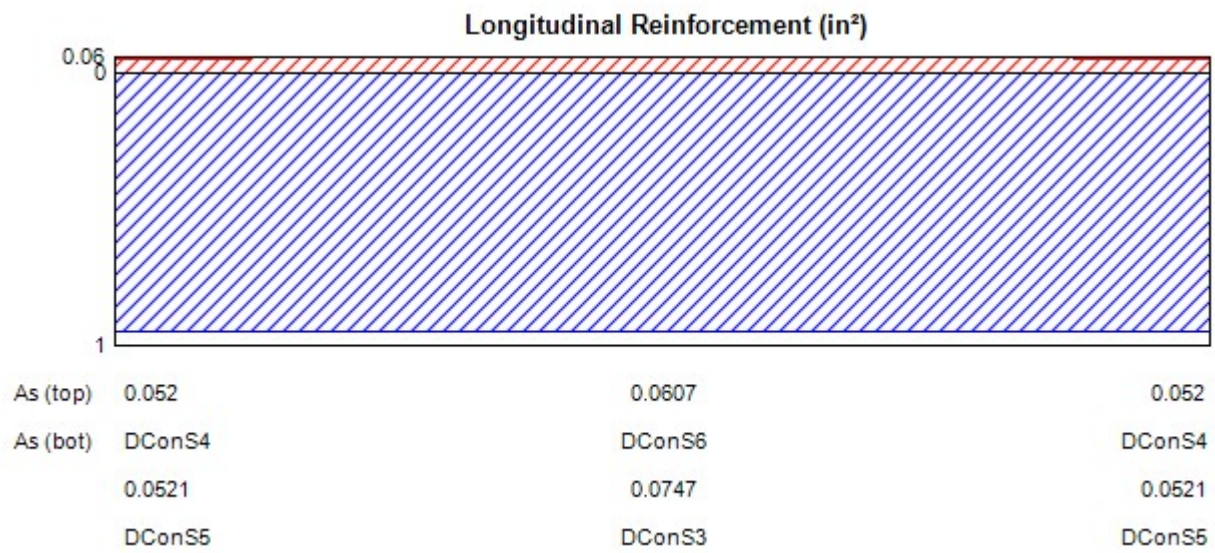


Figure 4-23-

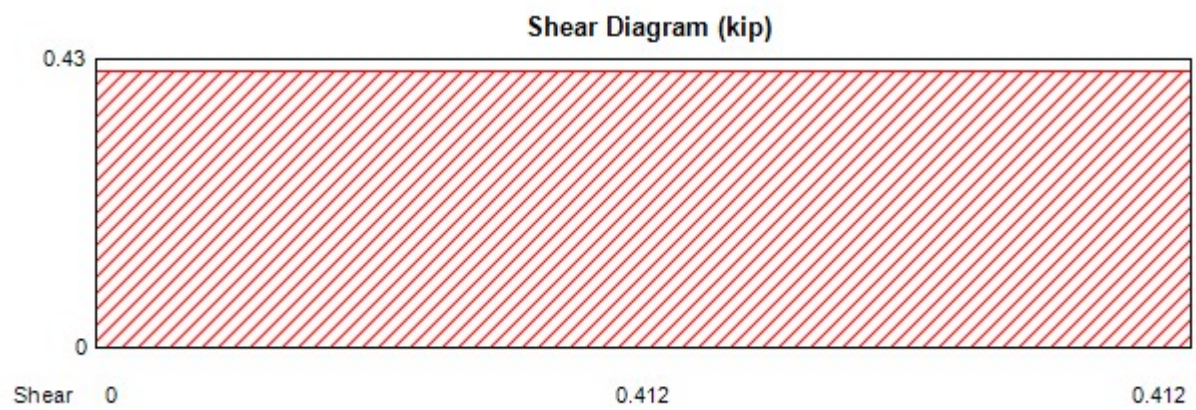


Figure 4-24-

ACI 318-14 Concrete Strip Design

Geometric Properties	Material Properties
Combination = Overall	Concrete Comp. Strength =
Envelope	Concrete Modulus =
Strip Label = SA3	Longitudinal Rebar Yield =
Length = 2 ft	
Distance to Top Rebar Center =	
Distance to Bot Rebar Center =	

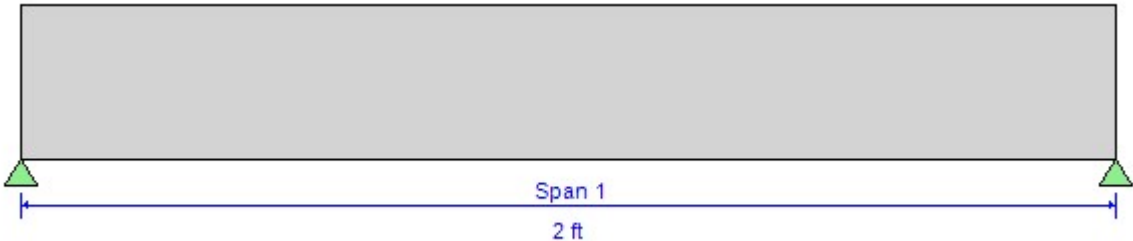


Figure 4-25-

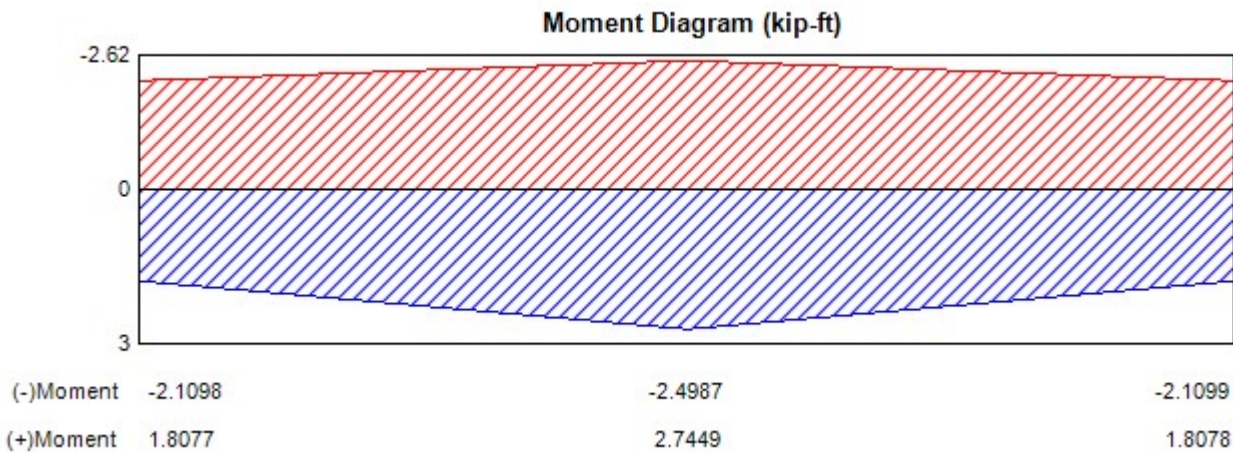


Figure 4-26-

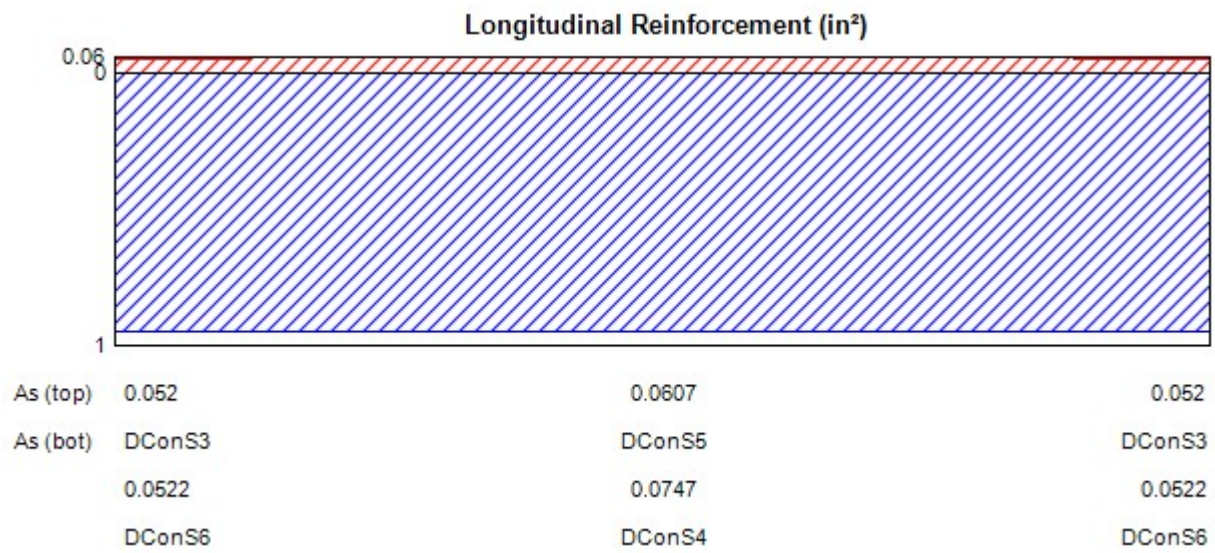


Figure 4-27-

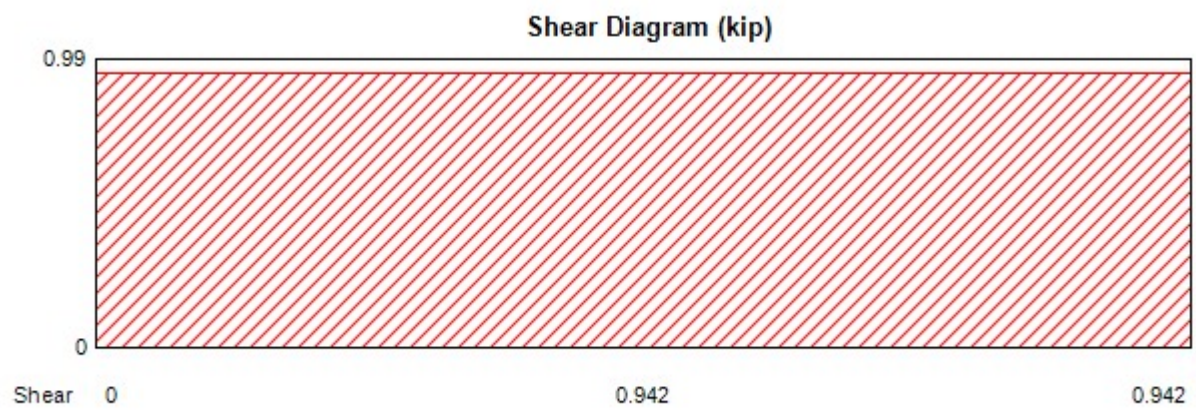


Figure 4-28-

ACI 318-14 Concrete Strip Design

Geometric Properties	Material Properties
Combination = Overall	Concrete Comp. Strength =
Envelope	Concrete Modulus =
Strip Label = SA4	Longitudinal Rebar Yield =
Length = 2 ft	
Distance to Top Rebar Center =	
Distance to Bot Rebar Center =	

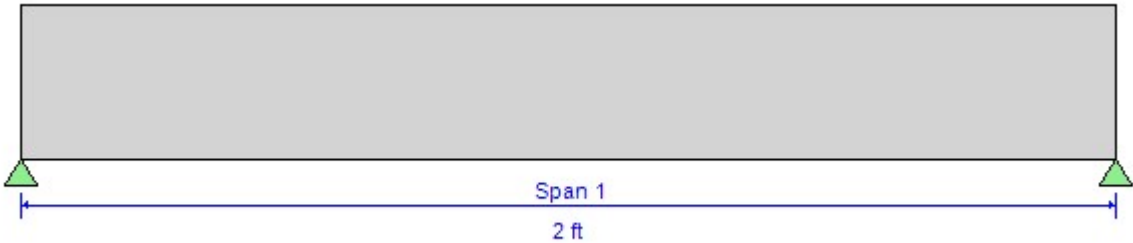


Figure 4-29-

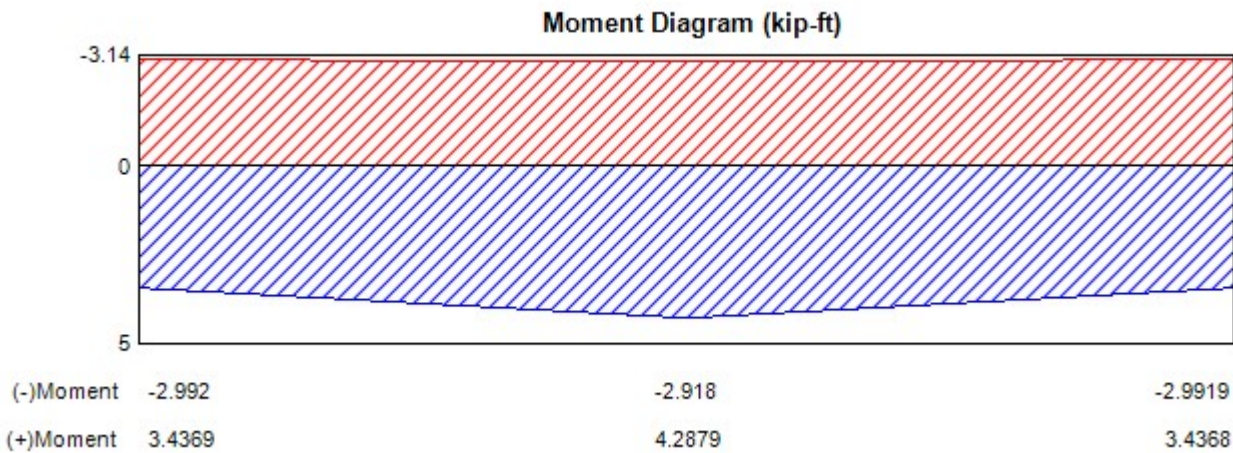


Figure 4-30-

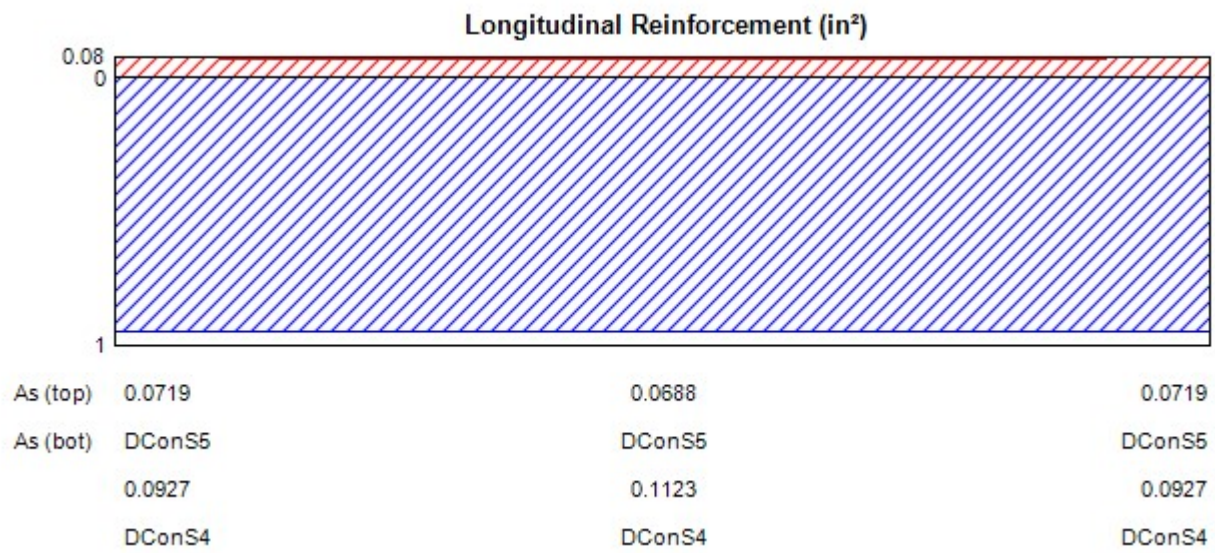


Figure 4-31-

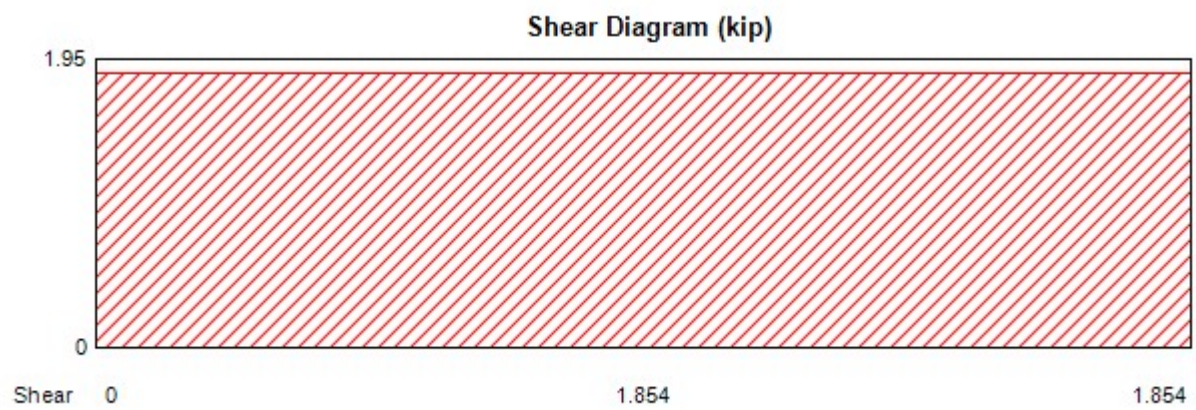


Figure 4-32-

ACI 318-14 Concrete Strip Design

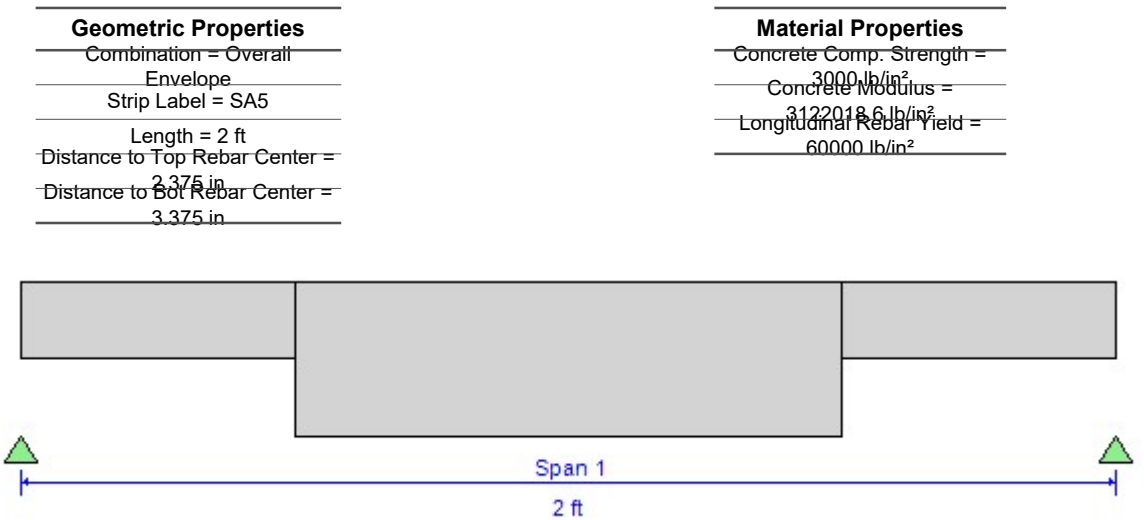


Figure 4-33-

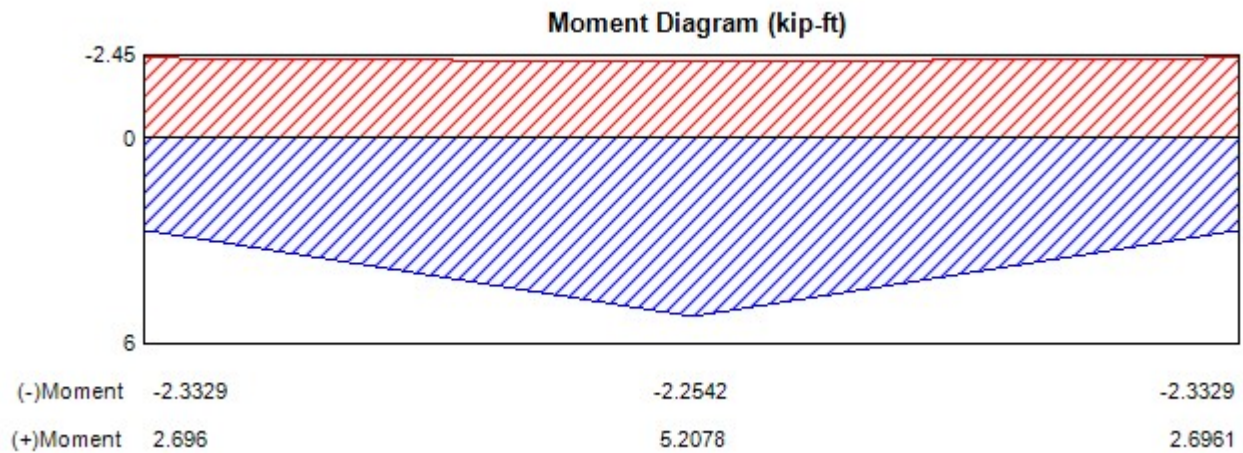
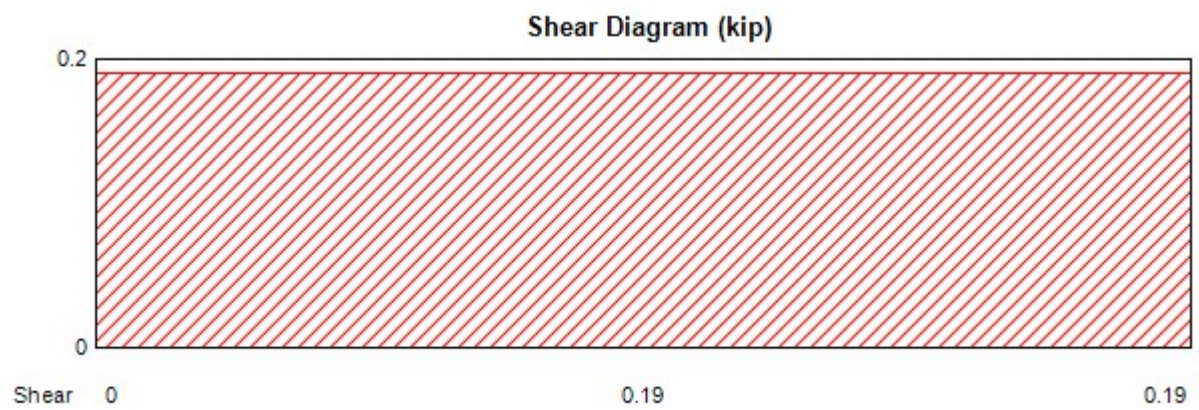
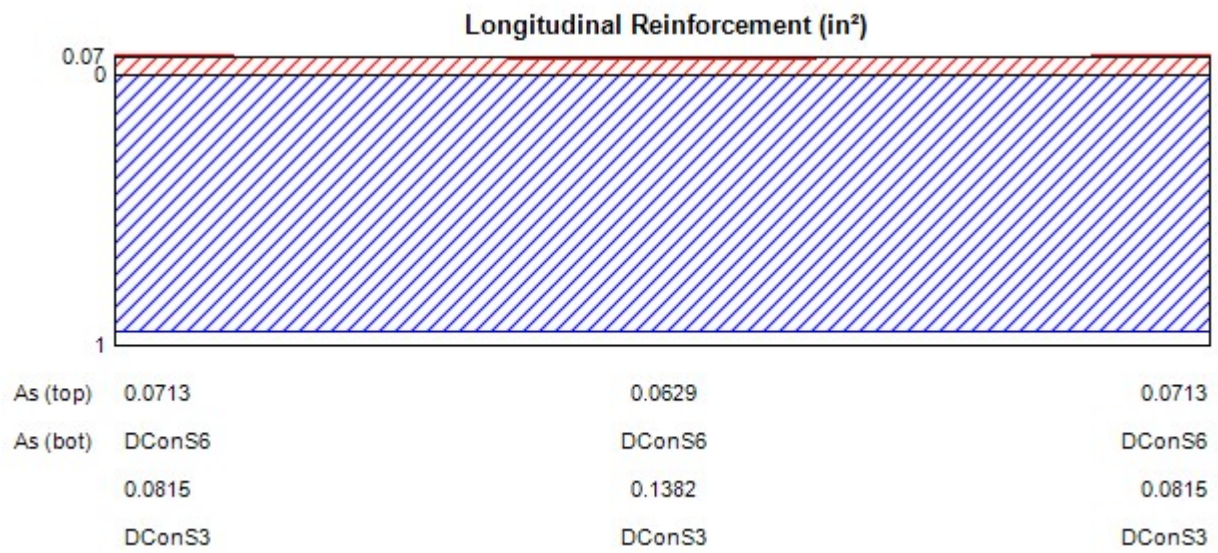


Figure 4-34-

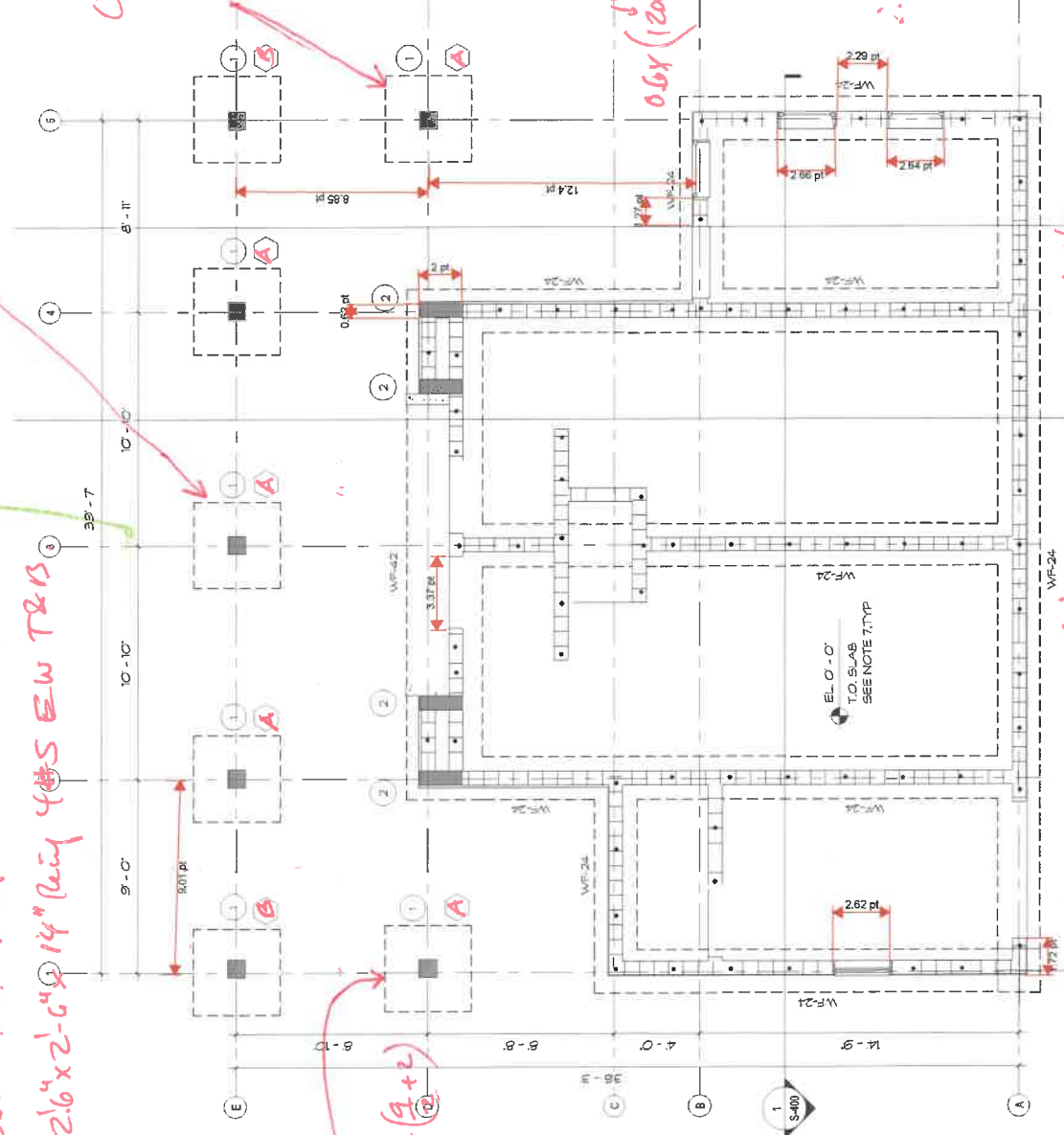


$TA = \left(\frac{11}{2} + \frac{9}{2} \right) \times \left(\frac{9}{2} + 2 \right) \approx 65 \text{ SF}$

Footing Schedule

(A) 26" x 26" x 18" Reinf 4 #5 EW T&B

(B) 26" x 26" x 14" Reinf 4 #5 EW T&B



$TA = \left(\frac{9}{2} + \frac{9}{2} \right) \times \left(\frac{9}{2} + 2 \right) = 58 \text{ SF}$

Corner Footing

$0.6 \times 2 \times 2 \times 7 \times 150 + 0.6 \times (2 \times 2 \times 2 \times 100 + 1200) = 1260$

$TA = \left(\frac{9}{2} + 2 \right) \times \left(\frac{9}{2} + 2 \right) = 42 \text{ SF}$

$0.6 \times (10 \times 42 - 60 \times 42) \approx 1260$

Column Uplift

$\gamma = \frac{1260 - 1000}{360}$

$\gamma \approx 0.16' \therefore$ use 2.5' x 2.5' x 18" thick Corner Footing.

Footing size for uplift on Columns

$\text{Column weight} \approx 6.8 \times 0.8 \times 13' \times 150 = 1248 \text{ lb.}$
 $\approx 1200 \text{ lb.}$

Column: 0.6D = 0.6W.

Roof DL = 10 psf.

$TA = \frac{(12 + 8.6)}{2} \times \left(\frac{9}{2} + 2 \right) = 67 \text{ SF}$

Soil wind uplift.

$0.6 (10 \text{ psf} \times 67 - 60 \text{ psf} \times 67) = 2010 \text{ lb}$

column reaction on footing

Using 3x3 footing

check required thickness for uplift

$0.6 \times (1200 + 2.5 \times 7 \times 150 + 2 \times 2.5 \times 100) = 2010$

$\gamma = \frac{2010 - (1200 + 1250) \times 0.6}{937 \times 0.6} = \frac{540}{562} \approx 0.96$

$\therefore 3 \times 3 \times 18"$ footing thickness.

$2 \times 12 \times 0.018 = 0.432 \therefore \#5 @ 12"$

3x3 Footing 25" x 18" Reinf

#5 EW T&B.

3350

Wall footing.

Tribut width = $\frac{9}{2} + \frac{22}{2} + 2' = 17.5'$ ^{overh.}

Effective soil pressure = $2500 \text{ p.s.f.} - 3' \times 150 = 2050$.

Blocking cells at 24" c/c.

UDL = $17' \times 61 + 17.5' \times (30 + 25) = 1037 + 962 = 2000 \text{ p.f.}$
 height $\uparrow$ LL $\uparrow$ Dead.

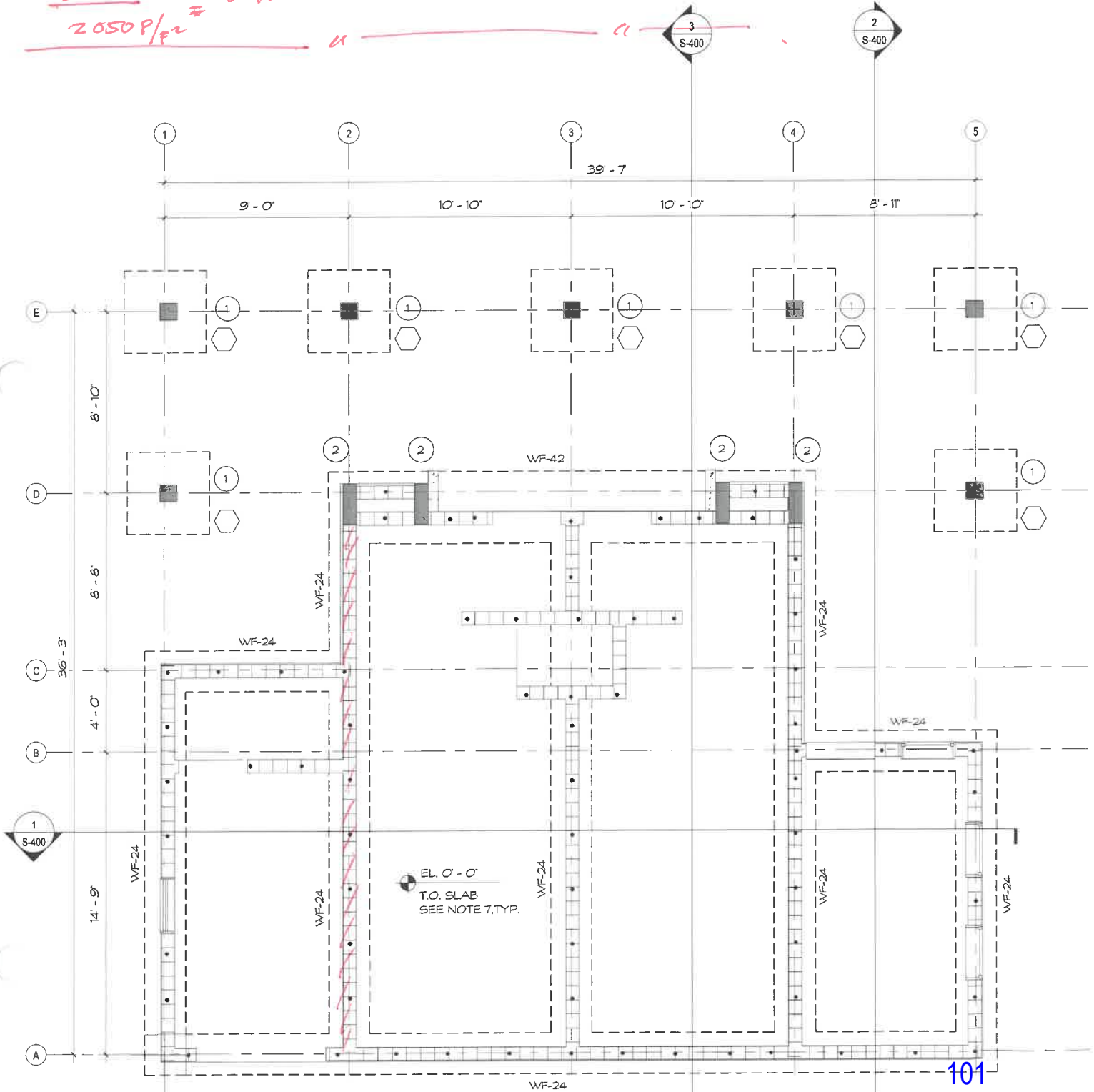
Roof slope
3:12

$x = \sqrt{3^2 + 12^2} = 12.4$
 $\frac{12.4}{12} = 1.033$

2000 p.f.

2050 p.f.

0.97' $\therefore$ use 2' wall footing.



NET.
70 PF ULTIMATE HAND WIND PRESSURE.

✓ Vertical. $= 9 \times 30 = 270$

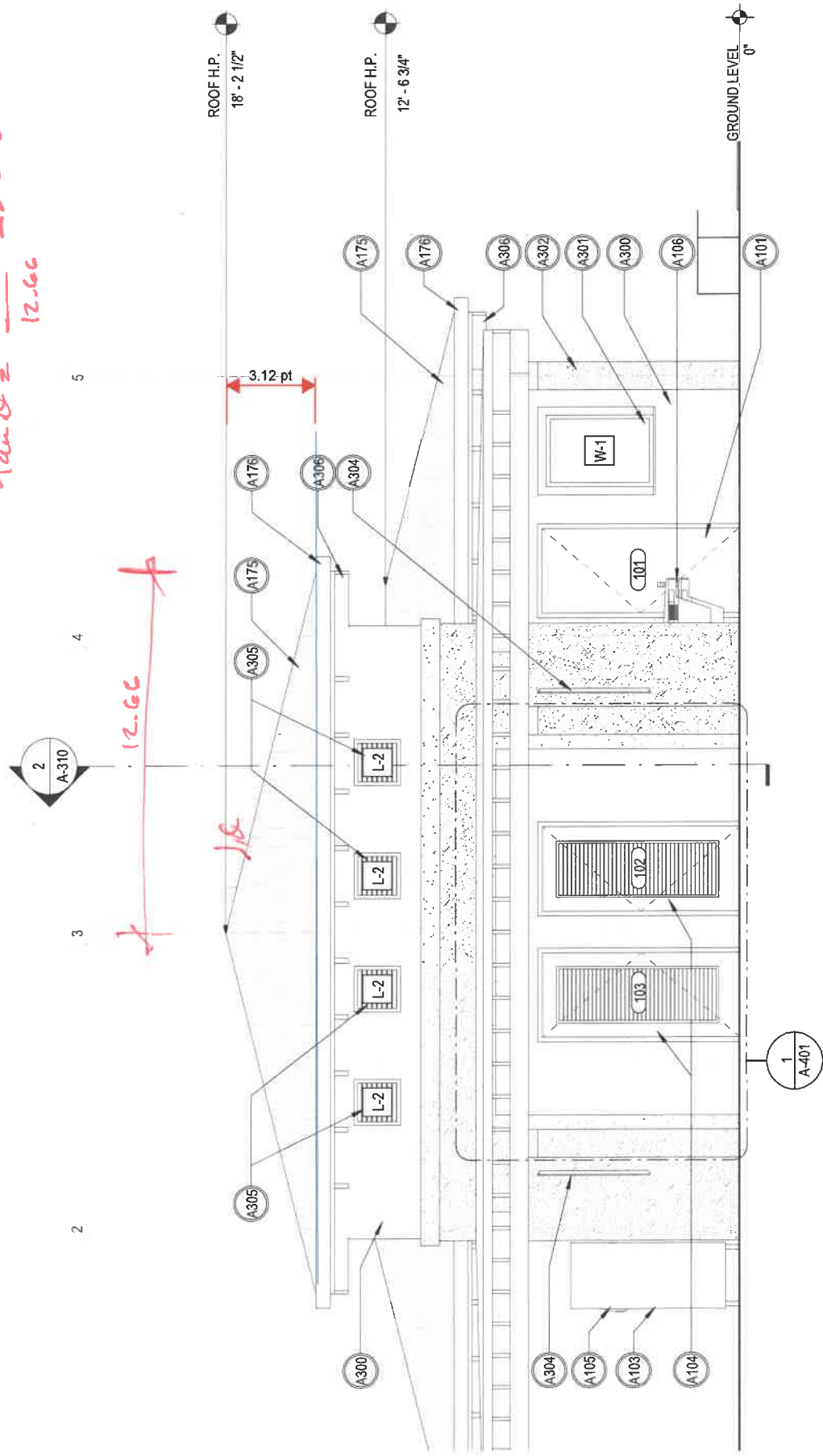
$$2280 \times 4' = 12016 = 1.1 \text{ K}$$
$$F_{\text{force}} = \frac{8.6 \times 7084 \times \left(\frac{15}{2} + 3.5\right)}{2}$$

$$= 5159K \text{ ultimate}$$

XO-C = 3095 service.
but will use 4-24.



Load to Safe = $7k \times 0.6 = 4.2k$
Service.
(used on
Safe model)

$$Z: 12 \Rightarrow \frac{60}{12} = \frac{x}{2} \quad \alpha = 16^\circ \quad \tan \frac{2}{12} = 9.5^\circ$$
$$\frac{100}{12.66} = \frac{x}{3.12} \quad x = 24\%$$
$$\begin{array}{r} 3.12 \times 122 \\ \hline 12.66 \end{array}$$
$$\tan \theta = \frac{3.12}{12.66} \Rightarrow \theta = 13.8^\circ$$


Title Block Line 1
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID:
Project Descr:

Printed: 19 NOV 2024, 8:41AM

Wood Beam

Lic. #: KW-06010740

File: wood joist.ec6
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
DDA Engineers, P.A.

DESCRIPTION: 12' perimeter double beam (2x12works)

CODE REFERENCES

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

Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Load Resistance Factor D
Load Combination : ASCE 7-16

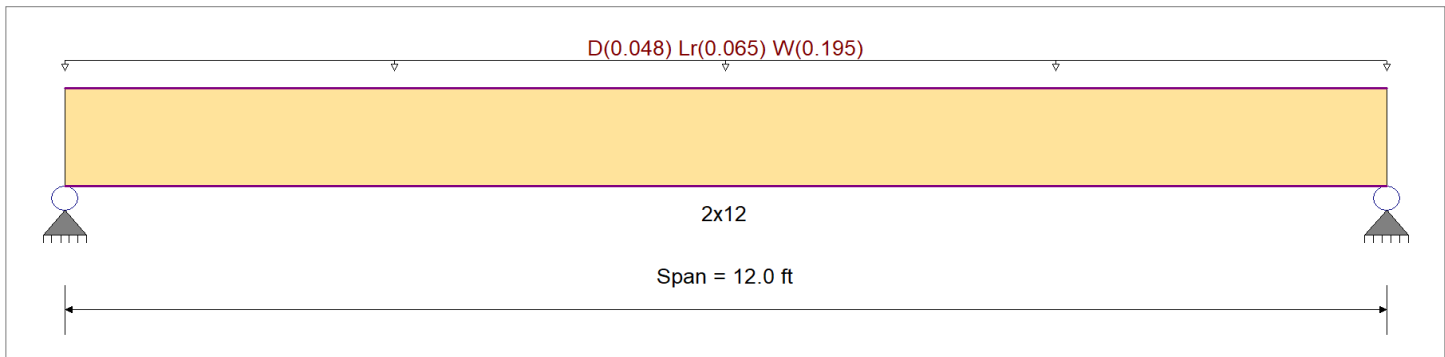
Wood Species : Southern Pine
Wood Grade : No.1 Dense: 2"-4" Thick: 12" Wide

Beam Bracing : Beam bracing is defined Beam-by-Beam

Fb +	1,100.0 psi	E : Modulus of Elasticity	
Fb -	1,100.0 psi	Ebend- xx	1,800.0 ksi
Fc - Prll	1,500.0 psi	Eminbend - xx	660.0 ksi
Fc - Perp	660.0 psi		
Fv	175.0 psi		
Ft	750.0 psi	Density	34.330 pcf

Unbraced Lengths

Span # 1, Fully Braced



Applied Loads

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

Beam self weight calculated and added to loads

Uniform Load : D = 0.0480, Lr = 0.0650, W = 0.1950 ksf, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.948	1	Maximum Shear Stress Ratio	=	0.394	: 1
Section used for this span		2x12		Section used for this span		2x12	
fb: Actual	=	1,801.75	psi	fv: Actual	=	119.18	psi
Fb: Allowable	=	1,900.80	psi	Fv: Allowable	=	302.40	psi
Load Combination		+1.20D+1.60Lr+0.50W		Load Combination		+1.20D+1.60Lr+0.50W	
Location of maximum on span	=	6.000	ft	Location of maximum on span	=	0.000	ft
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.286	in	Ratio =		504	>=360
Max Upward Transient Deflection		0.000	in	Ratio =		0	<360
Max Downward Total Deflection		0.276	in	Ratio =		521	>=240
Max Upward Total Deflection		0.000	in	Ratio =		0	<240

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios											Moment Values			Shear Values		
			M	V	λ	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Mu	fb	Fb	Vu	fv	Fv		
+1.40D														0.00	0.00	0.00	0.00		
Length = 12.0 ft	1		0.349	0.145	0.60	1.000	1.00	1.00	1.00	1.00	1.00	1.31	497.20	1425.60	0.37	32.89	226.80		
+1.20D+0.50Lr						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00		
Length = 12.0 ft	1		0.341	0.142	0.80	1.000	1.00	1.00	1.00	1.00	1.00	1.71	648.04	1900.80	0.48	42.87	302.40		
+1.20D						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00		
Length = 12.0 ft	1		0.224	0.093	0.80	1.000	1.00	1.00	1.00	1.00	1.00	1.12	426.17	1900.80	0.32	28.19	302.40		
+1.20D+1.60Lr						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00		
Length = 12.0 ft	1		0.598	0.249	0.80	1.000	1.00	1.00	1.00	1.00	1.00	3.00	1,136.15	1900.80	0.85	75.16	302.40		
+1.20D+1.60Lr+0.50W						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00		
Length = 12.0 ft	1		0.948	0.394	0.80	1.000	1.00	1.00	1.00	1.00	1.00	4.75	1,801.75	1900.80	1.34	119.18	302.40		
+1.20D+0.50W						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00		

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and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID:
Project Descr:

Printed: 19 NOV 2024, 8:41AM

Wood Beam

File: wood joist.ec6
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Load Combination Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values		
		M	V	λ	C _{F/V}	C _i	C _r	C _m	C _t	C _L	Mu	fb	Fb	Vu	fv	Fv
Length = 12.0 ft	1	0.574	0.239	0.80	1.000	1.00	1.00	1.00	1.00	1.00	2.88	1,091.77	1900.80	0.81	72.22	302.40
+1.20D+0.50Lr+W					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.833	0.346	1.00	1.000	1.00	1.00	1.00	1.00	1.00	5.22	1,979.24	2376.00	1.47	130.93	378.00
+1.20D+W					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.740	0.308	1.00	1.000	1.00	1.00	1.00	1.00	1.00	4.63	1,757.37	2376.00	1.31	116.25	378.00
+0.90D+W					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.695	0.289	1.00	1.000	1.00	1.00	1.00	1.00	1.00	4.35	1,650.83	2376.00	1.23	109.20	378.00
+0.90D					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.135	0.056	1.00	1.000	1.00	1.00	1.00	1.00	1.00	0.84	319.63	2376.00	0.24	21.14	378.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
W Only	1	0.2856	6.044		0.0000	0.000

Maximum Deflections for Load Combinations

Load Combination	Span	Max. Downward Defl	Location in Span	Max. Upward Defl	Location in Span
D Only	1	0.0762	in 6.044 ft	0.0000	in 0.000 ft
+D+Lr	1	0.1714	in 6.044 ft	0.0000	in 0.000 ft
+D+0.750Lr	1	0.1476	in 6.044 ft	0.0000	in 0.000 ft
+D+0.60W	1	0.2476	in 6.044 ft	0.0000	in 0.000 ft
+D+0.750Lr+0.450W	1	0.2762	in 6.044 ft	0.0000	in 0.000 ft
+D+0.450W	1	0.2047	in 6.044 ft	0.0000	in 0.000 ft
+0.60D+0.60W	1	0.2171	in 6.044 ft	0.0000	in 0.000 ft
+0.60D	1	0.0457	in 6.044 ft	0.0000	in 0.000 ft
Lr Only	1	0.0952	in 6.044 ft	0.0000	in 0.000 ft
W Only	1	0.2856	in 6.044 ft	0.0000	in 0.000 ft

Vertical Reactions

Support notation : Far left is #1
Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.170	1.170
Overall MINimum	1.170	1.170
D Only	0.312	0.312
+D+Lr	0.702	0.702
+D+0.750Lr	0.605	0.605
+D+0.60W	1.014	1.014
+D+0.750Lr+0.450W	1.131	1.131
+D+0.450W	0.839	0.839
+0.60D+0.60W	0.889	0.889
+0.60D	0.187	0.187
Lr Only	0.390	0.390
W Only	1.170	1.170

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Title Block Line 6

Project Title:
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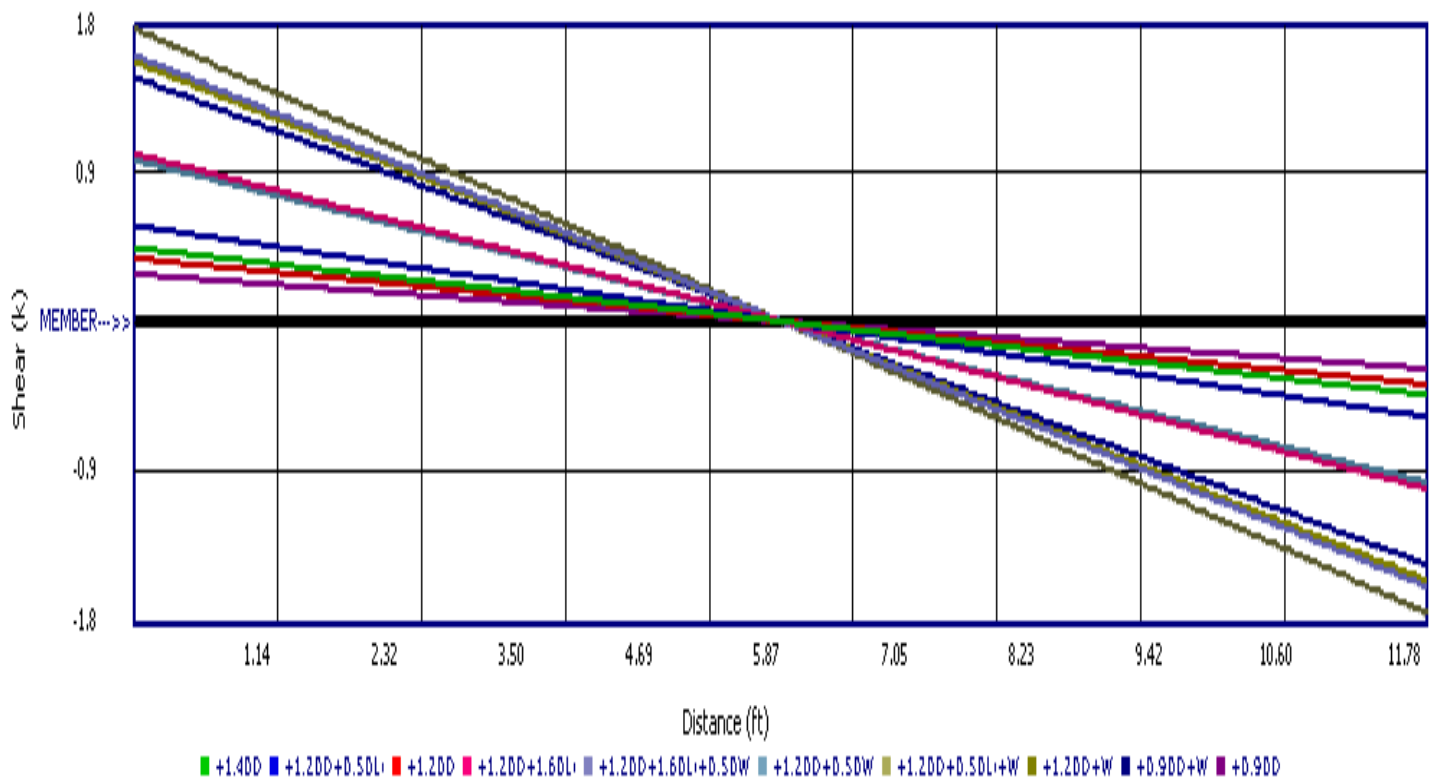
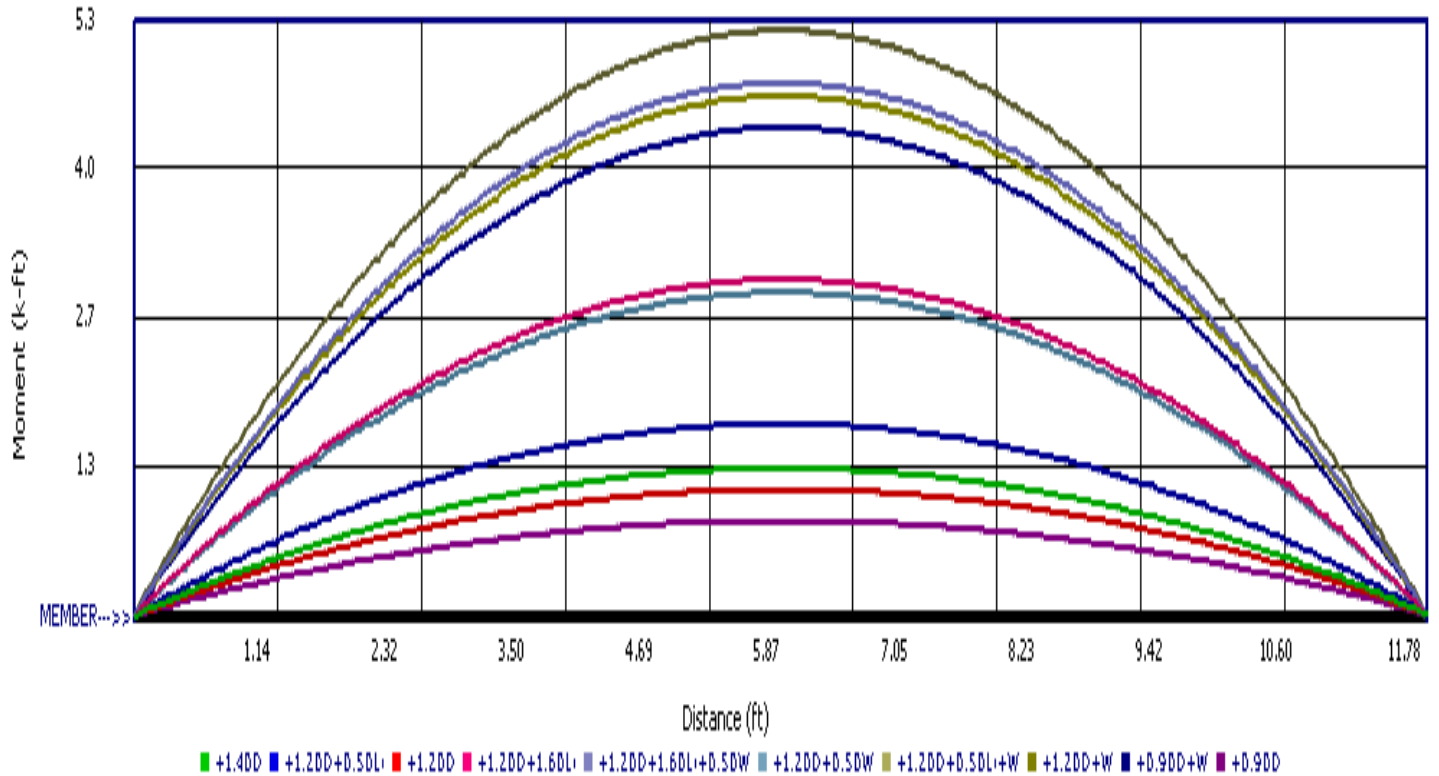
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Wood Beam

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DDA Engineers, P.A.

DESCRIPTION: 12' perimeter boucle beam (2x12works)



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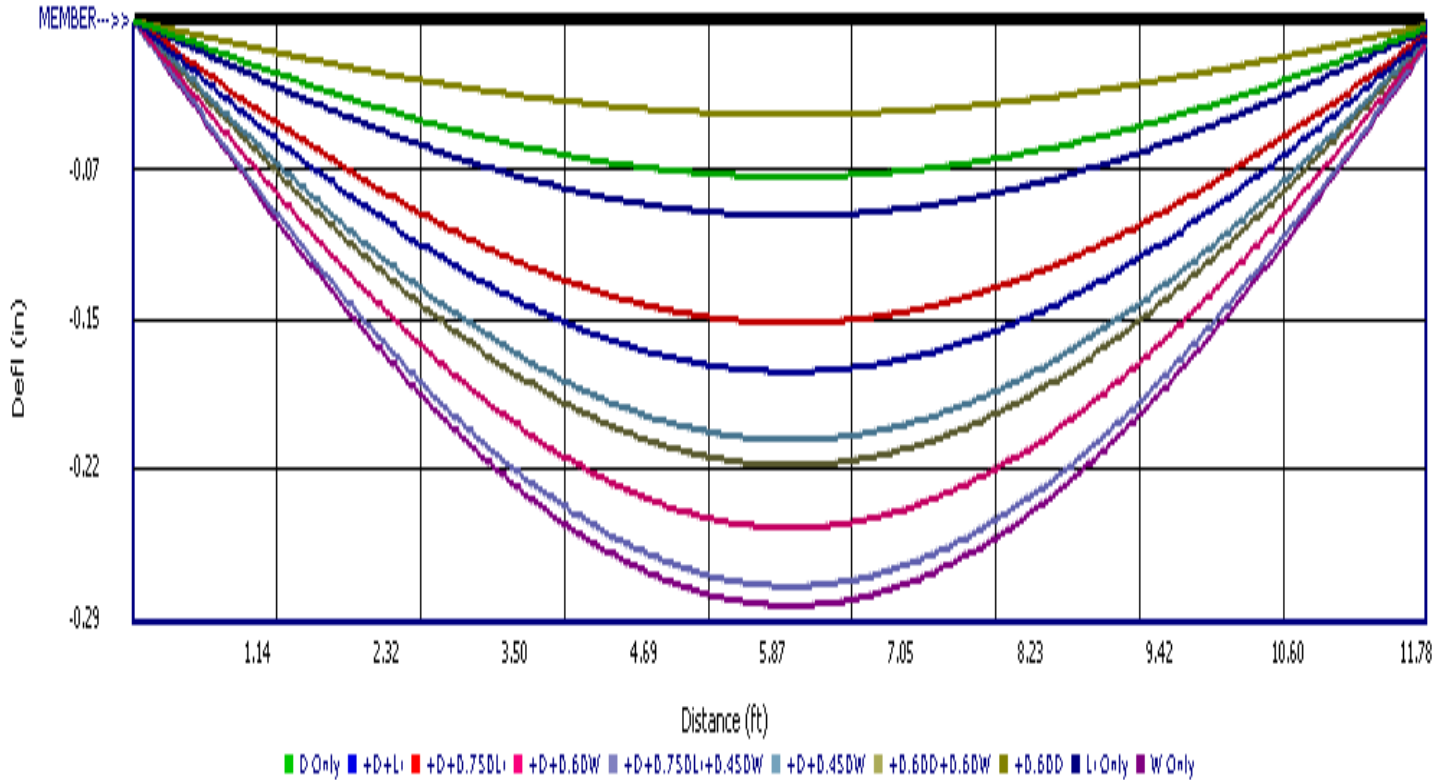
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 DDA Engineers, P.A.

DESCRIPTION: 12' perimeter bouble beam (2x12works)



Summary of Values per Beam Span

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.40D	0.00	Span 1	0.437	0.000
+1.40D	0.31	Span 1	0.415	0.131
+1.40D	0.61	Span 1	0.392	0.254
+1.40D	0.92	Span 1	0.370	0.371
+1.40D	1.23	Span 1	0.348	0.481
+1.40D	1.53	Span 1	0.325	0.584
+1.40D	1.84	Span 1	0.303	0.681
+1.40D	2.15	Span 1	0.281	0.770
+1.40D	2.45	Span 1	0.258	0.853
+1.40D	2.76	Span 1	0.236	0.928
+1.40D	3.07	Span 1	0.214	0.997
+1.40D	3.37	Span 1	0.191	1.060
+1.40D	3.68	Span 1	0.169	1.115
+1.40D	3.99	Span 1	0.147	1.163
+1.40D	4.29	Span 1	0.124	1.205
+1.40D	4.60	Span 1	0.102	1.239
+1.40D	4.91	Span 1	0.080	1.267
+1.40D	5.21	Span 1	0.057	1.288
+1.40D	5.52	Span 1	0.035	1.303
+1.40D	5.82	Span 1	0.013	1.310

Title Block Line 1
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Title Block Line 6

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Wood Beam

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Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

+1.40D	6.13	Span 1	-0.010	1.310
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Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.40D	6.44	Span 1	-0.032	1.304
+1.40D	6.74	Span 1	-0.054	1.291
+1.40D	7.05	Span 1	-0.077	1.271
+1.40D	7.36	Span 1	-0.099	1.244
+1.40D	7.66	Span 1	-0.121	1.210
+1.40D	7.97	Span 1	-0.144	1.170
+1.40D	8.28	Span 1	-0.166	1.122
+1.40D	8.58	Span 1	-0.188	1.068
+1.40D	8.89	Span 1	-0.211	1.007
+1.40D	9.20	Span 1	-0.233	0.939
+1.40D	9.50	Span 1	-0.255	0.864
+1.40D	9.81	Span 1	-0.278	0.782
+1.40D	10.12	Span 1	-0.300	0.694
+1.40D	10.42	Span 1	-0.322	0.598
+1.40D	10.73	Span 1	-0.344	0.496
+1.40D	11.04	Span 1	-0.367	0.387
+1.40D	11.34	Span 1	-0.389	0.271
+1.40D	11.65	Span 1	-0.411	0.149
+1.40D	11.96	Span 1	-0.434	0.019
+1.20D+0.50Lr	0.00	Span 1	0.570	0.000
+1.20D+0.50Lr	0.31	Span 1	0.540	0.170
+1.20D+0.50Lr	0.61	Span 1	0.511	0.331
+1.20D+0.50Lr	0.92	Span 1	0.482	0.484
+1.20D+0.50Lr	1.23	Span 1	0.453	0.627
+1.20D+0.50Lr	1.53	Span 1	0.424	0.762
+1.20D+0.50Lr	1.84	Span 1	0.395	0.887
+1.20D+0.50Lr	2.15	Span 1	0.366	1.004
+1.20D+0.50Lr	2.45	Span 1	0.337	1.111
+1.20D+0.50Lr	2.76	Span 1	0.308	1.210
+1.20D+0.50Lr	3.07	Span 1	0.279	1.300
+1.20D+0.50Lr	3.37	Span 1	0.249	1.381
+1.20D+0.50Lr	3.68	Span 1	0.220	1.453
+1.20D+0.50Lr	3.99	Span 1	0.191	1.516
+1.20D+0.50Lr	4.29	Span 1	0.162	1.570
+1.20D+0.50Lr	4.60	Span 1	0.133	1.615
+1.20D+0.50Lr	4.91	Span 1	0.104	1.652
+1.20D+0.50Lr	5.21	Span 1	0.075	1.679
+1.20D+0.50Lr	5.52	Span 1	0.046	1.698
+1.20D+0.50Lr	5.82	Span 1	0.017	1.707
+1.20D+0.50Lr	6.13	Span 1	-0.012	1.708
+1.20D+0.50Lr	6.44	Span 1	-0.042	1.700
+1.20D+0.50Lr	6.74	Span 1	-0.071	1.682
+1.20D+0.50Lr	7.05	Span 1	-0.100	1.656
+1.20D+0.50Lr	7.36	Span 1	-0.129	1.621
+1.20D+0.50Lr	7.66	Span 1	-0.158	1.577

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Wood Beam

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Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+0.50Lr	7.97	Span 1	-0.187	1.524
+1.20D+0.50Lr	8.28	Span 1	-0.216	1.463
+1.20D+0.50Lr	8.58	Span 1	-0.245	1.392
+1.20D+0.50Lr	8.89	Span 1	-0.274	1.312
+1.20D+0.50Lr	9.20	Span 1	-0.303	1.224
+1.20D+0.50Lr	9.50	Span 1	-0.333	1.126
+1.20D+0.50Lr	9.81	Span 1	-0.362	1.020
+1.20D+0.50Lr	10.12	Span 1	-0.391	0.904
+1.20D+0.50Lr	10.42	Span 1	-0.420	0.780
+1.20D+0.50Lr	10.73	Span 1	-0.449	0.647
+1.20D+0.50Lr	11.04	Span 1	-0.478	0.505
+1.20D+0.50Lr	11.34	Span 1	-0.507	0.354
+1.20D+0.50Lr	11.65	Span 1	-0.536	0.194
+1.20D+0.50Lr	11.96	Span 1	-0.565	0.025
+1.20D	0.00	Span 1	0.375	0.000
+1.20D	0.31	Span 1	0.355	0.112
+1.20D	0.61	Span 1	0.336	0.218
+1.20D	0.92	Span 1	0.317	0.318
+1.20D	1.23	Span 1	0.298	0.412
+1.20D	1.53	Span 1	0.279	0.501
+1.20D	1.84	Span 1	0.260	0.583
+1.20D	2.15	Span 1	0.241	0.660
+1.20D	2.45	Span 1	0.221	0.731
+1.20D	2.76	Span 1	0.202	0.796
+1.20D	3.07	Span 1	0.183	0.855
+1.20D	3.37	Span 1	0.164	0.908
+1.20D	3.68	Span 1	0.145	0.956
+1.20D	3.99	Span 1	0.126	0.997
+1.20D	4.29	Span 1	0.107	1.033
+1.20D	4.60	Span 1	0.087	1.062
+1.20D	4.91	Span 1	0.068	1.086
+1.20D	5.21	Span 1	0.049	1.104
+1.20D	5.52	Span 1	0.030	1.116
+1.20D	5.82	Span 1	0.011	1.123
+1.20D	6.13	Span 1	-0.008	1.123
+1.20D	6.44	Span 1	-0.027	1.118
+1.20D	6.74	Span 1	-0.046	1.106
+1.20D	7.05	Span 1	-0.066	1.089
+1.20D	7.36	Span 1	-0.085	1.066
+1.20D	7.66	Span 1	-0.104	1.037
+1.20D	7.97	Span 1	-0.123	1.002
+1.20D	8.28	Span 1	-0.142	0.962
+1.20D	8.58	Span 1	-0.161	0.915
+1.20D	8.89	Span 1	-0.180	0.863
+1.20D	9.20	Span 1	-0.200	0.805

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Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D	9.50	Span 1	-0.219	0.741
+1.20D	9.81	Span 1	-0.238	0.671
+1.20D	10.12	Span 1	-0.257	0.595
+1.20D	10.42	Span 1	-0.276	0.513
+1.20D	10.73	Span 1	-0.295	0.425
+1.20D	11.04	Span 1	-0.314	0.332
+1.20D	11.34	Span 1	-0.334	0.233
+1.20D	11.65	Span 1	-0.353	0.127
+1.20D	11.96	Span 1	-0.372	0.016
+1.20D+1.60Lr	0.00	Span 1	0.999	0.000
+1.20D+1.60Lr	0.31	Span 1	0.948	0.298
+1.20D+1.60Lr	0.61	Span 1	0.897	0.581
+1.20D+1.60Lr	0.92	Span 1	0.846	0.848
+1.20D+1.60Lr	1.23	Span 1	0.794	1.099
+1.20D+1.60Lr	1.53	Span 1	0.743	1.335
+1.20D+1.60Lr	1.84	Span 1	0.692	1.555
+1.20D+1.60Lr	2.15	Span 1	0.641	1.760
+1.20D+1.60Lr	2.45	Span 1	0.590	1.949
+1.20D+1.60Lr	2.76	Span 1	0.539	2.122
+1.20D+1.60Lr	3.07	Span 1	0.488	2.279
+1.20D+1.60Lr	3.37	Span 1	0.437	2.421
+1.20D+1.60Lr	3.68	Span 1	0.386	2.547
+1.20D+1.60Lr	3.99	Span 1	0.335	2.658
+1.20D+1.60Lr	4.29	Span 1	0.284	2.753
+1.20D+1.60Lr	4.60	Span 1	0.233	2.832
+1.20D+1.60Lr	4.91	Span 1	0.182	2.896
+1.20D+1.60Lr	5.21	Span 1	0.131	2.944
+1.20D+1.60Lr	5.52	Span 1	0.080	2.976
+1.20D+1.60Lr	5.82	Span 1	0.029	2.993
+1.20D+1.60Lr	6.13	Span 1	-0.022	2.994
+1.20D+1.60Lr	6.44	Span 1	-0.073	2.980
+1.20D+1.60Lr	6.74	Span 1	-0.124	2.950
+1.20D+1.60Lr	7.05	Span 1	-0.175	2.904
+1.20D+1.60Lr	7.36	Span 1	-0.226	2.842
+1.20D+1.60Lr	7.66	Span 1	-0.277	2.765
+1.20D+1.60Lr	7.97	Span 1	-0.328	2.672
+1.20D+1.60Lr	8.28	Span 1	-0.379	2.564
+1.20D+1.60Lr	8.58	Span 1	-0.430	2.440
+1.20D+1.60Lr	8.89	Span 1	-0.481	2.300
+1.20D+1.60Lr	9.20	Span 1	-0.532	2.145
+1.20D+1.60Lr	9.50	Span 1	-0.583	1.974
+1.20D+1.60Lr	9.81	Span 1	-0.634	1.788
+1.20D+1.60Lr	10.12	Span 1	-0.685	1.585
+1.20D+1.60Lr	10.42	Span 1	-0.736	1.368
+1.20D+1.60Lr	10.73	Span 1	-0.787	1.134

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Wood Beam

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DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+1.60Lr	11.04	Span 1	-0.838	0.885
+1.20D+1.60Lr	11.34	Span 1	-0.889	0.620
+1.20D+1.60Lr	11.65	Span 1	-0.940	0.340
+1.20D+1.60Lr	11.96	Span 1	-0.991	0.044
+1.20D+1.60Lr+0.50W	0.00	Span 1	1.584	0.000
+1.20D+1.60Lr+0.50W	0.31	Span 1	1.503	0.473
+1.20D+1.60Lr+0.50W	0.61	Span 1	1.422	0.921
+1.20D+1.60Lr+0.50W	0.92	Span 1	1.341	1.345
+1.20D+1.60Lr+0.50W	1.23	Span 1	1.260	1.743
+1.20D+1.60Lr+0.50W	1.53	Span 1	1.179	2.117
+1.20D+1.60Lr+0.50W	1.84	Span 1	1.098	2.466
+1.20D+1.60Lr+0.50W	2.15	Span 1	1.017	2.791
+1.20D+1.60Lr+0.50W	2.45	Span 1	0.936	3.090
+1.20D+1.60Lr+0.50W	2.76	Span 1	0.855	3.365
+1.20D+1.60Lr+0.50W	3.07	Span 1	0.774	3.614
+1.20D+1.60Lr+0.50W	3.37	Span 1	0.694	3.839
+1.20D+1.60Lr+0.50W	3.68	Span 1	0.613	4.040
+1.20D+1.60Lr+0.50W	3.99	Span 1	0.532	4.215
+1.20D+1.60Lr+0.50W	4.29	Span 1	0.451	4.366
+1.20D+1.60Lr+0.50W	4.60	Span 1	0.370	4.492
+1.20D+1.60Lr+0.50W	4.91	Span 1	0.289	4.593
+1.20D+1.60Lr+0.50W	5.21	Span 1	0.208	4.669
+1.20D+1.60Lr+0.50W	5.52	Span 1	0.127	4.720
+1.20D+1.60Lr+0.50W	5.82	Span 1	0.046	4.747
+1.20D+1.60Lr+0.50W	6.13	Span 1	-0.035	4.748
+1.20D+1.60Lr+0.50W	6.44	Span 1	-0.116	4.725
+1.20D+1.60Lr+0.50W	6.74	Span 1	-0.197	4.678
+1.20D+1.60Lr+0.50W	7.05	Span 1	-0.277	4.605
+1.20D+1.60Lr+0.50W	7.36	Span 1	-0.358	4.507
+1.20D+1.60Lr+0.50W	7.66	Span 1	-0.439	4.385
+1.20D+1.60Lr+0.50W	7.97	Span 1	-0.520	4.238
+1.20D+1.60Lr+0.50W	8.28	Span 1	-0.601	4.066
+1.20D+1.60Lr+0.50W	8.58	Span 1	-0.682	3.870
+1.20D+1.60Lr+0.50W	8.89	Span 1	-0.763	3.648
+1.20D+1.60Lr+0.50W	9.20	Span 1	-0.844	3.402
+1.20D+1.60Lr+0.50W	9.50	Span 1	-0.925	3.131
+1.20D+1.60Lr+0.50W	9.81	Span 1	-1.006	2.835
+1.20D+1.60Lr+0.50W	10.12	Span 1	-1.087	2.514
+1.20D+1.60Lr+0.50W	10.42	Span 1	-1.167	2.169
+1.20D+1.60Lr+0.50W	10.73	Span 1	-1.248	1.798
+1.20D+1.60Lr+0.50W	11.04	Span 1	-1.329	1.403
+1.20D+1.60Lr+0.50W	11.34	Span 1	-1.410	0.983
+1.20D+1.60Lr+0.50W	11.65	Span 1	-1.491	0.539
+1.20D+1.60Lr+0.50W	11.96	Span 1	-1.572	0.069

Title Block Line 1
 You can change this area
 using the "Settings" menu item
 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
 Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+0.50W	0.00	Span 1	0.960	0.000
+1.20D+0.50W	0.31	Span 1	0.911	0.287
+1.20D+0.50W	0.61	Span 1	0.862	0.558
+1.20D+0.50W	0.92	Span 1	0.812	0.815
+1.20D+0.50W	1.23	Span 1	0.763	1.056
+1.20D+0.50W	1.53	Span 1	0.714	1.283
+1.20D+0.50W	1.84	Span 1	0.665	1.494
+1.20D+0.50W	2.15	Span 1	0.616	1.691
+1.20D+0.50W	2.45	Span 1	0.567	1.872
+1.20D+0.50W	2.76	Span 1	0.518	2.039
+1.20D+0.50W	3.07	Span 1	0.469	2.190
+1.20D+0.50W	3.37	Span 1	0.420	2.327
+1.20D+0.50W	3.68	Span 1	0.371	2.448
+1.20D+0.50W	3.99	Span 1	0.322	2.554
+1.20D+0.50W	4.29	Span 1	0.273	2.645
+1.20D+0.50W	4.60	Span 1	0.224	2.722
+1.20D+0.50W	4.91	Span 1	0.175	2.783
+1.20D+0.50W	5.21	Span 1	0.126	2.829
+1.20D+0.50W	5.52	Span 1	0.077	2.860
+1.20D+0.50W	5.82	Span 1	0.028	2.876
+1.20D+0.50W	6.13	Span 1	-0.021	2.877
+1.20D+0.50W	6.44	Span 1	-0.070	2.863
+1.20D+0.50W	6.74	Span 1	-0.119	2.834
+1.20D+0.50W	7.05	Span 1	-0.168	2.790
+1.20D+0.50W	7.36	Span 1	-0.217	2.731
+1.20D+0.50W	7.66	Span 1	-0.266	2.657
+1.20D+0.50W	7.97	Span 1	-0.315	2.568
+1.20D+0.50W	8.28	Span 1	-0.364	2.464
+1.20D+0.50W	8.58	Span 1	-0.413	2.345
+1.20D+0.50W	8.89	Span 1	-0.462	2.211
+1.20D+0.50W	9.20	Span 1	-0.511	2.061
+1.20D+0.50W	9.50	Span 1	-0.560	1.897
+1.20D+0.50W	9.81	Span 1	-0.609	1.718
+1.20D+0.50W	10.12	Span 1	-0.658	1.523
+1.20D+0.50W	10.42	Span 1	-0.707	1.314
+1.20D+0.50W	10.73	Span 1	-0.756	1.090
+1.20D+0.50W	11.04	Span 1	-0.805	0.850
+1.20D+0.50W	11.34	Span 1	-0.855	0.596
+1.20D+0.50W	11.65	Span 1	-0.904	0.326
+1.20D+0.50W	11.96	Span 1	-0.953	0.042
+1.20D+0.50Lr+W	0.00	Span 1	1.740	0.000
+1.20D+0.50Lr+W	0.31	Span 1	1.651	0.520
+1.20D+0.50Lr+W	0.61	Span 1	1.562	1.012
+1.20D+0.50Lr+W	0.92	Span 1	1.473	1.477
+1.20D+0.50Lr+W	1.23	Span 1	1.384	1.915

Title Block Line 1
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 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
 Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+0.50Lr+W	1.53	Span 1	1.295	2.326
+1.20D+0.50Lr+W	1.84	Span 1	1.206	2.709
+1.20D+0.50Lr+W	2.15	Span 1	1.117	3.065
+1.20D+0.50Lr+W	2.45	Span 1	1.029	3.394
+1.20D+0.50Lr+W	2.76	Span 1	0.940	3.696
+1.20D+0.50Lr+W	3.07	Span 1	0.851	3.971
+1.20D+0.50Lr+W	3.37	Span 1	0.762	4.218
+1.20D+0.50Lr+W	3.68	Span 1	0.673	4.438
+1.20D+0.50Lr+W	3.99	Span 1	0.584	4.630
+1.20D+0.50Lr+W	4.29	Span 1	0.495	4.796
+1.20D+0.50Lr+W	4.60	Span 1	0.406	4.934
+1.20D+0.50Lr+W	4.91	Span 1	0.317	5.045
+1.20D+0.50Lr+W	5.21	Span 1	0.229	5.129
+1.20D+0.50Lr+W	5.52	Span 1	0.140	5.185
+1.20D+0.50Lr+W	5.82	Span 1	0.051	5.214
+1.20D+0.50Lr+W	6.13	Span 1	-0.038	5.216
+1.20D+0.50Lr+W	6.44	Span 1	-0.127	5.191
+1.20D+0.50Lr+W	6.74	Span 1	-0.216	5.138
+1.20D+0.50Lr+W	7.05	Span 1	-0.305	5.059
+1.20D+0.50Lr+W	7.36	Span 1	-0.394	4.951
+1.20D+0.50Lr+W	7.66	Span 1	-0.483	4.817
+1.20D+0.50Lr+W	7.97	Span 1	-0.571	4.656
+1.20D+0.50Lr+W	8.28	Span 1	-0.660	4.467
+1.20D+0.50Lr+W	8.58	Span 1	-0.749	4.251
+1.20D+0.50Lr+W	8.89	Span 1	-0.838	4.008
+1.20D+0.50Lr+W	9.20	Span 1	-0.927	3.737
+1.20D+0.50Lr+W	9.50	Span 1	-1.016	3.439
+1.20D+0.50Lr+W	9.81	Span 1	-1.105	3.114
+1.20D+0.50Lr+W	10.12	Span 1	-1.194	2.762
+1.20D+0.50Lr+W	10.42	Span 1	-1.282	2.382
+1.20D+0.50Lr+W	10.73	Span 1	-1.371	1.976
+1.20D+0.50Lr+W	11.04	Span 1	-1.460	1.542
+1.20D+0.50Lr+W	11.34	Span 1	-1.549	1.080
+1.20D+0.50Lr+W	11.65	Span 1	-1.638	0.592
+1.20D+0.50Lr+W	11.96	Span 1	-1.727	0.076
+1.20D+W	0.00	Span 1	1.545	0.000
+1.20D+W	0.31	Span 1	1.466	0.461
+1.20D+W	0.61	Span 1	1.387	0.899
+1.20D+W	0.92	Span 1	1.308	1.312
+1.20D+W	1.23	Span 1	1.229	1.701
+1.20D+W	1.53	Span 1	1.150	2.065
+1.20D+W	1.84	Span 1	1.071	2.406
+1.20D+W	2.15	Span 1	0.992	2.722
+1.20D+W	2.45	Span 1	0.913	3.014
+1.20D+W	2.76	Span 1	0.834	3.282

Title Block Line 1
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 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+W	3.07	Span 1	0.755	3.525
+1.20D+W	3.37	Span 1	0.676	3.745
+1.20D+W	3.68	Span 1	0.598	3.940
+1.20D+W	3.99	Span 1	0.519	4.111
+1.20D+W	4.29	Span 1	0.440	4.258
+1.20D+W	4.60	Span 1	0.361	4.381
+1.20D+W	4.91	Span 1	0.282	4.479
+1.20D+W	5.21	Span 1	0.203	4.554
+1.20D+W	5.52	Span 1	0.124	4.604
+1.20D+W	5.82	Span 1	0.045	4.630
+1.20D+W	6.13	Span 1	-0.034	4.631
+1.20D+W	6.44	Span 1	-0.113	4.609
+1.20D+W	6.74	Span 1	-0.192	4.562
+1.20D+W	7.05	Span 1	-0.271	4.491
+1.20D+W	7.36	Span 1	-0.350	4.396
+1.20D+W	7.66	Span 1	-0.428	4.277
+1.20D+W	7.97	Span 1	-0.507	4.134
+1.20D+W	8.28	Span 1	-0.586	3.966
+1.20D+W	8.58	Span 1	-0.665	3.774
+1.20D+W	8.89	Span 1	-0.744	3.558
+1.20D+W	9.20	Span 1	-0.823	3.318
+1.20D+W	9.50	Span 1	-0.902	3.054
+1.20D+W	9.81	Span 1	-0.981	2.765
+1.20D+W	10.12	Span 1	-1.060	2.452
+1.20D+W	10.42	Span 1	-1.139	2.115
+1.20D+W	10.73	Span 1	-1.218	1.754
+1.20D+W	11.04	Span 1	-1.297	1.369
+1.20D+W	11.34	Span 1	-1.375	0.959
+1.20D+W	11.65	Span 1	-1.454	0.525
+1.20D+W	11.96	Span 1	-1.533	0.067
+0.90D+W	0.00	Span 1	1.451	0.000
+0.90D+W	0.31	Span 1	1.377	0.433
+0.90D+W	0.61	Span 1	1.303	0.844
+0.90D+W	0.92	Span 1	1.229	1.232
+0.90D+W	1.23	Span 1	1.154	1.597
+0.90D+W	1.53	Span 1	1.080	1.940
+0.90D+W	1.84	Span 1	1.006	2.260
+0.90D+W	2.15	Span 1	0.932	2.557
+0.90D+W	2.45	Span 1	0.858	2.831
+0.90D+W	2.76	Span 1	0.784	3.083
+0.90D+W	3.07	Span 1	0.710	3.312
+0.90D+W	3.37	Span 1	0.635	3.518
+0.90D+W	3.68	Span 1	0.561	3.701
+0.90D+W	3.99	Span 1	0.487	3.862
+0.90D+W	4.29	Span 1	0.413	4.000

Title Block Line 1
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+0.90D+W	4.60	Span 1	0.339	4.115
+0.90D+W	4.91	Span 1	0.265	4.208
+0.90D+W	5.21	Span 1	0.191	4.278
+0.90D+W	5.52	Span 1	0.116	4.325
+0.90D+W	5.82	Span 1	0.042	4.349
+0.90D+W	6.13	Span 1	-0.032	4.351
+0.90D+W	6.44	Span 1	-0.106	4.330
+0.90D+W	6.74	Span 1	-0.180	4.286
+0.90D+W	7.05	Span 1	-0.254	4.219
+0.90D+W	7.36	Span 1	-0.328	4.130
+0.90D+W	7.66	Span 1	-0.402	4.018
+0.90D+W	7.97	Span 1	-0.477	3.883
+0.90D+W	8.28	Span 1	-0.551	3.726
+0.90D+W	8.58	Span 1	-0.625	3.545
+0.90D+W	8.89	Span 1	-0.699	3.343
+0.90D+W	9.20	Span 1	-0.773	3.117
+0.90D+W	9.50	Span 1	-0.847	2.869
+0.90D+W	9.81	Span 1	-0.921	2.597
+0.90D+W	10.12	Span 1	-0.996	2.304
+0.90D+W	10.42	Span 1	-1.070	1.987
+0.90D+W	10.73	Span 1	-1.144	1.648
+0.90D+W	11.04	Span 1	-1.218	1.286
+0.90D+W	11.34	Span 1	-1.292	0.901
+0.90D+W	11.65	Span 1	-1.366	0.494
+0.90D+W	11.96	Span 1	-1.440	0.063
+0.90D	0.00	Span 1	0.281	0.000
+0.90D	0.31	Span 1	0.267	0.084
+0.90D	0.61	Span 1	0.252	0.163
+0.90D	0.92	Span 1	0.238	0.239
+0.90D	1.23	Span 1	0.224	0.309
+0.90D	1.53	Span 1	0.209	0.376
+0.90D	1.84	Span 1	0.195	0.438
+0.90D	2.15	Span 1	0.180	0.495
+0.90D	2.45	Span 1	0.166	0.548
+0.90D	2.76	Span 1	0.152	0.597
+0.90D	3.07	Span 1	0.137	0.641
+0.90D	3.37	Span 1	0.123	0.681
+0.90D	3.68	Span 1	0.109	0.717
+0.90D	3.99	Span 1	0.094	0.748
+0.90D	4.29	Span 1	0.080	0.774
+0.90D	4.60	Span 1	0.066	0.797
+0.90D	4.91	Span 1	0.051	0.815
+0.90D	5.21	Span 1	0.037	0.828
+0.90D	5.52	Span 1	0.023	0.837
+0.90D	5.82	Span 1	0.008	0.842

Title Block Line 1
 You can change this area
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+0.90D	6.13	Span 1	-0.006	0.842
+0.90D	6.44	Span 1	-0.021	0.838
+0.90D	6.74	Span 1	-0.035	0.830
+0.90D	7.05	Span 1	-0.049	0.817
+0.90D	7.36	Span 1	-0.064	0.800
+0.90D	7.66	Span 1	-0.078	0.778
+0.90D	7.97	Span 1	-0.092	0.752
+0.90D	8.28	Span 1	-0.107	0.721
+0.90D	8.58	Span 1	-0.121	0.686
+0.90D	8.89	Span 1	-0.135	0.647
+0.90D	9.20	Span 1	-0.150	0.603
+0.90D	9.50	Span 1	-0.164	0.555
+0.90D	9.81	Span 1	-0.178	0.503
+0.90D	10.12	Span 1	-0.193	0.446
+0.90D	10.42	Span 1	-0.207	0.385
+0.90D	10.73	Span 1	-0.221	0.319
+0.90D	11.04	Span 1	-0.236	0.249
+0.90D	11.34	Span 1	-0.250	0.174
+0.90D	11.65	Span 1	-0.265	0.096
+0.90D	11.96	Span 1	-0.279	0.012

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
Overall MAXimum Envelope	0.00	Span 1	0.000
Overall MAXimum Envelope	0.31	Span 1	0.023
Overall MAXimum Envelope	0.61	Span 1	0.046
Overall MAXimum Envelope	0.92	Span 1	0.069
Overall MAXimum Envelope	1.23	Span 1	0.091
Overall MAXimum Envelope	1.53	Span 1	0.113
Overall MAXimum Envelope	1.84	Span 1	0.133
Overall MAXimum Envelope	2.15	Span 1	0.153
Overall MAXimum Envelope	2.45	Span 1	0.172
Overall MAXimum Envelope	2.76	Span 1	0.190
Overall MAXimum Envelope	3.07	Span 1	0.206
Overall MAXimum Envelope	3.37	Span 1	0.221
Overall MAXimum Envelope	3.68	Span 1	0.235
Overall MAXimum Envelope	3.99	Span 1	0.247
Overall MAXimum Envelope	4.29	Span 1	0.258
Overall MAXimum Envelope	4.60	Span 1	0.267
Overall MAXimum Envelope	4.91	Span 1	0.274
Overall MAXimum Envelope	5.21	Span 1	0.279
Overall MAXimum Envelope	5.52	Span 1	0.283
Overall MAXimum Envelope	5.82	Span 1	0.285
Overall MAXimum Envelope	6.13	Span 1	0.286

Title Block Line 1
 You can change this area
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
Overall MAXimum Envelope	6.44	Span 1	0.284
Overall MAXimum Envelope	6.74	Span 1	0.281
Overall MAXimum Envelope	7.05	Span 1	0.276
Overall MAXimum Envelope	7.36	Span 1	0.269
Overall MAXimum Envelope	7.66	Span 1	0.260
Overall MAXimum Envelope	7.97	Span 1	0.250
Overall MAXimum Envelope	8.28	Span 1	0.239
Overall MAXimum Envelope	8.58	Span 1	0.225
Overall MAXimum Envelope	8.89	Span 1	0.211
Overall MAXimum Envelope	9.20	Span 1	0.195
Overall MAXimum Envelope	9.50	Span 1	0.177
Overall MAXimum Envelope	9.81	Span 1	0.159
Overall MAXimum Envelope	10.12	Span 1	0.139
Overall MAXimum Envelope	10.42	Span 1	0.119
Overall MAXimum Envelope	10.73	Span 1	0.097
Overall MAXimum Envelope	11.04	Span 1	0.075
Overall MAXimum Envelope	11.34	Span 1	0.053
Overall MAXimum Envelope	11.65	Span 1	0.030
Overall MAXimum Envelope	11.96	Span 1	0.007
Overall MAXimum Envelope	12.00	Span 1	0.003
D Only	0.00	Span 1	0.000
D Only	0.31	Span 1	0.006
D Only	0.61	Span 1	0.012
D Only	0.92	Span 1	0.018
D Only	1.23	Span 1	0.024
D Only	1.53	Span 1	0.030
D Only	1.84	Span 1	0.036
D Only	2.15	Span 1	0.041
D Only	2.45	Span 1	0.046
D Only	2.76	Span 1	0.051
D Only	3.07	Span 1	0.055
D Only	3.37	Span 1	0.059
D Only	3.68	Span 1	0.063
D Only	3.99	Span 1	0.066
D Only	4.29	Span 1	0.069
D Only	4.60	Span 1	0.071
D Only	4.91	Span 1	0.073
D Only	5.21	Span 1	0.075
D Only	5.52	Span 1	0.076
D Only	5.82	Span 1	0.076
D Only	6.13	Span 1	0.076
D Only	6.44	Span 1	0.076

Title Block Line 1
 You can change this area
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
D Only	6.74	Span 1	0.075
D Only	7.05	Span 1	0.074
D Only	7.36	Span 1	0.072
D Only	7.66	Span 1	0.069
D Only	7.97	Span 1	0.067
D Only	8.28	Span 1	0.064
D Only	8.58	Span 1	0.060
D Only	8.89	Span 1	0.056
D Only	9.20	Span 1	0.052
D Only	9.50	Span 1	0.047
D Only	9.81	Span 1	0.042
D Only	10.12	Span 1	0.037
D Only	10.42	Span 1	0.032
D Only	10.73	Span 1	0.026
D Only	11.04	Span 1	0.020
D Only	11.34	Span 1	0.014
D Only	11.65	Span 1	0.008
D Only	11.96	Span 1	0.002
D Only	12.00	Span 1	0.001
+D+Lr	0.00	Span 1	0.000
+D+Lr	0.31	Span 1	0.014
+D+Lr	0.61	Span 1	0.028
+D+Lr	0.92	Span 1	0.041
+D+Lr	1.23	Span 1	0.055
+D+Lr	1.53	Span 1	0.068
+D+Lr	1.84	Span 1	0.080
+D+Lr	2.15	Span 1	0.092
+D+Lr	2.45	Span 1	0.103
+D+Lr	2.76	Span 1	0.114
+D+Lr	3.07	Span 1	0.124
+D+Lr	3.37	Span 1	0.133
+D+Lr	3.68	Span 1	0.141
+D+Lr	3.99	Span 1	0.148
+D+Lr	4.29	Span 1	0.155
+D+Lr	4.60	Span 1	0.160
+D+Lr	4.91	Span 1	0.164
+D+Lr	5.21	Span 1	0.168
+D+Lr	5.52	Span 1	0.170
+D+Lr	5.82	Span 1	0.171
+D+Lr	6.13	Span 1	0.171
+D+Lr	6.44	Span 1	0.170
+D+Lr	6.74	Span 1	0.168

Title Block Line 1
 You can change this area
 using the "Settings" menu item
 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
 Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+Lr	7.05	Span 1	0.165
+D+Lr	7.36	Span 1	0.161
+D+Lr	7.66	Span 1	0.156
+D+Lr	7.97	Span 1	0.150
+D+Lr	8.28	Span 1	0.143
+D+Lr	8.58	Span 1	0.135
+D+Lr	8.89	Span 1	0.126
+D+Lr	9.20	Span 1	0.117
+D+Lr	9.50	Span 1	0.106
+D+Lr	9.81	Span 1	0.095
+D+Lr	10.12	Span 1	0.084
+D+Lr	10.42	Span 1	0.071
+D+Lr	10.73	Span 1	0.058
+D+Lr	11.04	Span 1	0.045
+D+Lr	11.34	Span 1	0.032
+D+Lr	11.65	Span 1	0.018
+D+Lr	11.96	Span 1	0.004
+D+Lr	12.00	Span 1	0.002
+D+0.750Lr	0.00	Span 1	0.000
+D+0.750Lr	0.31	Span 1	0.012
+D+0.750Lr	0.61	Span 1	0.024
+D+0.750Lr	0.92	Span 1	0.036
+D+0.750Lr	1.23	Span 1	0.047
+D+0.750Lr	1.53	Span 1	0.058
+D+0.750Lr	1.84	Span 1	0.069
+D+0.750Lr	2.15	Span 1	0.079
+D+0.750Lr	2.45	Span 1	0.089
+D+0.750Lr	2.76	Span 1	0.098
+D+0.750Lr	3.07	Span 1	0.107
+D+0.750Lr	3.37	Span 1	0.114
+D+0.750Lr	3.68	Span 1	0.121
+D+0.750Lr	3.99	Span 1	0.128
+D+0.750Lr	4.29	Span 1	0.133
+D+0.750Lr	4.60	Span 1	0.138
+D+0.750Lr	4.91	Span 1	0.142
+D+0.750Lr	5.21	Span 1	0.144
+D+0.750Lr	5.52	Span 1	0.146
+D+0.750Lr	5.82	Span 1	0.147
+D+0.750Lr	6.13	Span 1	0.148
+D+0.750Lr	6.44	Span 1	0.147
+D+0.750Lr	6.74	Span 1	0.145
+D+0.750Lr	7.05	Span 1	0.142

Title Block Line 1
 You can change this area
 using the "Settings" menu item
 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Printed: 19 NOV 2024, 8:41AM

Wood Beam

File: wood joist.ec6
 Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+0.750Lr	7.36	Span 1	0.139
+D+0.750Lr	7.66	Span 1	0.135
+D+0.750Lr	7.97	Span 1	0.129
+D+0.750Lr	8.28	Span 1	0.123
+D+0.750Lr	8.58	Span 1	0.116
+D+0.750Lr	8.89	Span 1	0.109
+D+0.750Lr	9.20	Span 1	0.101
+D+0.750Lr	9.50	Span 1	0.092
+D+0.750Lr	9.81	Span 1	0.082
+D+0.750Lr	10.12	Span 1	0.072
+D+0.750Lr	10.42	Span 1	0.061
+D+0.750Lr	10.73	Span 1	0.050
+D+0.750Lr	11.04	Span 1	0.039
+D+0.750Lr	11.34	Span 1	0.027
+D+0.750Lr	11.65	Span 1	0.015
+D+0.750Lr	11.96	Span 1	0.003
+D+0.750Lr	12.00	Span 1	0.002
+D+0.60W	0.00	Span 1	0.000
+D+0.60W	0.31	Span 1	0.020
+D+0.60W	0.61	Span 1	0.040
+D+0.60W	0.92	Span 1	0.060
+D+0.60W	1.23	Span 1	0.079
+D+0.60W	1.53	Span 1	0.098
+D+0.60W	1.84	Span 1	0.116
+D+0.60W	2.15	Span 1	0.133
+D+0.60W	2.45	Span 1	0.149
+D+0.60W	2.76	Span 1	0.165
+D+0.60W	3.07	Span 1	0.179
+D+0.60W	3.37	Span 1	0.192
+D+0.60W	3.68	Span 1	0.204
+D+0.60W	3.99	Span 1	0.214
+D+0.60W	4.29	Span 1	0.223
+D+0.60W	4.60	Span 1	0.231
+D+0.60W	4.91	Span 1	0.237
+D+0.60W	5.21	Span 1	0.242
+D+0.60W	5.52	Span 1	0.246
+D+0.60W	5.82	Span 1	0.247
+D+0.60W	6.13	Span 1	0.248
+D+0.60W	6.44	Span 1	0.246
+D+0.60W	6.74	Span 1	0.243
+D+0.60W	7.05	Span 1	0.239
+D+0.60W	7.36	Span 1	0.233

Title Block Line 1
 You can change this area
 using the "Settings" menu item
 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
 Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+0.60W	7.66	Span 1	0.226
+D+0.60W	7.97	Span 1	0.217
+D+0.60W	8.28	Span 1	0.207
+D+0.60W	8.58	Span 1	0.195
+D+0.60W	8.89	Span 1	0.183
+D+0.60W	9.20	Span 1	0.169
+D+0.60W	9.50	Span 1	0.154
+D+0.60W	9.81	Span 1	0.138
+D+0.60W	10.12	Span 1	0.121
+D+0.60W	10.42	Span 1	0.103
+D+0.60W	10.73	Span 1	0.084
+D+0.60W	11.04	Span 1	0.065
+D+0.60W	11.34	Span 1	0.046
+D+0.60W	11.65	Span 1	0.026
+D+0.60W	11.96	Span 1	0.006
+D+0.60W	12.00	Span 1	0.003
+D+0.750Lr+0.450W	0.00	Span 1	0.000
+D+0.750Lr+0.450W	0.31	Span 1	0.022
+D+0.750Lr+0.450W	0.61	Span 1	0.045
+D+0.750Lr+0.450W	0.92	Span 1	0.067
+D+0.750Lr+0.450W	1.23	Span 1	0.088
+D+0.750Lr+0.450W	1.53	Span 1	0.109
+D+0.750Lr+0.450W	1.84	Span 1	0.129
+D+0.750Lr+0.450W	2.15	Span 1	0.148
+D+0.750Lr+0.450W	2.45	Span 1	0.166
+D+0.750Lr+0.450W	2.76	Span 1	0.184
+D+0.750Lr+0.450W	3.07	Span 1	0.199
+D+0.750Lr+0.450W	3.37	Span 1	0.214
+D+0.750Lr+0.450W	3.68	Span 1	0.227
+D+0.750Lr+0.450W	3.99	Span 1	0.239
+D+0.750Lr+0.450W	4.29	Span 1	0.249
+D+0.750Lr+0.450W	4.60	Span 1	0.258
+D+0.750Lr+0.450W	4.91	Span 1	0.265
+D+0.750Lr+0.450W	5.21	Span 1	0.270
+D+0.750Lr+0.450W	5.52	Span 1	0.274
+D+0.750Lr+0.450W	5.82	Span 1	0.276
+D+0.750Lr+0.450W	6.13	Span 1	0.276
+D+0.750Lr+0.450W	6.44	Span 1	0.275
+D+0.750Lr+0.450W	6.74	Span 1	0.271
+D+0.750Lr+0.450W	7.05	Span 1	0.267
+D+0.750Lr+0.450W	7.36	Span 1	0.260
+D+0.750Lr+0.450W	7.66	Span 1	0.252

Title Block Line 1
 You can change this area
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 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+0.750Lr+0.450W	7.97	Span 1	0.242
+D+0.750Lr+0.450W	8.28	Span 1	0.231
+D+0.750Lr+0.450W	8.58	Span 1	0.218
+D+0.750Lr+0.450W	8.89	Span 1	0.204
+D+0.750Lr+0.450W	9.20	Span 1	0.188
+D+0.750Lr+0.450W	9.50	Span 1	0.171
+D+0.750Lr+0.450W	9.81	Span 1	0.154
+D+0.750Lr+0.450W	10.12	Span 1	0.135
+D+0.750Lr+0.450W	10.42	Span 1	0.115
+D+0.750Lr+0.450W	10.73	Span 1	0.094
+D+0.750Lr+0.450W	11.04	Span 1	0.073
+D+0.750Lr+0.450W	11.34	Span 1	0.051
+D+0.750Lr+0.450W	11.65	Span 1	0.029
+D+0.750Lr+0.450W	11.96	Span 1	0.006
+D+0.750Lr+0.450W	12.00	Span 1	0.003
+D+0.450W	0.00	Span 1	0.000
+D+0.450W	0.31	Span 1	0.017
+D+0.450W	0.61	Span 1	0.033
+D+0.450W	0.92	Span 1	0.049
+D+0.450W	1.23	Span 1	0.065
+D+0.450W	1.53	Span 1	0.081
+D+0.450W	1.84	Span 1	0.096
+D+0.450W	2.15	Span 1	0.110
+D+0.450W	2.45	Span 1	0.123
+D+0.450W	2.76	Span 1	0.136
+D+0.450W	3.07	Span 1	0.148
+D+0.450W	3.37	Span 1	0.159
+D+0.450W	3.68	Span 1	0.168
+D+0.450W	3.99	Span 1	0.177
+D+0.450W	4.29	Span 1	0.185
+D+0.450W	4.60	Span 1	0.191
+D+0.450W	4.91	Span 1	0.196
+D+0.450W	5.21	Span 1	0.200
+D+0.450W	5.52	Span 1	0.203
+D+0.450W	5.82	Span 1	0.204
+D+0.450W	6.13	Span 1	0.205
+D+0.450W	6.44	Span 1	0.204
+D+0.450W	6.74	Span 1	0.201
+D+0.450W	7.05	Span 1	0.198
+D+0.450W	7.36	Span 1	0.193
+D+0.450W	7.66	Span 1	0.187
+D+0.450W	7.97	Span 1	0.179

Title Block Line 1
 You can change this area
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+0.450W	8.28	Span 1	0.171
+D+0.450W	8.58	Span 1	0.162
+D+0.450W	8.89	Span 1	0.151
+D+0.450W	9.20	Span 1	0.140
+D+0.450W	9.50	Span 1	0.127
+D+0.450W	9.81	Span 1	0.114
+D+0.450W	10.12	Span 1	0.100
+D+0.450W	10.42	Span 1	0.085
+D+0.450W	10.73	Span 1	0.070
+D+0.450W	11.04	Span 1	0.054
+D+0.450W	11.34	Span 1	0.038
+D+0.450W	11.65	Span 1	0.021
+D+0.450W	11.96	Span 1	0.005
+D+0.450W	12.00	Span 1	0.002
+0.60D+0.60W	0.00	Span 1	0.000
+0.60D+0.60W	0.31	Span 1	0.018
+0.60D+0.60W	0.61	Span 1	0.035
+0.60D+0.60W	0.92	Span 1	0.052
+0.60D+0.60W	1.23	Span 1	0.069
+0.60D+0.60W	1.53	Span 1	0.086
+0.60D+0.60W	1.84	Span 1	0.101
+0.60D+0.60W	2.15	Span 1	0.117
+0.60D+0.60W	2.45	Span 1	0.131
+0.60D+0.60W	2.76	Span 1	0.144
+0.60D+0.60W	3.07	Span 1	0.157
+0.60D+0.60W	3.37	Span 1	0.168
+0.60D+0.60W	3.68	Span 1	0.179
+0.60D+0.60W	3.99	Span 1	0.188
+0.60D+0.60W	4.29	Span 1	0.196
+0.60D+0.60W	4.60	Span 1	0.203
+0.60D+0.60W	4.91	Span 1	0.208
+0.60D+0.60W	5.21	Span 1	0.212
+0.60D+0.60W	5.52	Span 1	0.215
+0.60D+0.60W	5.82	Span 1	0.217
+0.60D+0.60W	6.13	Span 1	0.217
+0.60D+0.60W	6.44	Span 1	0.216
+0.60D+0.60W	6.74	Span 1	0.213
+0.60D+0.60W	7.05	Span 1	0.210
+0.60D+0.60W	7.36	Span 1	0.204
+0.60D+0.60W	7.66	Span 1	0.198
+0.60D+0.60W	7.97	Span 1	0.190
+0.60D+0.60W	8.28	Span 1	0.181

Title Block Line 1
 You can change this area
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+0.60D+0.60W	8.58	Span 1	0.171
+0.60D+0.60W	8.89	Span 1	0.160
+0.60D+0.60W	9.20	Span 1	0.148
+0.60D+0.60W	9.50	Span 1	0.135
+0.60D+0.60W	9.81	Span 1	0.121
+0.60D+0.60W	10.12	Span 1	0.106
+0.60D+0.60W	10.42	Span 1	0.090
+0.60D+0.60W	10.73	Span 1	0.074
+0.60D+0.60W	11.04	Span 1	0.057
+0.60D+0.60W	11.34	Span 1	0.040
+0.60D+0.60W	11.65	Span 1	0.023
+0.60D+0.60W	11.96	Span 1	0.005
+0.60D+0.60W	12.00	Span 1	0.003
+0.60D	0.00	Span 1	0.000
+0.60D	0.31	Span 1	0.004
+0.60D	0.61	Span 1	0.007
+0.60D	0.92	Span 1	0.011
+0.60D	1.23	Span 1	0.015
+0.60D	1.53	Span 1	0.018
+0.60D	1.84	Span 1	0.021
+0.60D	2.15	Span 1	0.025
+0.60D	2.45	Span 1	0.028
+0.60D	2.76	Span 1	0.030
+0.60D	3.07	Span 1	0.033
+0.60D	3.37	Span 1	0.035
+0.60D	3.68	Span 1	0.038
+0.60D	3.99	Span 1	0.040
+0.60D	4.29	Span 1	0.041
+0.60D	4.60	Span 1	0.043
+0.60D	4.91	Span 1	0.044
+0.60D	5.21	Span 1	0.045
+0.60D	5.52	Span 1	0.045
+0.60D	5.82	Span 1	0.046
+0.60D	6.13	Span 1	0.046
+0.60D	6.44	Span 1	0.045
+0.60D	6.74	Span 1	0.045
+0.60D	7.05	Span 1	0.044
+0.60D	7.36	Span 1	0.043
+0.60D	7.66	Span 1	0.042
+0.60D	7.97	Span 1	0.040
+0.60D	8.28	Span 1	0.038
+0.60D	8.58	Span 1	0.036

Title Block Line 1
 You can change this area
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 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+0.60D	8.89	Span 1	0.034
+0.60D	9.20	Span 1	0.031
+0.60D	9.50	Span 1	0.028
+0.60D	9.81	Span 1	0.025
+0.60D	10.12	Span 1	0.022
+0.60D	10.42	Span 1	0.019
+0.60D	10.73	Span 1	0.016
+0.60D	11.04	Span 1	0.012
+0.60D	11.34	Span 1	0.008
+0.60D	11.65	Span 1	0.005
+0.60D	11.96	Span 1	0.001
+0.60D	12.00	Span 1	0.001
Lr Only	0.00	Span 1	0.000
Lr Only	0.31	Span 1	0.008
Lr Only	0.61	Span 1	0.015
Lr Only	0.92	Span 1	0.023
Lr Only	1.23	Span 1	0.030
Lr Only	1.53	Span 1	0.038
Lr Only	1.84	Span 1	0.044
Lr Only	2.15	Span 1	0.051
Lr Only	2.45	Span 1	0.057
Lr Only	2.76	Span 1	0.063
Lr Only	3.07	Span 1	0.069
Lr Only	3.37	Span 1	0.074
Lr Only	3.68	Span 1	0.078
Lr Only	3.99	Span 1	0.082
Lr Only	4.29	Span 1	0.086
Lr Only	4.60	Span 1	0.089
Lr Only	4.91	Span 1	0.091
Lr Only	5.21	Span 1	0.093
Lr Only	5.52	Span 1	0.094
Lr Only	5.82	Span 1	0.095
Lr Only	6.13	Span 1	0.095
Lr Only	6.44	Span 1	0.095
Lr Only	6.74	Span 1	0.094
Lr Only	7.05	Span 1	0.092
Lr Only	7.36	Span 1	0.090
Lr Only	7.66	Span 1	0.087
Lr Only	7.97	Span 1	0.083
Lr Only	8.28	Span 1	0.080
Lr Only	8.58	Span 1	0.075
Lr Only	8.89	Span 1	0.070

Title Block Line 1
You can change this area
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID:
Project Descr:

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Wood Beam

File: wood joist.ec6
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
Lr Only	9.20	Span 1	0.065
Lr Only	9.50	Span 1	0.059
Lr Only	9.81	Span 1	0.053
Lr Only	10.12	Span 1	0.046
Lr Only	10.42	Span 1	0.040
Lr Only	10.73	Span 1	0.032
Lr Only	11.04	Span 1	0.025
Lr Only	11.34	Span 1	0.018
Lr Only	11.65	Span 1	0.010
Lr Only	11.96	Span 1	0.002
Lr Only	12.00	Span 1	0.001
W Only	0.00	Span 1	0.000
W Only	0.31	Span 1	0.023
W Only	0.61	Span 1	0.046
W Only	0.92	Span 1	0.069
W Only	1.23	Span 1	0.091
W Only	1.53	Span 1	0.113
W Only	1.84	Span 1	0.133
W Only	2.15	Span 1	0.153
W Only	2.45	Span 1	0.172
W Only	2.76	Span 1	0.190
W Only	3.07	Span 1	0.206
W Only	3.37	Span 1	0.221
W Only	3.68	Span 1	0.235
W Only	3.99	Span 1	0.247
W Only	4.29	Span 1	0.258
W Only	4.60	Span 1	0.267
W Only	4.91	Span 1	0.274
W Only	5.21	Span 1	0.279
W Only	5.52	Span 1	0.283
W Only	5.82	Span 1	0.285
W Only	6.13	Span 1	0.286
W Only	6.44	Span 1	0.284
W Only	6.74	Span 1	0.281
W Only	7.05	Span 1	0.276
W Only	7.36	Span 1	0.269
W Only	7.66	Span 1	0.260
W Only	7.97	Span 1	0.250
W Only	8.28	Span 1	0.239
W Only	8.58	Span 1	0.225
W Only	8.89	Span 1	0.211
W Only	9.20	Span 1	0.195

Title Block Line 1
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Title Block Line 6

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Engineer:
Project ID:
Project Descr:

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Wood Beam

File: wood joist.ec6
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12' perimeter bouble beam (2x12works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
W Only	9.50	Span 1	0.177
W Only	9.81	Span 1	0.159
W Only	10.12	Span 1	0.139
W Only	10.42	Span 1	0.119
W Only	10.73	Span 1	0.097
W Only	11.04	Span 1	0.075
W Only	11.34	Span 1	0.053
W Only	11.65	Span 1	0.030
W Only	11.96	Span 1	0.007
W Only	12.00	Span 1	0.003

Title Block Line 1
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 Title Block Line 6

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 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

Lic. # : KW-06010740

File: wood joist.ec6
 Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
 DDA Engineers, P.A.

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

CODE REFERENCES

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

Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Load Resistance Factor D

Load Combination : ASCE 7-16

Wood Species : Southern Pine

Wood Grade : No.1 Non-Dense: 2"-4" Thick: 8" Wide

Beam Bracing : Completely Unbraced

Fb + 1,100.0 psi

Fb - 1,100.0 psi

Fc - Prll 1,400.0 psi

Fc - Perp 480.0 psi

Fv 175.0 psi

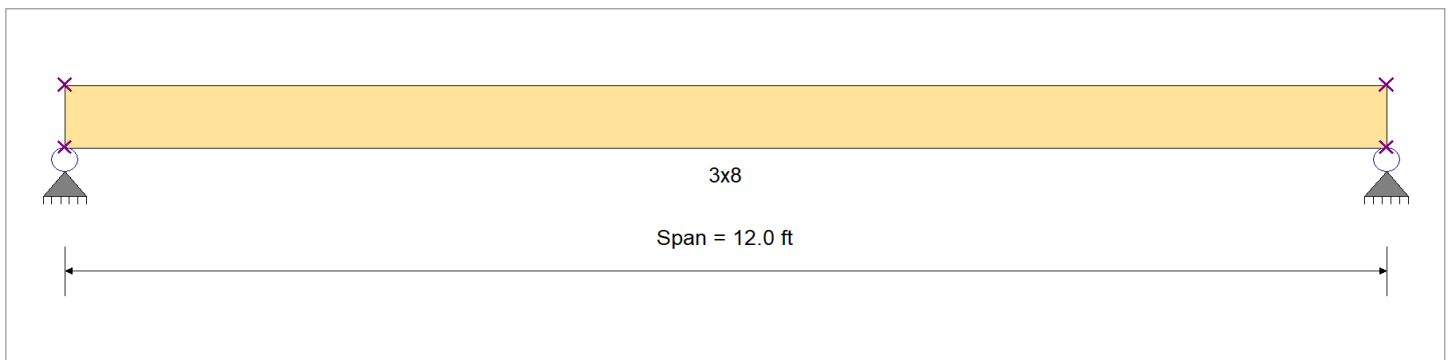
Ft 700.0 psi

E : Modulus of Elasticity

Ebend- xx 1,400.0 ksi

Eminbend - xx 510.0 ksi

Density 34.330 pcf



Applied Loads

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

Beam self weight calculated and added to loads

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.928	1	Maximum Shear Stress Ratio	=	0.305	: 1
Section used for this span		3x8		Section used for this span		3x8	
fb: Actual	=	1,644.80	psi	fv: Actual	=	92.14	psi
Fb: Allowable	=	1,771.65	psi	Fv: Allowable	=	302.40	psi
Load Combination		+1.20D+1.60Lr+0.50W		Load Combination		+1.20D+1.60Lr+0.50W	
Location of maximum on span	=	5.080	ft	Location of maximum on span	=	0.000	ft
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.180	in	Ratio =		800	>=360
Max Upward Transient Deflection		0.000	in	Ratio =		0	<360
Max Downward Total Deflection		0.487	in	Ratio =		295	>=240
Max Upward Total Deflection		0.000	in	Ratio =		0	<240

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values		
			M	V	λ	C _{FV}	C _i	C _r	C _m	C _t	C _L	Mu	fb	Fb	Vu	fv	Fv
+1.40D														0.00		0.00	0.00
Length = 12.0 ft		1	0.265	0.088	0.60	1.000	1.00	1.00	1.00	1.00	0.96	0.66	363.15	1367.82	0.24	19.88	226.80
+1.20D+0.50Lr														0.00		0.00	0.00
Length = 12.0 ft		1	0.297	0.096	0.80	1.000	1.00	1.00	1.00	1.00	0.93	0.96	526.30	1771.65	0.35	29.15	302.40
+1.20D														0.00		0.00	0.00
Length = 12.0 ft		1	0.176	0.056	0.80	1.000	1.00	1.00	1.00	1.00	0.93	0.57	311.27	1771.65	0.21	17.04	302.40
+1.20D+1.60Lr														0.00		0.00	0.00
Length = 12.0 ft		1	0.564	0.185	0.80	1.000	1.00	1.00	1.00	1.00	0.93	1.82	999.50	1771.65	0.67	55.80	302.40
+1.20D+1.60Lr+0.50W														0.00		0.00	0.00
Length = 12.0 ft		1	0.928	0.305	0.80	1.000	1.00	1.00	1.00	1.00	0.93	3.00	1,644.80	1771.65	1.11	92.14	302.40
+1.20D+1.60Lr-0.50W														0.00		0.00	0.00
Length = 12.0 ft		1	0.200	0.064	0.80	1.000	1.00	1.00	1.00	1.00	0.93	0.65	354.27	1771.65	0.24	19.46	302.40
+1.20D+0.50W														0.00		0.00	0.00
Length = 12.0 ft		1	0.540	0.177	0.80	1.000	1.00	1.00	1.00	1.00	0.93	1.75	956.48	1771.65	0.65	53.38	302.40

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Wood Beam

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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Load Combination Segment Length	Span #	Max Stress Ratios		λ	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values			Shear Values		
		M	V								Mu	fb	Fb	Vu	fv	Fv
+1.20D-0.50W					1.000	1.00	1.00	1.00	1.00	0.93			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.189	0.064	0.80	1.000	1.00	1.00	1.00	1.00	0.93	0.61	334.41	1771.65	0.23	19.30	302.40
+1.20D+0.50Lr+W					1.000	1.00	1.00	1.00	1.00	0.93			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.858	0.269	1.00	1.000	1.00	1.00	1.00	1.00	0.89	3.32	1,816.89	2117.89	1.23	101.84	378.00
+1.20D+0.50Lr-W					1.000	1.00	1.00	1.00	1.00	0.89			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.361	0.115	1.00	1.000	1.00	1.00	1.00	1.00	0.89	1.40	764.54	2117.89	0.53	43.53	378.00
+1.20D+W					1.000	1.00	1.00	1.00	1.00	0.89			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.756	0.237	1.00	1.000	1.00	1.00	1.00	1.00	0.89	2.92	1,601.78	2117.89	1.08	89.72	378.00
+1.20D-W					1.000	1.00	1.00	1.00	1.00	0.89			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.463	0.147	1.00	1.000	1.00	1.00	1.00	1.00	0.89	1.79	979.64	2117.89	0.67	55.65	378.00
+0.90D+W					1.000	1.00	1.00	1.00	1.00	0.89			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.720	0.226	1.00	1.000	1.00	1.00	1.00	1.00	0.89	2.78	1,524.00	2117.89	1.03	85.46	378.00
+0.90D-W					1.000	1.00	1.00	1.00	1.00	0.89			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.499	0.158	1.00	1.000	1.00	1.00	1.00	1.00	0.89	1.93	1,057.39	2117.89	0.72	59.91	378.00
+0.90D					1.000	1.00	1.00	1.00	1.00	0.89			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.110	0.034	1.00	1.000	1.00	1.00	1.00	1.00	0.89	0.43	233.45	2117.89	0.15	12.78	378.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750Lr+0.450W	1	0.4868	5.781		0.0000	0.000

Maximum Deflections for Load Combinations

Load Combination	Span	Max. Downward Defl	Location in Span	Max. Upward Defl	Location in Span
D Only	1	0.1092 in	5.825 ft	0.0000 in	0.000 ft
+D+Lr	1	0.2890 in	5.825 ft	0.0000 in	0.000 ft
+D+0.750Lr	1	0.2441 in	5.825 ft	0.0000 in	0.000 ft
+D+0.60W	1	0.4329 in	5.781 ft	0.0000 in	0.000 ft
+D+0.750Lr+0.450W	1	0.4868 in	5.781 ft	0.0000 in	0.000 ft
+D+0.450W	1	0.3520 in	5.781 ft	0.0000 in	0.000 ft
+0.60D+0.60W	1	0.3892 in	5.781 ft	0.0000 in	0.000 ft
+0.60D	1	0.0655 in	5.825 ft	0.0000 in	0.000 ft
Lr Only	1	0.1798 in	5.781 ft	0.0000 in	0.000 ft

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	-1.020	-0.510
Overall MINimum	-1.020	-0.510
D Only	0.198	0.112
+D+Lr	0.538	0.282
+D+0.750Lr	0.453	0.239
+D+0.60W	0.810	0.418
+D-0.60W	-0.414	-0.194
+D+0.750Lr+0.450W	0.912	0.469
+D+0.750Lr-0.450W	-0.006	0.010
+D+0.450W	0.657	0.341
+D-0.450W	-0.261	-0.118
+0.60D+0.60W	0.731	0.373
+0.60D-0.60W	-0.493	-0.239
+0.60D	0.119	0.067
Lr Only	0.340	0.170
W Only	1.020	0.510
-W	-1.020	-0.510

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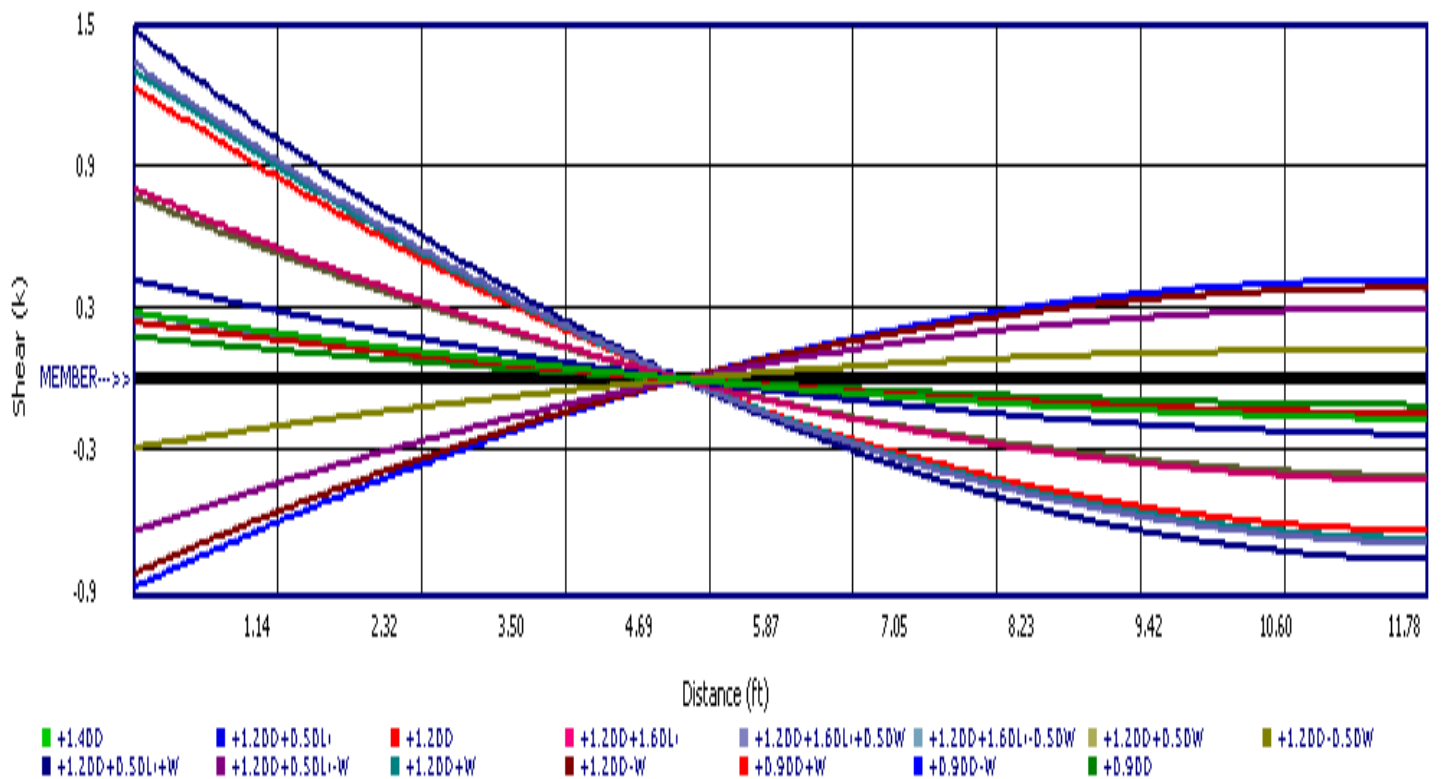
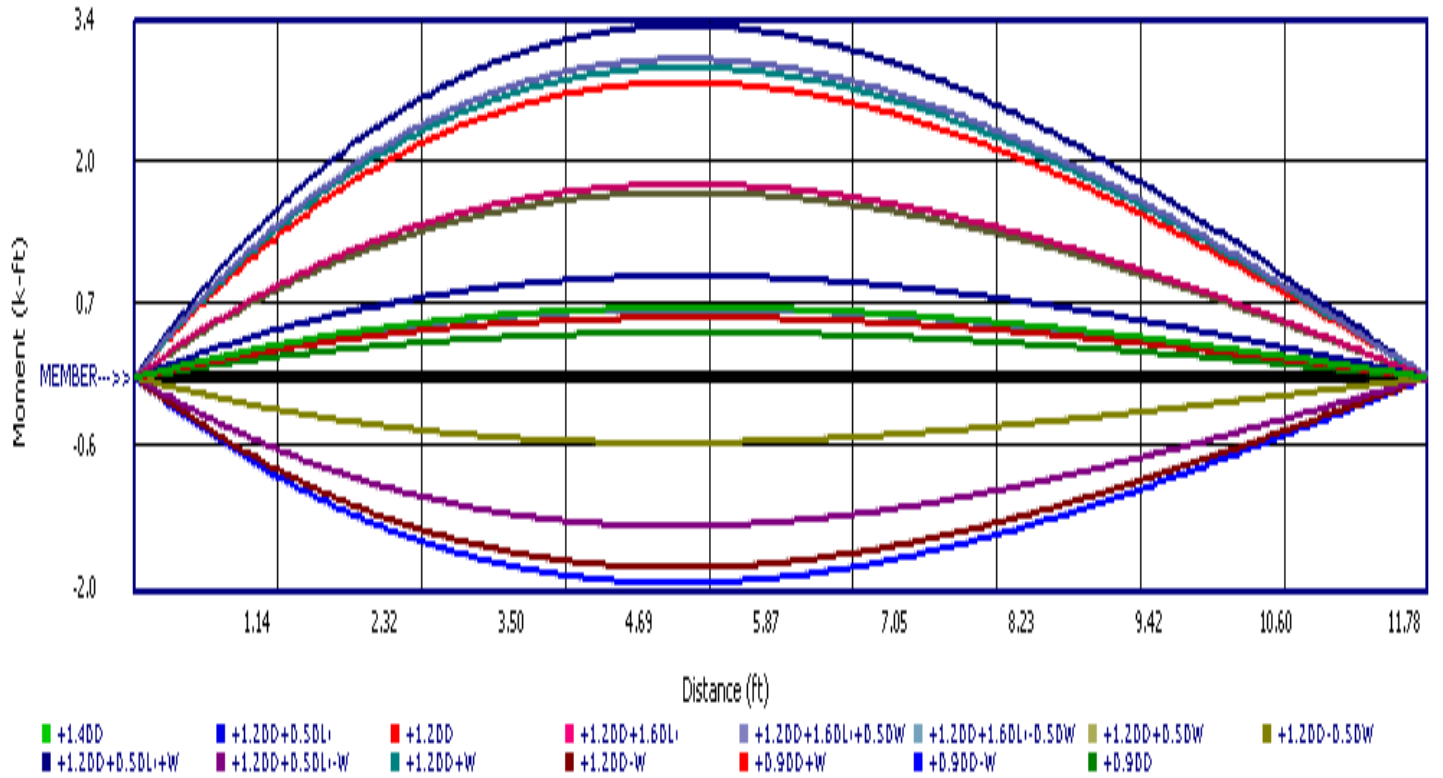
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Wood Beam

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 DDA Engineers, P.A.

DESCRIPTION: 12'builtup beam triang load (2-3x8works)



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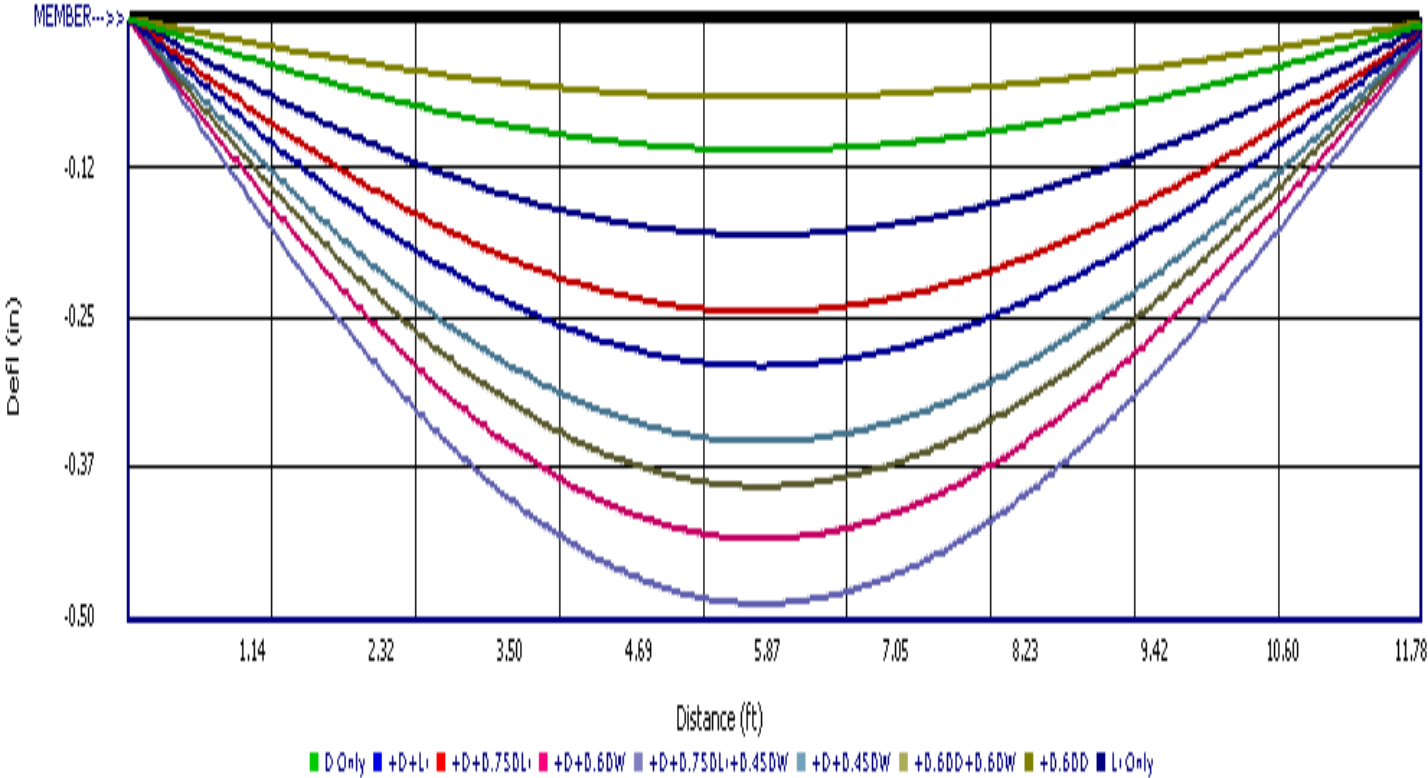
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DDA Engineers, P.A.

DESCRIPTION: 12'builtup beam triang load (2-3x8works)



Summary of Values per Beam Span

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.40D	0.00	Span 1	0.277	0.000
+1.40D	0.31	Span 1	0.257	0.082
+1.40D	0.61	Span 1	0.237	0.158
+1.40D	0.92	Span 1	0.218	0.227
+1.40D	1.23	Span 1	0.200	0.292
+1.40D	1.53	Span 1	0.181	0.350
+1.40D	1.84	Span 1	0.164	0.403
+1.40D	2.15	Span 1	0.146	0.450
+1.40D	2.45	Span 1	0.130	0.493
+1.40D	2.76	Span 1	0.113	0.530
+1.40D	3.07	Span 1	0.098	0.562
+1.40D	3.37	Span 1	0.082	0.590
+1.40D	3.68	Span 1	0.067	0.613
+1.40D	3.99	Span 1	0.053	0.631
+1.40D	4.29	Span 1	0.039	0.645
+1.40D	4.60	Span 1	0.025	0.655
+1.40D	4.91	Span 1	0.012	0.661
+1.40D	5.21	Span 1	-0.000	0.663
+1.40D	5.52	Span 1	-0.012	0.661
+1.40D	5.82	Span 1	-0.024	0.655

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Wood Beam

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DDA Engineers, P.A.

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

+1.40D	6.13	Span 1	-0.035	0.646
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Title Block Line 1
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Wood Beam

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Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.40D	6.44	Span 1	-0.045	0.634
+1.40D	6.74	Span 1	-0.056	0.619
+1.40D	7.05	Span 1	-0.065	0.600
+1.40D	7.36	Span 1	-0.075	0.579
+1.40D	7.66	Span 1	-0.083	0.554
+1.40D	7.97	Span 1	-0.092	0.528
+1.40D	8.28	Span 1	-0.099	0.498
+1.40D	8.58	Span 1	-0.107	0.467
+1.40D	8.89	Span 1	-0.114	0.433
+1.40D	9.20	Span 1	-0.120	0.397
+1.40D	9.50	Span 1	-0.126	0.359
+1.40D	9.81	Span 1	-0.131	0.320
+1.40D	10.12	Span 1	-0.136	0.279
+1.40D	10.42	Span 1	-0.141	0.236
+1.40D	10.73	Span 1	-0.145	0.192
+1.40D	11.04	Span 1	-0.149	0.147
+1.40D	11.34	Span 1	-0.152	0.101
+1.40D	11.65	Span 1	-0.154	0.054
+1.40D	11.96	Span 1	-0.156	0.007
+1.20D+0.50Lr	0.00	Span 1	0.408	0.000
+1.20D+0.50Lr	0.31	Span 1	0.377	0.120
+1.20D+0.50Lr	0.61	Span 1	0.348	0.231
+1.20D+0.50Lr	0.92	Span 1	0.320	0.334
+1.20D+0.50Lr	1.23	Span 1	0.292	0.427
+1.20D+0.50Lr	1.53	Span 1	0.265	0.513
+1.20D+0.50Lr	1.84	Span 1	0.238	0.590
+1.20D+0.50Lr	2.15	Span 1	0.213	0.659
+1.20D+0.50Lr	2.45	Span 1	0.188	0.720
+1.20D+0.50Lr	2.76	Span 1	0.163	0.774
+1.20D+0.50Lr	3.07	Span 1	0.140	0.820
+1.20D+0.50Lr	3.37	Span 1	0.117	0.860
+1.20D+0.50Lr	3.68	Span 1	0.095	0.892
+1.20D+0.50Lr	3.99	Span 1	0.074	0.918
+1.20D+0.50Lr	4.29	Span 1	0.054	0.938
+1.20D+0.50Lr	4.60	Span 1	0.034	0.951
+1.20D+0.50Lr	4.91	Span 1	0.015	0.959
+1.20D+0.50Lr	5.21	Span 1	-0.003	0.960
+1.20D+0.50Lr	5.52	Span 1	-0.021	0.957
+1.20D+0.50Lr	5.82	Span 1	-0.038	0.948
+1.20D+0.50Lr	6.13	Span 1	-0.054	0.934
+1.20D+0.50Lr	6.44	Span 1	-0.069	0.915
+1.20D+0.50Lr	6.74	Span 1	-0.084	0.891
+1.20D+0.50Lr	7.05	Span 1	-0.098	0.863
+1.20D+0.50Lr	7.36	Span 1	-0.111	0.831
+1.20D+0.50Lr	7.66	Span 1	-0.123	0.796

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Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+0.50Lr	7.97	Span 1	-0.135	0.756
+1.20D+0.50Lr	8.28	Span 1	-0.146	0.713
+1.20D+0.50Lr	8.58	Span 1	-0.156	0.667
+1.20D+0.50Lr	8.89	Span 1	-0.165	0.618
+1.20D+0.50Lr	9.20	Span 1	-0.174	0.566
+1.20D+0.50Lr	9.50	Span 1	-0.182	0.511
+1.20D+0.50Lr	9.81	Span 1	-0.189	0.454
+1.20D+0.50Lr	10.12	Span 1	-0.196	0.395
+1.20D+0.50Lr	10.42	Span 1	-0.201	0.334
+1.20D+0.50Lr	10.73	Span 1	-0.206	0.272
+1.20D+0.50Lr	11.04	Span 1	-0.211	0.208
+1.20D+0.50Lr	11.34	Span 1	-0.214	0.143
+1.20D+0.50Lr	11.65	Span 1	-0.217	0.076
+1.20D+0.50Lr	11.96	Span 1	-0.219	0.010
+1.20D	0.00	Span 1	0.238	0.000
+1.20D	0.31	Span 1	0.220	0.070
+1.20D	0.61	Span 1	0.204	0.135
+1.20D	0.92	Span 1	0.187	0.195
+1.20D	1.23	Span 1	0.171	0.250
+1.20D	1.53	Span 1	0.156	0.300
+1.20D	1.84	Span 1	0.140	0.345
+1.20D	2.15	Span 1	0.126	0.386
+1.20D	2.45	Span 1	0.111	0.422
+1.20D	2.76	Span 1	0.097	0.454
+1.20D	3.07	Span 1	0.084	0.482
+1.20D	3.37	Span 1	0.070	0.506
+1.20D	3.68	Span 1	0.058	0.525
+1.20D	3.99	Span 1	0.045	0.541
+1.20D	4.29	Span 1	0.033	0.553
+1.20D	4.60	Span 1	0.022	0.561
+1.20D	4.91	Span 1	0.011	0.566
+1.20D	5.21	Span 1	-0.000	0.568
+1.20D	5.52	Span 1	-0.010	0.566
+1.20D	5.82	Span 1	-0.020	0.562
+1.20D	6.13	Span 1	-0.030	0.554
+1.20D	6.44	Span 1	-0.039	0.544
+1.20D	6.74	Span 1	-0.048	0.530
+1.20D	7.05	Span 1	-0.056	0.514
+1.20D	7.36	Span 1	-0.064	0.496
+1.20D	7.66	Span 1	-0.071	0.475
+1.20D	7.97	Span 1	-0.079	0.452
+1.20D	8.28	Span 1	-0.085	0.427
+1.20D	8.58	Span 1	-0.092	0.400
+1.20D	8.89	Span 1	-0.097	0.371
+1.20D	9.20	Span 1	-0.103	0.340

Title Block Line 1
 You can change this area
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 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D	9.50	Span 1	-0.108	0.308
+1.20D	9.81	Span 1	-0.113	0.274
+1.20D	10.12	Span 1	-0.117	0.239
+1.20D	10.42	Span 1	-0.121	0.203
+1.20D	10.73	Span 1	-0.124	0.165
+1.20D	11.04	Span 1	-0.127	0.126
+1.20D	11.34	Span 1	-0.130	0.087
+1.20D	11.65	Span 1	-0.132	0.047
+1.20D	11.96	Span 1	-0.134	0.006
+1.20D+1.60Lr	0.00	Span 1	0.782	0.000
+1.20D+1.60Lr	0.31	Span 1	0.723	0.231
+1.20D+1.60Lr	0.61	Span 1	0.666	0.444
+1.20D+1.60Lr	0.92	Span 1	0.611	0.639
+1.20D+1.60Lr	1.23	Span 1	0.557	0.818
+1.20D+1.60Lr	1.53	Span 1	0.504	0.981
+1.20D+1.60Lr	1.84	Span 1	0.453	1.128
+1.20D+1.60Lr	2.15	Span 1	0.404	1.259
+1.20D+1.60Lr	2.45	Span 1	0.356	1.375
+1.20D+1.60Lr	2.76	Span 1	0.309	1.477
+1.20D+1.60Lr	3.07	Span 1	0.264	1.565
+1.20D+1.60Lr	3.37	Span 1	0.220	1.639
+1.20D+1.60Lr	3.68	Span 1	0.178	1.700
+1.20D+1.60Lr	3.99	Span 1	0.137	1.749
+1.20D+1.60Lr	4.29	Span 1	0.098	1.785
+1.20D+1.60Lr	4.60	Span 1	0.060	1.809
+1.20D+1.60Lr	4.91	Span 1	0.024	1.822
+1.20D+1.60Lr	5.21	Span 1	-0.011	1.824
+1.20D+1.60Lr	5.52	Span 1	-0.044	1.815
+1.20D+1.60Lr	5.82	Span 1	-0.076	1.797
+1.20D+1.60Lr	6.13	Span 1	-0.107	1.769
+1.20D+1.60Lr	6.44	Span 1	-0.136	1.731
+1.20D+1.60Lr	6.74	Span 1	-0.163	1.686
+1.20D+1.60Lr	7.05	Span 1	-0.189	1.631
+1.20D+1.60Lr	7.36	Span 1	-0.214	1.570
+1.20D+1.60Lr	7.66	Span 1	-0.237	1.501
+1.20D+1.60Lr	7.97	Span 1	-0.259	1.425
+1.20D+1.60Lr	8.28	Span 1	-0.279	1.342
+1.20D+1.60Lr	8.58	Span 1	-0.297	1.254
+1.20D+1.60Lr	8.89	Span 1	-0.315	1.160
+1.20D+1.60Lr	9.20	Span 1	-0.330	1.061
+1.20D+1.60Lr	9.50	Span 1	-0.345	0.958
+1.20D+1.60Lr	9.81	Span 1	-0.357	0.850
+1.20D+1.60Lr	10.12	Span 1	-0.369	0.739
+1.20D+1.60Lr	10.42	Span 1	-0.379	0.624
+1.20D+1.60Lr	10.73	Span 1	-0.387	0.507

Title Block Line 1
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+1.60Lr	11.04	Span 1	-0.394	0.387
+1.20D+1.60Lr	11.34	Span 1	-0.400	0.265
+1.20D+1.60Lr	11.65	Span 1	-0.404	0.142
+1.20D+1.60Lr	11.96	Span 1	-0.406	0.018
+1.20D+1.60Lr+0.50W	0.00	Span 1	1.292	0.000
+1.20D+1.60Lr+0.50W	0.31	Span 1	1.195	0.381
+1.20D+1.60Lr+0.50W	0.61	Span 1	1.100	0.733
+1.20D+1.60Lr+0.50W	0.92	Span 1	1.008	1.056
+1.20D+1.60Lr+0.50W	1.23	Span 1	0.918	1.351
+1.20D+1.60Lr+0.50W	1.53	Span 1	0.831	1.619
+1.20D+1.60Lr+0.50W	1.84	Span 1	0.747	1.861
+1.20D+1.60Lr+0.50W	2.15	Span 1	0.665	2.077
+1.20D+1.60Lr+0.50W	2.45	Span 1	0.585	2.269
+1.20D+1.60Lr+0.50W	2.76	Span 1	0.508	2.436
+1.20D+1.60Lr+0.50W	3.07	Span 1	0.433	2.580
+1.20D+1.60Lr+0.50W	3.37	Span 1	0.361	2.702
+1.20D+1.60Lr+0.50W	3.68	Span 1	0.291	2.802
+1.20D+1.60Lr+0.50W	3.99	Span 1	0.224	2.881
+1.20D+1.60Lr+0.50W	4.29	Span 1	0.159	2.939
+1.20D+1.60Lr+0.50W	4.60	Span 1	0.096	2.978
+1.20D+1.60Lr+0.50W	4.91	Span 1	0.036	2.998
+1.20D+1.60Lr+0.50W	5.21	Span 1	-0.021	3.001
+1.20D+1.60Lr+0.50W	5.52	Span 1	-0.076	2.986
+1.20D+1.60Lr+0.50W	5.82	Span 1	-0.129	2.954
+1.20D+1.60Lr+0.50W	6.13	Span 1	-0.179	2.907
+1.20D+1.60Lr+0.50W	6.44	Span 1	-0.226	2.845
+1.20D+1.60Lr+0.50W	6.74	Span 1	-0.271	2.769
+1.20D+1.60Lr+0.50W	7.05	Span 1	-0.314	2.679
+1.20D+1.60Lr+0.50W	7.36	Span 1	-0.354	2.576
+1.20D+1.60Lr+0.50W	7.66	Span 1	-0.392	2.462
+1.20D+1.60Lr+0.50W	7.97	Span 1	-0.427	2.336
+1.20D+1.60Lr+0.50W	8.28	Span 1	-0.460	2.200
+1.20D+1.60Lr+0.50W	8.58	Span 1	-0.490	2.054
+1.20D+1.60Lr+0.50W	8.89	Span 1	-0.518	1.900
+1.20D+1.60Lr+0.50W	9.20	Span 1	-0.544	1.737
+1.20D+1.60Lr+0.50W	9.50	Span 1	-0.567	1.567
+1.20D+1.60Lr+0.50W	9.81	Span 1	-0.587	1.390
+1.20D+1.60Lr+0.50W	10.12	Span 1	-0.605	1.207
+1.20D+1.60Lr+0.50W	10.42	Span 1	-0.620	1.019
+1.20D+1.60Lr+0.50W	10.73	Span 1	-0.634	0.827
+1.20D+1.60Lr+0.50W	11.04	Span 1	-0.644	0.631
+1.20D+1.60Lr+0.50W	11.34	Span 1	-0.652	0.432
+1.20D+1.60Lr+0.50W	11.65	Span 1	-0.658	0.231
+1.20D+1.60Lr+0.50W	11.96	Span 1	-0.661	0.029

Title Block Line 1
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 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+1.60Lr-0.50W	0.00	Span 1	0.272	0.000
+1.20D+1.60Lr-0.50W	0.31	Span 1	0.252	0.080
+1.20D+1.60Lr-0.50W	0.61	Span 1	0.232	0.154
+1.20D+1.60Lr-0.50W	0.92	Span 1	0.214	0.223
+1.20D+1.60Lr-0.50W	1.23	Span 1	0.195	0.285
+1.20D+1.60Lr-0.50W	1.53	Span 1	0.177	0.342
+1.20D+1.60Lr-0.50W	1.84	Span 1	0.160	0.394
+1.20D+1.60Lr-0.50W	2.15	Span 1	0.143	0.441
+1.20D+1.60Lr-0.50W	2.45	Span 1	0.126	0.482
+1.20D+1.60Lr-0.50W	2.76	Span 1	0.110	0.518
+1.20D+1.60Lr-0.50W	3.07	Span 1	0.095	0.550
+1.20D+1.60Lr-0.50W	3.37	Span 1	0.080	0.576
+1.20D+1.60Lr-0.50W	3.68	Span 1	0.065	0.599
+1.20D+1.60Lr-0.50W	3.99	Span 1	0.051	0.616
+1.20D+1.60Lr-0.50W	4.29	Span 1	0.037	0.630
+1.20D+1.60Lr-0.50W	4.60	Span 1	0.024	0.639
+1.20D+1.60Lr-0.50W	4.91	Span 1	0.012	0.645
+1.20D+1.60Lr-0.50W	5.21	Span 1	-0.001	0.647
+1.20D+1.60Lr-0.50W	5.52	Span 1	-0.012	0.645
+1.20D+1.60Lr-0.50W	5.82	Span 1	-0.024	0.639
+1.20D+1.60Lr-0.50W	6.13	Span 1	-0.035	0.630
+1.20D+1.60Lr-0.50W	6.44	Span 1	-0.045	0.618
+1.20D+1.60Lr-0.50W	6.74	Span 1	-0.055	0.602
+1.20D+1.60Lr-0.50W	7.05	Span 1	-0.064	0.584
+1.20D+1.60Lr-0.50W	7.36	Span 1	-0.073	0.563
+1.20D+1.60Lr-0.50W	7.66	Span 1	-0.082	0.539
+1.20D+1.60Lr-0.50W	7.97	Span 1	-0.090	0.513
+1.20D+1.60Lr-0.50W	8.28	Span 1	-0.097	0.484
+1.20D+1.60Lr-0.50W	8.58	Span 1	-0.104	0.453
+1.20D+1.60Lr-0.50W	8.89	Span 1	-0.111	0.420
+1.20D+1.60Lr-0.50W	9.20	Span 1	-0.117	0.385
+1.20D+1.60Lr-0.50W	9.50	Span 1	-0.123	0.349
+1.20D+1.60Lr-0.50W	9.81	Span 1	-0.128	0.310
+1.20D+1.60Lr-0.50W	10.12	Span 1	-0.133	0.270
+1.20D+1.60Lr-0.50W	10.42	Span 1	-0.137	0.229
+1.20D+1.60Lr-0.50W	10.73	Span 1	-0.141	0.186
+1.20D+1.60Lr-0.50W	11.04	Span 1	-0.144	0.143
+1.20D+1.60Lr-0.50W	11.34	Span 1	-0.147	0.098
+1.20D+1.60Lr-0.50W	11.65	Span 1	-0.149	0.053
+1.20D+1.60Lr-0.50W	11.96	Span 1	-0.151	0.007
+1.20D+0.50W	0.00	Span 1	0.748	0.000
+1.20D+0.50W	0.31	Span 1	0.692	0.221
+1.20D+0.50W	0.61	Span 1	0.637	0.424
+1.20D+0.50W	0.92	Span 1	0.584	0.611
+1.20D+0.50W	1.23	Span 1	0.533	0.783

Title Block Line 1
 You can change this area
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 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+0.50W	1.53	Span 1	0.483	0.938
+1.20D+0.50W	1.84	Span 1	0.434	1.079
+1.20D+0.50W	2.15	Span 1	0.386	1.204
+1.20D+0.50W	2.45	Span 1	0.340	1.316
+1.20D+0.50W	2.76	Span 1	0.296	1.413
+1.20D+0.50W	3.07	Span 1	0.253	1.497
+1.20D+0.50W	3.37	Span 1	0.211	1.568
+1.20D+0.50W	3.68	Span 1	0.171	1.627
+1.20D+0.50W	3.99	Span 1	0.132	1.673
+1.20D+0.50W	4.29	Span 1	0.094	1.708
+1.20D+0.50W	4.60	Span 1	0.058	1.731
+1.20D+0.50W	4.91	Span 1	0.023	1.743
+1.20D+0.50W	5.21	Span 1	-0.010	1.745
+1.20D+0.50W	5.52	Span 1	-0.042	1.737
+1.20D+0.50W	5.82	Span 1	-0.073	1.719
+1.20D+0.50W	6.13	Span 1	-0.102	1.693
+1.20D+0.50W	6.44	Span 1	-0.130	1.657
+1.20D+0.50W	6.74	Span 1	-0.156	1.613
+1.20D+0.50W	7.05	Span 1	-0.181	1.562
+1.20D+0.50W	7.36	Span 1	-0.204	1.503
+1.20D+0.50W	7.66	Span 1	-0.227	1.436
+1.20D+0.50W	7.97	Span 1	-0.247	1.364
+1.20D+0.50W	8.28	Span 1	-0.267	1.285
+1.20D+0.50W	8.58	Span 1	-0.285	1.200
+1.20D+0.50W	8.89	Span 1	-0.301	1.111
+1.20D+0.50W	9.20	Span 1	-0.316	1.016
+1.20D+0.50W	9.50	Span 1	-0.330	0.917
+1.20D+0.50W	9.81	Span 1	-0.342	0.814
+1.20D+0.50W	10.12	Span 1	-0.353	0.707
+1.20D+0.50W	10.42	Span 1	-0.363	0.598
+1.20D+0.50W	10.73	Span 1	-0.371	0.485
+1.20D+0.50W	11.04	Span 1	-0.377	0.370
+1.20D+0.50W	11.34	Span 1	-0.383	0.254
+1.20D+0.50W	11.65	Span 1	-0.387	0.136
+1.20D+0.50W	11.96	Span 1	-0.389	0.017
+1.20D-0.50W	0.00	Span 1	-0.272	0.000
+1.20D-0.50W	0.31	Span 1	-0.251	-0.080
+1.20D-0.50W	0.61	Span 1	-0.230	-0.154
+1.20D-0.50W	0.92	Span 1	-0.210	-0.222
+1.20D-0.50W	1.23	Span 1	-0.191	-0.283
+1.20D-0.50W	1.53	Span 1	-0.172	-0.338
+1.20D-0.50W	1.84	Span 1	-0.153	-0.388
+1.20D-0.50W	2.15	Span 1	-0.135	-0.432
+1.20D-0.50W	2.45	Span 1	-0.118	-0.471
+1.20D-0.50W	2.76	Span 1	-0.101	-0.505

Title Block Line 1
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. #: KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D-0.50W	3.07	Span 1	-0.085	-0.533
+1.20D-0.50W	3.37	Span 1	-0.070	-0.557
+1.20D-0.50W	3.68	Span 1	-0.055	-0.576
+1.20D-0.50W	3.99	Span 1	-0.041	-0.591
+1.20D-0.50W	4.29	Span 1	-0.027	-0.602
+1.20D-0.50W	4.60	Span 1	-0.014	-0.608
+1.20D-0.50W	4.91	Span 1	-0.002	-0.610
+1.20D-0.50W	5.21	Span 1	0.010	-0.609
+1.20D-0.50W	5.52	Span 1	0.021	-0.604
+1.20D-0.50W	5.82	Span 1	0.032	-0.596
+1.20D-0.50W	6.13	Span 1	0.042	-0.584
+1.20D-0.50W	6.44	Span 1	0.052	-0.570
+1.20D-0.50W	6.74	Span 1	0.061	-0.553
+1.20D-0.50W	7.05	Span 1	0.069	-0.533
+1.20D-0.50W	7.36	Span 1	0.077	-0.511
+1.20D-0.50W	7.66	Span 1	0.084	-0.486
+1.20D-0.50W	7.97	Span 1	0.090	-0.459
+1.20D-0.50W	8.28	Span 1	0.096	-0.431
+1.20D-0.50W	8.58	Span 1	0.101	-0.401
+1.20D-0.50W	8.89	Span 1	0.106	-0.369
+1.20D-0.50W	9.20	Span 1	0.110	-0.335
+1.20D-0.50W	9.50	Span 1	0.114	-0.301
+1.20D-0.50W	9.81	Span 1	0.117	-0.266
+1.20D-0.50W	10.12	Span 1	0.119	-0.229
+1.20D-0.50W	10.42	Span 1	0.121	-0.193
+1.20D-0.50W	10.73	Span 1	0.122	-0.155
+1.20D-0.50W	11.04	Span 1	0.123	-0.118
+1.20D-0.50W	11.34	Span 1	0.123	-0.080
+1.20D-0.50W	11.65	Span 1	0.122	-0.043
+1.20D-0.50W	11.96	Span 1	0.121	-0.005
+1.20D+0.50Lr+W	0.00	Span 1	1.428	0.000
+1.20D+0.50Lr+W	0.31	Span 1	1.320	0.421
+1.20D+0.50Lr+W	0.61	Span 1	1.216	0.810
+1.20D+0.50Lr+W	0.92	Span 1	1.114	1.167
+1.20D+0.50Lr+W	1.23	Span 1	1.015	1.493
+1.20D+0.50Lr+W	1.53	Span 1	0.919	1.789
+1.20D+0.50Lr+W	1.84	Span 1	0.825	2.057
+1.20D+0.50Lr+W	2.15	Span 1	0.734	2.296
+1.20D+0.50Lr+W	2.45	Span 1	0.646	2.507
+1.20D+0.50Lr+W	2.76	Span 1	0.561	2.692
+1.20D+0.50Lr+W	3.07	Span 1	0.478	2.851
+1.20D+0.50Lr+W	3.37	Span 1	0.398	2.985
+1.20D+0.50Lr+W	3.68	Span 1	0.321	3.096
+1.20D+0.50Lr+W	3.99	Span 1	0.247	3.183
+1.20D+0.50Lr+W	4.29	Span 1	0.175	3.247

Title Block Line 1
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 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+0.50Lr+W	4.60	Span 1	0.106	3.290
+1.20D+0.50Lr+W	4.91	Span 1	0.040	3.312
+1.20D+0.50Lr+W	5.21	Span 1	-0.024	3.315
+1.20D+0.50Lr+W	5.52	Span 1	-0.085	3.298
+1.20D+0.50Lr+W	5.82	Span 1	-0.143	3.263
+1.20D+0.50Lr+W	6.13	Span 1	-0.198	3.211
+1.20D+0.50Lr+W	6.44	Span 1	-0.250	3.142
+1.20D+0.50Lr+W	6.74	Span 1	-0.300	3.057
+1.20D+0.50Lr+W	7.05	Span 1	-0.347	2.958
+1.20D+0.50Lr+W	7.36	Span 1	-0.392	2.845
+1.20D+0.50Lr+W	7.66	Span 1	-0.433	2.718
+1.20D+0.50Lr+W	7.97	Span 1	-0.472	2.579
+1.20D+0.50Lr+W	8.28	Span 1	-0.508	2.429
+1.20D+0.50Lr+W	8.58	Span 1	-0.542	2.268
+1.20D+0.50Lr+W	8.89	Span 1	-0.573	2.097
+1.20D+0.50Lr+W	9.20	Span 1	-0.601	1.917
+1.20D+0.50Lr+W	9.50	Span 1	-0.626	1.729
+1.20D+0.50Lr+W	9.81	Span 1	-0.648	1.534
+1.20D+0.50Lr+W	10.12	Span 1	-0.668	1.332
+1.20D+0.50Lr+W	10.42	Span 1	-0.685	1.124
+1.20D+0.50Lr+W	10.73	Span 1	-0.699	0.912
+1.20D+0.50Lr+W	11.04	Span 1	-0.711	0.696
+1.20D+0.50Lr+W	11.34	Span 1	-0.720	0.477
+1.20D+0.50Lr+W	11.65	Span 1	-0.726	0.255
+1.20D+0.50Lr+W	11.96	Span 1	-0.729	0.032
+1.20D+0.50Lr-W	0.00	Span 1	-0.612	0.000
+1.20D+0.50Lr-W	0.31	Span 1	-0.565	-0.181
+1.20D+0.50Lr-W	0.61	Span 1	-0.520	-0.347
+1.20D+0.50Lr-W	0.92	Span 1	-0.475	-0.499
+1.20D+0.50Lr-W	1.23	Span 1	-0.432	-0.638
+1.20D+0.50Lr-W	1.53	Span 1	-0.390	-0.764
+1.20D+0.50Lr-W	1.84	Span 1	-0.349	-0.877
+1.20D+0.50Lr-W	2.15	Span 1	-0.309	-0.978
+1.20D+0.50Lr-W	2.45	Span 1	-0.271	-1.067
+1.20D+0.50Lr-W	2.76	Span 1	-0.234	-1.144
+1.20D+0.50Lr-W	3.07	Span 1	-0.198	-1.210
+1.20D+0.50Lr-W	3.37	Span 1	-0.164	-1.266
+1.20D+0.50Lr-W	3.68	Span 1	-0.130	-1.311
+1.20D+0.50Lr-W	3.99	Span 1	-0.098	-1.346
+1.20D+0.50Lr-W	4.29	Span 1	-0.068	-1.371
+1.20D+0.50Lr-W	4.60	Span 1	-0.038	-1.387
+1.20D+0.50Lr-W	4.91	Span 1	-0.010	-1.395
+1.20D+0.50Lr-W	5.21	Span 1	0.017	-1.394
+1.20D+0.50Lr-W	5.52	Span 1	0.043	-1.385
+1.20D+0.50Lr-W	5.82	Span 1	0.067	-1.368

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 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+0.50Lr-W	6.13	Span 1	0.090	-1.344
+1.20D+0.50Lr-W	6.44	Span 1	0.112	-1.313
+1.20D+0.50Lr-W	6.74	Span 1	0.133	-1.275
+1.20D+0.50Lr-W	7.05	Span 1	0.152	-1.231
+1.20D+0.50Lr-W	7.36	Span 1	0.170	-1.182
+1.20D+0.50Lr-W	7.66	Span 1	0.187	-1.127
+1.20D+0.50Lr-W	7.97	Span 1	0.203	-1.067
+1.20D+0.50Lr-W	8.28	Span 1	0.217	-1.003
+1.20D+0.50Lr-W	8.58	Span 1	0.230	-0.934
+1.20D+0.50Lr-W	8.89	Span 1	0.242	-0.862
+1.20D+0.50Lr-W	9.20	Span 1	0.253	-0.786
+1.20D+0.50Lr-W	9.50	Span 1	0.262	-0.707
+1.20D+0.50Lr-W	9.81	Span 1	0.270	-0.626
+1.20D+0.50Lr-W	10.12	Span 1	0.277	-0.542
+1.20D+0.50Lr-W	10.42	Span 1	0.282	-0.456
+1.20D+0.50Lr-W	10.73	Span 1	0.286	-0.369
+1.20D+0.50Lr-W	11.04	Span 1	0.289	-0.280
+1.20D+0.50Lr-W	11.34	Span 1	0.291	-0.191
+1.20D+0.50Lr-W	11.65	Span 1	0.292	-0.102
+1.20D+0.50Lr-W	11.96	Span 1	0.291	-0.013
+1.20D+W	0.00	Span 1	1.258	0.000
+1.20D+W	0.31	Span 1	1.163	0.371
+1.20D+W	0.61	Span 1	1.071	0.713
+1.20D+W	0.92	Span 1	0.982	1.028
+1.20D+W	1.23	Span 1	0.894	1.315
+1.20D+W	1.53	Span 1	0.810	1.577
+1.20D+W	1.84	Span 1	0.727	1.812
+1.20D+W	2.15	Span 1	0.647	2.023
+1.20D+W	2.45	Span 1	0.570	2.209
+1.20D+W	2.76	Span 1	0.495	2.372
+1.20D+W	3.07	Span 1	0.422	2.513
+1.20D+W	3.37	Span 1	0.351	2.631
+1.20D+W	3.68	Span 1	0.283	2.728
+1.20D+W	3.99	Span 1	0.218	2.805
+1.20D+W	4.29	Span 1	0.155	2.862
+1.20D+W	4.60	Span 1	0.094	2.900
+1.20D+W	4.91	Span 1	0.036	2.920
+1.20D+W	5.21	Span 1	-0.020	2.922
+1.20D+W	5.52	Span 1	-0.074	2.908
+1.20D+W	5.82	Span 1	-0.125	2.877
+1.20D+W	6.13	Span 1	-0.174	2.831
+1.20D+W	6.44	Span 1	-0.220	2.771
+1.20D+W	6.74	Span 1	-0.264	2.696
+1.20D+W	7.05	Span 1	-0.306	2.609
+1.20D+W	7.36	Span 1	-0.345	2.509

Title Block Line 1
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 Title Block Line 6

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Wood Beam

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Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+W	7.66	Span 1	-0.382	2.398
+1.20D+W	7.97	Span 1	-0.416	2.275
+1.20D+W	8.28	Span 1	-0.448	2.143
+1.20D+W	8.58	Span 1	-0.478	2.001
+1.20D+W	8.89	Span 1	-0.505	1.850
+1.20D+W	9.20	Span 1	-0.529	1.692
+1.20D+W	9.50	Span 1	-0.552	1.526
+1.20D+W	9.81	Span 1	-0.572	1.354
+1.20D+W	10.12	Span 1	-0.589	1.176
+1.20D+W	10.42	Span 1	-0.604	0.993
+1.20D+W	10.73	Span 1	-0.617	0.805
+1.20D+W	11.04	Span 1	-0.627	0.615
+1.20D+W	11.34	Span 1	-0.635	0.421
+1.20D+W	11.65	Span 1	-0.641	0.225
+1.20D+W	11.96	Span 1	-0.644	0.028
+1.20D-W	0.00	Span 1	-0.782	0.000
+1.20D-W	0.31	Span 1	-0.723	-0.231
+1.20D-W	0.61	Span 1	-0.664	-0.443
+1.20D-W	0.92	Span 1	-0.607	-0.638
+1.20D-W	1.23	Span 1	-0.552	-0.816
+1.20D-W	1.53	Span 1	-0.499	-0.977
+1.20D-W	1.84	Span 1	-0.447	-1.122
+1.20D-W	2.15	Span 1	-0.396	-1.251
+1.20D-W	2.45	Span 1	-0.347	-1.365
+1.20D-W	2.76	Span 1	-0.300	-1.464
+1.20D-W	3.07	Span 1	-0.254	-1.549
+1.20D-W	3.37	Span 1	-0.210	-1.620
+1.20D-W	3.68	Span 1	-0.168	-1.678
+1.20D-W	3.99	Span 1	-0.127	-1.723
+1.20D-W	4.29	Span 1	-0.088	-1.756
+1.20D-W	4.60	Span 1	-0.050	-1.777
+1.20D-W	4.91	Span 1	-0.014	-1.787
+1.20D-W	5.21	Span 1	0.020	-1.786
+1.20D-W	5.52	Span 1	0.053	-1.775
+1.20D-W	5.82	Span 1	0.085	-1.754
+1.20D-W	6.13	Span 1	0.114	-1.723
+1.20D-W	6.44	Span 1	0.142	-1.684
+1.20D-W	6.74	Span 1	0.169	-1.636
+1.20D-W	7.05	Span 1	0.194	-1.580
+1.20D-W	7.36	Span 1	0.217	-1.517
+1.20D-W	7.66	Span 1	0.239	-1.447
+1.20D-W	7.97	Span 1	0.259	-1.371
+1.20D-W	8.28	Span 1	0.278	-1.289
+1.20D-W	8.58	Span 1	0.295	-1.201
+1.20D-W	8.89	Span 1	0.310	-1.108

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DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D-W	9.20	Span 1	0.324	-1.011
+1.20D-W	9.50	Span 1	0.336	-0.910
+1.20D-W	9.81	Span 1	0.346	-0.805
+1.20D-W	10.12	Span 1	0.355	-0.698
+1.20D-W	10.42	Span 1	0.363	-0.588
+1.20D-W	10.73	Span 1	0.369	-0.476
+1.20D-W	11.04	Span 1	0.373	-0.362
+1.20D-W	11.34	Span 1	0.375	-0.247
+1.20D-W	11.65	Span 1	0.376	-0.132
+1.20D-W	11.96	Span 1	0.376	-0.016
+0.90D+W	0.00	Span 1	1.198	0.000
+0.90D+W	0.31	Span 1	1.108	0.353
+0.90D+W	0.61	Span 1	1.020	0.680
+0.90D+W	0.92	Span 1	0.935	0.979
+0.90D+W	1.23	Span 1	0.852	1.253
+0.90D+W	1.53	Span 1	0.771	1.502
+0.90D+W	1.84	Span 1	0.692	1.726
+0.90D+W	2.15	Span 1	0.616	1.926
+0.90D+W	2.45	Span 1	0.542	2.104
+0.90D+W	2.76	Span 1	0.470	2.259
+0.90D+W	3.07	Span 1	0.401	2.392
+0.90D+W	3.37	Span 1	0.334	2.505
+0.90D+W	3.68	Span 1	0.269	2.597
+0.90D+W	3.99	Span 1	0.206	2.670
+0.90D+W	4.29	Span 1	0.146	2.724
+0.90D+W	4.60	Span 1	0.088	2.760
+0.90D+W	4.91	Span 1	0.033	2.778
+0.90D+W	5.21	Span 1	-0.020	2.780
+0.90D+W	5.52	Span 1	-0.071	2.766
+0.90D+W	5.82	Span 1	-0.120	2.737
+0.90D+W	6.13	Span 1	-0.166	2.693
+0.90D+W	6.44	Span 1	-0.211	2.635
+0.90D+W	6.74	Span 1	-0.252	2.564
+0.90D+W	7.05	Span 1	-0.292	2.480
+0.90D+W	7.36	Span 1	-0.329	2.385
+0.90D+W	7.66	Span 1	-0.364	2.279
+0.90D+W	7.97	Span 1	-0.396	2.162
+0.90D+W	8.28	Span 1	-0.427	2.036
+0.90D+W	8.58	Span 1	-0.455	1.901
+0.90D+W	8.89	Span 1	-0.480	1.758
+0.90D+W	9.20	Span 1	-0.504	1.607
+0.90D+W	9.50	Span 1	-0.525	1.449
+0.90D+W	9.81	Span 1	-0.544	1.285
+0.90D+W	10.12	Span 1	-0.560	1.116
+0.90D+W	10.42	Span 1	-0.574	0.942

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Wood Beam

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Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+0.90D+W	10.73	Span 1	-0.586	0.764
+0.90D+W	11.04	Span 1	-0.596	0.583
+0.90D+W	11.34	Span 1	-0.603	0.399
+0.90D+W	11.65	Span 1	-0.608	0.214
+0.90D+W	11.96	Span 1	-0.611	0.027
+0.90D-W	0.00	Span 1	-0.842	0.000
+0.90D-W	0.31	Span 1	-0.778	-0.248
+0.90D-W	0.61	Span 1	-0.715	-0.477
+0.90D-W	0.92	Span 1	-0.654	-0.687
+0.90D-W	1.23	Span 1	-0.595	-0.878
+0.90D-W	1.53	Span 1	-0.537	-1.052
+0.90D-W	1.84	Span 1	-0.482	-1.208
+0.90D-W	2.15	Span 1	-0.428	-1.347
+0.90D-W	2.45	Span 1	-0.375	-1.470
+0.90D-W	2.76	Span 1	-0.324	-1.577
+0.90D-W	3.07	Span 1	-0.275	-1.669
+0.90D-W	3.37	Span 1	-0.228	-1.746
+0.90D-W	3.68	Span 1	-0.182	-1.809
+0.90D-W	3.99	Span 1	-0.138	-1.858
+0.90D-W	4.29	Span 1	-0.096	-1.894
+0.90D-W	4.60	Span 1	-0.056	-1.918
+0.90D-W	4.91	Span 1	-0.017	-1.929
+0.90D-W	5.21	Span 1	0.020	-1.928
+0.90D-W	5.52	Span 1	0.056	-1.916
+0.90D-W	5.82	Span 1	0.090	-1.894
+0.90D-W	6.13	Span 1	0.122	-1.862
+0.90D-W	6.44	Span 1	0.152	-1.820
+0.90D-W	6.74	Span 1	0.181	-1.769
+0.90D-W	7.05	Span 1	0.208	-1.709
+0.90D-W	7.36	Span 1	0.233	-1.641
+0.90D-W	7.66	Span 1	0.257	-1.566
+0.90D-W	7.97	Span 1	0.279	-1.484
+0.90D-W	8.28	Span 1	0.299	-1.396
+0.90D-W	8.58	Span 1	0.317	-1.301
+0.90D-W	8.89	Span 1	0.334	-1.201
+0.90D-W	9.20	Span 1	0.349	-1.096
+0.90D-W	9.50	Span 1	0.363	-0.987
+0.90D-W	9.81	Span 1	0.375	-0.874
+0.90D-W	10.12	Span 1	0.385	-0.758
+0.90D-W	10.42	Span 1	0.393	-0.638
+0.90D-W	10.73	Span 1	0.400	-0.517
+0.90D-W	11.04	Span 1	0.405	-0.393
+0.90D-W	11.34	Span 1	0.408	-0.269
+0.90D-W	11.65	Span 1	0.410	-0.144
+0.90D-W	11.96	Span 1	0.409	-0.018

Title Block Line 1
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Wood Beam

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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

+0.90D	0.00	Span 1	0.178	0.000
+0.90D	0.31	Span 1	0.165	0.053
+0.90D	0.61	Span 1	0.153	0.101
+0.90D	0.92	Span 1	0.140	0.146
+0.90D	1.23	Span 1	0.128	0.187
+0.90D	1.53	Span 1	0.117	0.225
+0.90D	1.84	Span 1	0.105	0.259
+0.90D	2.15	Span 1	0.094	0.290
+0.90D	2.45	Span 1	0.083	0.317
+0.90D	2.76	Span 1	0.073	0.341
+0.90D	3.07	Span 1	0.063	0.361
+0.90D	3.37	Span 1	0.053	0.379
+0.90D	3.68	Span 1	0.043	0.394
+0.90D	3.99	Span 1	0.034	0.406
+0.90D	4.29	Span 1	0.025	0.415
+0.90D	4.60	Span 1	0.016	0.421
+0.90D	4.91	Span 1	0.008	0.425
+0.90D	5.21	Span 1	-0.000	0.426
+0.90D	5.52	Span 1	-0.008	0.425
+0.90D	5.82	Span 1	-0.015	0.421
+0.90D	6.13	Span 1	-0.022	0.416
+0.90D	6.44	Span 1	-0.029	0.408
+0.90D	6.74	Span 1	-0.036	0.398
+0.90D	7.05	Span 1	-0.042	0.386
+0.90D	7.36	Span 1	-0.048	0.372
+0.90D	7.66	Span 1	-0.054	0.356
+0.90D	7.97	Span 1	-0.059	0.339
+0.90D	8.28	Span 1	-0.064	0.320
+0.90D	8.58	Span 1	-0.069	0.300
+0.90D	8.89	Span 1	-0.073	0.278
+0.90D	9.20	Span 1	-0.077	0.255
+0.90D	9.50	Span 1	-0.081	0.231
+0.90D	9.81	Span 1	-0.084	0.206
+0.90D	10.12	Span 1	-0.088	0.179
+0.90D	10.42	Span 1	-0.091	0.152
+0.90D	10.73	Span 1	-0.093	0.124
+0.90D	11.04	Span 1	-0.095	0.095
+0.90D	11.34	Span 1	-0.097	0.065
+0.90D	11.65	Span 1	-0.099	0.035
+0.90D	11.96	Span 1	-0.101	0.004

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
Overall MAXimum Envelope	0.00	Span 1	0.000
Overall MAXimum Envelope	0.31	Span 1	0.042
Overall MAXimum Envelope	0.61	Span 1	0.084
Overall MAXimum Envelope	0.92	Span 1	0.124

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 using the "Settings" menu item
 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
Overall MAXimum Envelope	1.23	Span 1	0.164
Overall MAXimum Envelope	1.53	Span 1	0.203
Overall MAXimum Envelope	1.84	Span 1	0.239
Overall MAXimum Envelope	2.15	Span 1	0.274
Overall MAXimum Envelope	2.45	Span 1	0.307
Overall MAXimum Envelope	2.76	Span 1	0.338
Overall MAXimum Envelope	3.07	Span 1	0.366
Overall MAXimum Envelope	3.37	Span 1	0.391
Overall MAXimum Envelope	3.68	Span 1	0.413
Overall MAXimum Envelope	3.99	Span 1	0.433
Overall MAXimum Envelope	4.29	Span 1	0.450
Overall MAXimum Envelope	4.60	Span 1	0.463
Overall MAXimum Envelope	4.91	Span 1	0.474
Overall MAXimum Envelope	5.21	Span 1	0.481
Overall MAXimum Envelope	5.52	Span 1	0.486
Overall MAXimum Envelope	5.82	Span 1	0.487
Overall MAXimum Envelope	6.13	Span 1	0.485
Overall MAXimum Envelope	6.44	Span 1	0.480
Overall MAXimum Envelope	6.74	Span 1	0.473
Overall MAXimum Envelope	7.05	Span 1	0.462
Overall MAXimum Envelope	7.36	Span 1	0.449
Overall MAXimum Envelope	7.66	Span 1	0.433
Overall MAXimum Envelope	7.97	Span 1	0.414
Overall MAXimum Envelope	8.28	Span 1	0.393
Overall MAXimum Envelope	8.58	Span 1	0.370
Overall MAXimum Envelope	8.89	Span 1	0.344
Overall MAXimum Envelope	9.20	Span 1	0.317
Overall MAXimum Envelope	9.50	Span 1	0.288
Overall MAXimum Envelope	9.81	Span 1	0.257
Overall MAXimum Envelope	10.12	Span 1	0.224
Overall MAXimum Envelope	10.42	Span 1	0.191
Overall MAXimum Envelope	10.73	Span 1	0.156
Overall MAXimum Envelope	11.04	Span 1	0.121
Overall MAXimum Envelope	11.34	Span 1	0.084
Overall MAXimum Envelope	11.65	Span 1	0.048
Overall MAXimum Envelope	11.96	Span 1	0.011
Overall MAXimum Envelope	12.00	Span 1	0.006
D Only	0.00	Span 1	0.000
D Only	0.31	Span 1	0.009
D Only	0.61	Span 1	0.019
D Only	0.92	Span 1	0.028
D Only	1.23	Span 1	0.037

Title Block Line 1
 You can change this area
 using the "Settings" menu item
 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Printed: 19 NOV 2024, 8:34AM

Wood Beam

File: wood joist.ec6
 Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
D Only	1.53	Span 1	0.045
D Only	1.84	Span 1	0.053
D Only	2.15	Span 1	0.061
D Only	2.45	Span 1	0.068
D Only	2.76	Span 1	0.075
D Only	3.07	Span 1	0.082
D Only	3.37	Span 1	0.087
D Only	3.68	Span 1	0.092
D Only	3.99	Span 1	0.097
D Only	4.29	Span 1	0.101
D Only	4.60	Span 1	0.104
D Only	4.91	Span 1	0.106
D Only	5.21	Span 1	0.108
D Only	5.52	Span 1	0.109
D Only	5.82	Span 1	0.109
D Only	6.13	Span 1	0.109
D Only	6.44	Span 1	0.108
D Only	6.74	Span 1	0.106
D Only	7.05	Span 1	0.104
D Only	7.36	Span 1	0.101
D Only	7.66	Span 1	0.097
D Only	7.97	Span 1	0.093
D Only	8.28	Span 1	0.089
D Only	8.58	Span 1	0.083
D Only	8.89	Span 1	0.078
D Only	9.20	Span 1	0.072
D Only	9.50	Span 1	0.065
D Only	9.81	Span 1	0.058
D Only	10.12	Span 1	0.051
D Only	10.42	Span 1	0.043
D Only	10.73	Span 1	0.035
D Only	11.04	Span 1	0.027
D Only	11.34	Span 1	0.019
D Only	11.65	Span 1	0.011
D Only	11.96	Span 1	0.002
D Only	12.00	Span 1	0.001
+D+Lr	0.00	Span 1	0.000
+D+Lr	0.31	Span 1	0.025
+D+Lr	0.61	Span 1	0.050
+D+Lr	0.92	Span 1	0.074
+D+Lr	1.23	Span 1	0.097
+D+Lr	1.53	Span 1	0.120

Title Block Line 1
 You can change this area
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 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Printed: 19 NOV 2024, 8:34AM

Wood Beam

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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+Lr	1.84	Span 1	0.142
+D+Lr	2.15	Span 1	0.163
+D+Lr	2.45	Span 1	0.182
+D+Lr	2.76	Span 1	0.200
+D+Lr	3.07	Span 1	0.217
+D+Lr	3.37	Span 1	0.232
+D+Lr	3.68	Span 1	0.245
+D+Lr	3.99	Span 1	0.257
+D+Lr	4.29	Span 1	0.267
+D+Lr	4.60	Span 1	0.275
+D+Lr	4.91	Span 1	0.281
+D+Lr	5.21	Span 1	0.286
+D+Lr	5.52	Span 1	0.288
+D+Lr	5.82	Span 1	0.289
+D+Lr	6.13	Span 1	0.288
+D+Lr	6.44	Span 1	0.285
+D+Lr	6.74	Span 1	0.281
+D+Lr	7.05	Span 1	0.274
+D+Lr	7.36	Span 1	0.266
+D+Lr	7.66	Span 1	0.257
+D+Lr	7.97	Span 1	0.246
+D+Lr	8.28	Span 1	0.233
+D+Lr	8.58	Span 1	0.220
+D+Lr	8.89	Span 1	0.205
+D+Lr	9.20	Span 1	0.188
+D+Lr	9.50	Span 1	0.171
+D+Lr	9.81	Span 1	0.153
+D+Lr	10.12	Span 1	0.133
+D+Lr	10.42	Span 1	0.113
+D+Lr	10.73	Span 1	0.093
+D+Lr	11.04	Span 1	0.072
+D+Lr	11.34	Span 1	0.050
+D+Lr	11.65	Span 1	0.028
+D+Lr	11.96	Span 1	0.007
+D+Lr	12.00	Span 1	0.003
+D+0.750Lr	0.00	Span 1	0.000
+D+0.750Lr	0.31	Span 1	0.021
+D+0.750Lr	0.61	Span 1	0.042
+D+0.750Lr	0.92	Span 1	0.062
+D+0.750Lr	1.23	Span 1	0.082
+D+0.750Lr	1.53	Span 1	0.101
+D+0.750Lr	1.84	Span 1	0.120

Title Block Line 1
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+0.750Lr	2.15	Span 1	0.137
+D+0.750Lr	2.45	Span 1	0.154
+D+0.750Lr	2.76	Span 1	0.169
+D+0.750Lr	3.07	Span 1	0.183
+D+0.750Lr	3.37	Span 1	0.196
+D+0.750Lr	3.68	Span 1	0.207
+D+0.750Lr	3.99	Span 1	0.217
+D+0.750Lr	4.29	Span 1	0.225
+D+0.750Lr	4.60	Span 1	0.232
+D+0.750Lr	4.91	Span 1	0.237
+D+0.750Lr	5.21	Span 1	0.241
+D+0.750Lr	5.52	Span 1	0.243
+D+0.750Lr	5.82	Span 1	0.244
+D+0.750Lr	6.13	Span 1	0.243
+D+0.750Lr	6.44	Span 1	0.241
+D+0.750Lr	6.74	Span 1	0.237
+D+0.750Lr	7.05	Span 1	0.232
+D+0.750Lr	7.36	Span 1	0.225
+D+0.750Lr	7.66	Span 1	0.217
+D+0.750Lr	7.97	Span 1	0.208
+D+0.750Lr	8.28	Span 1	0.197
+D+0.750Lr	8.58	Span 1	0.186
+D+0.750Lr	8.89	Span 1	0.173
+D+0.750Lr	9.20	Span 1	0.159
+D+0.750Lr	9.50	Span 1	0.144
+D+0.750Lr	9.81	Span 1	0.129
+D+0.750Lr	10.12	Span 1	0.113
+D+0.750Lr	10.42	Span 1	0.096
+D+0.750Lr	10.73	Span 1	0.078
+D+0.750Lr	11.04	Span 1	0.061
+D+0.750Lr	11.34	Span 1	0.042
+D+0.750Lr	11.65	Span 1	0.024
+D+0.750Lr	11.96	Span 1	0.005
+D+0.750Lr	12.00	Span 1	0.003
+D+0.60W	0.00	Span 1	0.000
+D+0.60W	0.31	Span 1	0.037
+D+0.60W	0.61	Span 1	0.074
+D+0.60W	0.92	Span 1	0.111
+D+0.60W	1.23	Span 1	0.146
+D+0.60W	1.53	Span 1	0.180
+D+0.60W	1.84	Span 1	0.213
+D+0.60W	2.15	Span 1	0.244

Title Block Line 1
 You can change this area
 using the "Settings" menu item
 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+0.60W	2.45	Span 1	0.273
+D+0.60W	2.76	Span 1	0.300
+D+0.60W	3.07	Span 1	0.325
+D+0.60W	3.37	Span 1	0.347
+D+0.60W	3.68	Span 1	0.367
+D+0.60W	3.99	Span 1	0.385
+D+0.60W	4.29	Span 1	0.400
+D+0.60W	4.60	Span 1	0.412
+D+0.60W	4.91	Span 1	0.421
+D+0.60W	5.21	Span 1	0.428
+D+0.60W	5.52	Span 1	0.432
+D+0.60W	5.82	Span 1	0.433
+D+0.60W	6.13	Span 1	0.431
+D+0.60W	6.44	Span 1	0.427
+D+0.60W	6.74	Span 1	0.420
+D+0.60W	7.05	Span 1	0.411
+D+0.60W	7.36	Span 1	0.399
+D+0.60W	7.66	Span 1	0.385
+D+0.60W	7.97	Span 1	0.368
+D+0.60W	8.28	Span 1	0.349
+D+0.60W	8.58	Span 1	0.329
+D+0.60W	8.89	Span 1	0.306
+D+0.60W	9.20	Span 1	0.282
+D+0.60W	9.50	Span 1	0.256
+D+0.60W	9.81	Span 1	0.228
+D+0.60W	10.12	Span 1	0.200
+D+0.60W	10.42	Span 1	0.170
+D+0.60W	10.73	Span 1	0.139
+D+0.60W	11.04	Span 1	0.107
+D+0.60W	11.34	Span 1	0.075
+D+0.60W	11.65	Span 1	0.043
+D+0.60W	11.96	Span 1	0.010
+D+0.60W	12.00	Span 1	0.005
+D+0.750Lr+0.450W	0.00	Span 1	0.000
+D+0.750Lr+0.450W	0.31	Span 1	0.042
+D+0.750Lr+0.450W	0.61	Span 1	0.084
+D+0.750Lr+0.450W	0.92	Span 1	0.124
+D+0.750Lr+0.450W	1.23	Span 1	0.164
+D+0.750Lr+0.450W	1.53	Span 1	0.203
+D+0.750Lr+0.450W	1.84	Span 1	0.239
+D+0.750Lr+0.450W	2.15	Span 1	0.274
+D+0.750Lr+0.450W	2.45	Span 1	0.307

Title Block Line 1
 You can change this area
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+0.750Lr+0.450W	2.76	Span 1	0.338
+D+0.750Lr+0.450W	3.07	Span 1	0.366
+D+0.750Lr+0.450W	3.37	Span 1	0.391
+D+0.750Lr+0.450W	3.68	Span 1	0.413
+D+0.750Lr+0.450W	3.99	Span 1	0.433
+D+0.750Lr+0.450W	4.29	Span 1	0.450
+D+0.750Lr+0.450W	4.60	Span 1	0.463
+D+0.750Lr+0.450W	4.91	Span 1	0.474
+D+0.750Lr+0.450W	5.21	Span 1	0.481
+D+0.750Lr+0.450W	5.52	Span 1	0.486
+D+0.750Lr+0.450W	5.82	Span 1	0.487
+D+0.750Lr+0.450W	6.13	Span 1	0.485
+D+0.750Lr+0.450W	6.44	Span 1	0.480
+D+0.750Lr+0.450W	6.74	Span 1	0.473
+D+0.750Lr+0.450W	7.05	Span 1	0.462
+D+0.750Lr+0.450W	7.36	Span 1	0.449
+D+0.750Lr+0.450W	7.66	Span 1	0.433
+D+0.750Lr+0.450W	7.97	Span 1	0.414
+D+0.750Lr+0.450W	8.28	Span 1	0.393
+D+0.750Lr+0.450W	8.58	Span 1	0.370
+D+0.750Lr+0.450W	8.89	Span 1	0.344
+D+0.750Lr+0.450W	9.20	Span 1	0.317
+D+0.750Lr+0.450W	9.50	Span 1	0.288
+D+0.750Lr+0.450W	9.81	Span 1	0.257
+D+0.750Lr+0.450W	10.12	Span 1	0.224
+D+0.750Lr+0.450W	10.42	Span 1	0.191
+D+0.750Lr+0.450W	10.73	Span 1	0.156
+D+0.750Lr+0.450W	11.04	Span 1	0.121
+D+0.750Lr+0.450W	11.34	Span 1	0.084
+D+0.750Lr+0.450W	11.65	Span 1	0.048
+D+0.750Lr+0.450W	11.96	Span 1	0.011
+D+0.750Lr+0.450W	12.00	Span 1	0.006
+D+0.450W	0.00	Span 1	0.000
+D+0.450W	0.31	Span 1	0.030
+D+0.450W	0.61	Span 1	0.060
+D+0.450W	0.92	Span 1	0.090
+D+0.450W	1.23	Span 1	0.119
+D+0.450W	1.53	Span 1	0.146
+D+0.450W	1.84	Span 1	0.173
+D+0.450W	2.15	Span 1	0.198
+D+0.450W	2.45	Span 1	0.222
+D+0.450W	2.76	Span 1	0.244

Title Block Line 1
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 Title Block Line 6

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Wood Beam

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Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+0.450W	3.07	Span 1	0.264
+D+0.450W	3.37	Span 1	0.282
+D+0.450W	3.68	Span 1	0.299
+D+0.450W	3.99	Span 1	0.313
+D+0.450W	4.29	Span 1	0.325
+D+0.450W	4.60	Span 1	0.335
+D+0.450W	4.91	Span 1	0.342
+D+0.450W	5.21	Span 1	0.348
+D+0.450W	5.52	Span 1	0.351
+D+0.450W	5.82	Span 1	0.352
+D+0.450W	6.13	Span 1	0.351
+D+0.450W	6.44	Span 1	0.347
+D+0.450W	6.74	Span 1	0.342
+D+0.450W	7.05	Span 1	0.334
+D+0.450W	7.36	Span 1	0.324
+D+0.450W	7.66	Span 1	0.313
+D+0.450W	7.97	Span 1	0.299
+D+0.450W	8.28	Span 1	0.284
+D+0.450W	8.58	Span 1	0.267
+D+0.450W	8.89	Span 1	0.249
+D+0.450W	9.20	Span 1	0.229
+D+0.450W	9.50	Span 1	0.208
+D+0.450W	9.81	Span 1	0.186
+D+0.450W	10.12	Span 1	0.162
+D+0.450W	10.42	Span 1	0.138
+D+0.450W	10.73	Span 1	0.113
+D+0.450W	11.04	Span 1	0.087
+D+0.450W	11.34	Span 1	0.061
+D+0.450W	11.65	Span 1	0.035
+D+0.450W	11.96	Span 1	0.008
+D+0.450W	12.00	Span 1	0.004
+0.60D+0.60W	0.00	Span 1	0.000
+0.60D+0.60W	0.31	Span 1	0.034
+0.60D+0.60W	0.61	Span 1	0.067
+0.60D+0.60W	0.92	Span 1	0.100
+0.60D+0.60W	1.23	Span 1	0.131
+0.60D+0.60W	1.53	Span 1	0.162
+0.60D+0.60W	1.84	Span 1	0.192
+0.60D+0.60W	2.15	Span 1	0.219
+0.60D+0.60W	2.45	Span 1	0.246
+0.60D+0.60W	2.76	Span 1	0.270
+0.60D+0.60W	3.07	Span 1	0.292

Title Block Line 1
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+0.60D+0.60W	3.37	Span 1	0.313
+0.60D+0.60W	3.68	Span 1	0.331
+0.60D+0.60W	3.99	Span 1	0.346
+0.60D+0.60W	4.29	Span 1	0.360
+0.60D+0.60W	4.60	Span 1	0.370
+0.60D+0.60W	4.91	Span 1	0.379
+0.60D+0.60W	5.21	Span 1	0.385
+0.60D+0.60W	5.52	Span 1	0.388
+0.60D+0.60W	5.82	Span 1	0.389
+0.60D+0.60W	6.13	Span 1	0.388
+0.60D+0.60W	6.44	Span 1	0.384
+0.60D+0.60W	6.74	Span 1	0.378
+0.60D+0.60W	7.05	Span 1	0.369
+0.60D+0.60W	7.36	Span 1	0.359
+0.60D+0.60W	7.66	Span 1	0.346
+0.60D+0.60W	7.97	Span 1	0.331
+0.60D+0.60W	8.28	Span 1	0.314
+0.60D+0.60W	8.58	Span 1	0.295
+0.60D+0.60W	8.89	Span 1	0.275
+0.60D+0.60W	9.20	Span 1	0.253
+0.60D+0.60W	9.50	Span 1	0.230
+0.60D+0.60W	9.81	Span 1	0.205
+0.60D+0.60W	10.12	Span 1	0.179
+0.60D+0.60W	10.42	Span 1	0.152
+0.60D+0.60W	10.73	Span 1	0.125
+0.60D+0.60W	11.04	Span 1	0.096
+0.60D+0.60W	11.34	Span 1	0.067
+0.60D+0.60W	11.65	Span 1	0.038
+0.60D+0.60W	11.96	Span 1	0.009
+0.60D+0.60W	12.00	Span 1	0.005
+0.60D	0.00	Span 1	0.000
+0.60D	0.31	Span 1	0.006
+0.60D	0.61	Span 1	0.011
+0.60D	0.92	Span 1	0.017
+0.60D	1.23	Span 1	0.022
+0.60D	1.53	Span 1	0.027
+0.60D	1.84	Span 1	0.032
+0.60D	2.15	Span 1	0.037
+0.60D	2.45	Span 1	0.041
+0.60D	2.76	Span 1	0.045
+0.60D	3.07	Span 1	0.049
+0.60D	3.37	Span 1	0.052

Title Block Line 1
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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+0.60D	3.68	Span 1	0.055
+0.60D	3.99	Span 1	0.058
+0.60D	4.29	Span 1	0.060
+0.60D	4.60	Span 1	0.062
+0.60D	4.91	Span 1	0.064
+0.60D	5.21	Span 1	0.065
+0.60D	5.52	Span 1	0.065
+0.60D	5.82	Span 1	0.066
+0.60D	6.13	Span 1	0.065
+0.60D	6.44	Span 1	0.065
+0.60D	6.74	Span 1	0.064
+0.60D	7.05	Span 1	0.062
+0.60D	7.36	Span 1	0.061
+0.60D	7.66	Span 1	0.058
+0.60D	7.97	Span 1	0.056
+0.60D	8.28	Span 1	0.053
+0.60D	8.58	Span 1	0.050
+0.60D	8.89	Span 1	0.047
+0.60D	9.20	Span 1	0.043
+0.60D	9.50	Span 1	0.039
+0.60D	9.81	Span 1	0.035
+0.60D	10.12	Span 1	0.030
+0.60D	10.42	Span 1	0.026
+0.60D	10.73	Span 1	0.021
+0.60D	11.04	Span 1	0.016
+0.60D	11.34	Span 1	0.011
+0.60D	11.65	Span 1	0.006
+0.60D	11.96	Span 1	0.001
+0.60D	12.00	Span 1	0.001
Lr Only	0.00	Span 1	0.000
Lr Only	0.31	Span 1	0.016
Lr Only	0.61	Span 1	0.031
Lr Only	0.92	Span 1	0.046
Lr Only	1.23	Span 1	0.061
Lr Only	1.53	Span 1	0.075
Lr Only	1.84	Span 1	0.089
Lr Only	2.15	Span 1	0.102
Lr Only	2.45	Span 1	0.114
Lr Only	2.76	Span 1	0.125
Lr Only	3.07	Span 1	0.135
Lr Only	3.37	Span 1	0.145
Lr Only	3.68	Span 1	0.153

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Wood Beam

File: wood joist.ec6
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DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 12'builtup beam triang load (2-3x8works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
Lr Only	3.99	Span 1	0.160
Lr Only	4.29	Span 1	0.166
Lr Only	4.60	Span 1	0.171
Lr Only	4.91	Span 1	0.175
Lr Only	5.21	Span 1	0.178
Lr Only	5.52	Span 1	0.179
Lr Only	5.82	Span 1	0.180
Lr Only	6.13	Span 1	0.179
Lr Only	6.44	Span 1	0.177
Lr Only	6.74	Span 1	0.174
Lr Only	7.05	Span 1	0.171
Lr Only	7.36	Span 1	0.166
Lr Only	7.66	Span 1	0.160
Lr Only	7.97	Span 1	0.153
Lr Only	8.28	Span 1	0.145
Lr Only	8.58	Span 1	0.136
Lr Only	8.89	Span 1	0.127
Lr Only	9.20	Span 1	0.117
Lr Only	9.50	Span 1	0.106
Lr Only	9.81	Span 1	0.095
Lr Only	10.12	Span 1	0.083
Lr Only	10.42	Span 1	0.070
Lr Only	10.73	Span 1	0.058
Lr Only	11.04	Span 1	0.044
Lr Only	11.34	Span 1	0.031
Lr Only	11.65	Span 1	0.018
Lr Only	11.96	Span 1	0.004
Lr Only	12.00	Span 1	0.002

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Wood Beam

Lic. #: KW-06010740

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DDA Engineers, P.A.

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

CODE REFERENCES

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

Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Load Resistance Factor D

Load Combination :ASCE 7-16

Wood Species : Southern Pine

Wood Grade : No.2 Dense: 2"-4" Thick: 5"-6" Wide

Beam Bracing : Completely Unbraced

Fb + 1,050.0 psi

Fb - 1,050.0 psi

Fc - Prll 1,450.0 psi

Fc - Perp 660.0 psi

Fv 175.0 psi

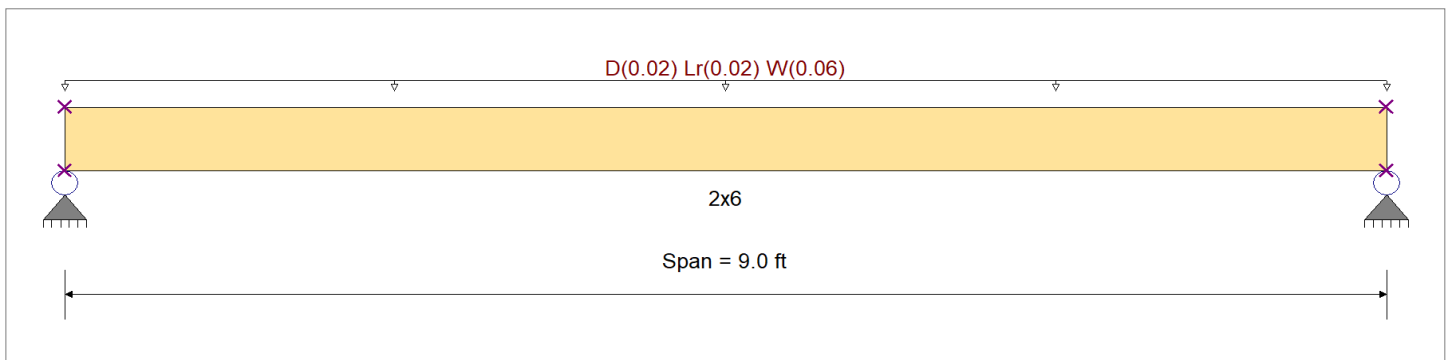
Ft 650.0 psi

E : Modulus of Elasticity

Ebend- xx 1,600.0ksi

Eminbend - xx 580.0ksi

Density 34.330pcf



Applied Loads

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

Beam self weight calculated and added to loads

Uniform Load : D = 0.020, Lr = 0.020, W = 0.060 ksf, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.893	1	Maximum Shear Stress Ratio	=	0.239	1
Section used for this span		2x6		Section used for this span		2x6	
fb: Actual	=	1,419.60	psi	fv: Actual	=	72.29	psi
Fb: Allowable	=	1,589.03	psi	Fv: Allowable	=	302.40	psi
Load Combination		+1.20D+1.60Lr+0.50W		Load Combination		+1.20D+1.60Lr+0.50W	
Location of maximum on span	=	4.500	ft	Location of maximum on span	=	0.000	ft
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.268	in	Ratio =		403	>=360
Max Upward Transient Deflection		0.000	in	Ratio =		0	<360
Max Downward Total Deflection		0.285	in	Ratio =		378	>=240
Max Upward Total Deflection		0.000	in	Ratio =		0	<240

Maximum Forces & Stresses for Load Combinations

Load Combination Segment Length	Span #	Max Stress Ratios			λ	C_{FV}	C_i	C_r	C_m	C_t	C_L	Moment Values			Shear Values		
		M	V									Mu	fb	Fb	Vu	fv	Fv
+1.40D														0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.389	0.111	0.60	1.000	1.00	1.00	1.00	1.00	0.93	0.31	494.09	1269.26	0.14	25.16	226.80	
+1.20D+0.50Lr					1.000	1.00	1.00	1.00	1.00	0.93			0.00	0.00	0.00	0.00	
Length = 9.0 ft	1	0.368	0.098	0.80	1.000	1.00	1.00	1.00	1.00	0.88	0.37	584.17	1589.03	0.16	29.75	302.40	
+1.20D					1.000	1.00	1.00	1.00	1.00	0.88			0.00	0.00	0.00	0.00	
Length = 9.0 ft	1	0.267	0.071	0.80	1.000	1.00	1.00	1.00	1.00	0.88	0.27	423.51	1589.03	0.12	21.57	302.40	
+1.20D+1.60Lr					1.000	1.00	1.00	1.00	1.00	0.88			0.00	0.00	0.00	0.00	
Length = 9.0 ft	1	0.590	0.158	0.80	1.000	1.00	1.00	1.00	1.00	0.88	0.59	937.62	1589.03	0.26	47.75	302.40	
+1.20D+1.60Lr+0.50W					1.000	1.00	1.00	1.00	1.00	0.88			0.00	0.00	0.00	0.00	
Length = 9.0 ft	1	0.893	0.239	0.80	1.000	1.00	1.00	1.00	1.00	0.88	0.89	1,419.60	1589.03	0.40	72.29	302.40	
+1.20D+1.60Lr-0.50W					1.000	1.00	1.00	1.00	1.00	0.88			0.00	0.00	0.00	0.00	
Length = 9.0 ft	1	0.287	0.077	0.80	1.000	1.00	1.00	1.00	1.00	0.88	0.29	455.64	1589.03	0.13	23.20	302.40	
+1.20D+0.50W					1.000	1.00	1.00	1.00	1.00	0.88			0.00	0.00	0.00	0.00	

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Wood Beam

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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Load Combination Segment Length	Span #	Max Stress Ratios		λ	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values			Shear Values		
		M	V								Mu	fb	Fb	Vu	fv	Fv
Length = 9.0 ft	1	0.570	0.152	0.80	1.000	1.00	1.00	1.00	1.00	0.88	0.57	905.49	1589.03	0.25	46.11	302.40
+1.20D-0.50W					1.000	1.00	1.00	1.00	1.00	0.88			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.037	0.010	0.80	1.000	1.00	1.00	1.00	1.00	0.88	0.04	58.48	1589.03	0.02	2.98	302.40
+1.20D+0.50Lr+W					1.000	1.00	1.00	1.00	1.00	0.88			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.859	0.209	1.00	1.000	1.00	1.00	1.00	1.00	0.79	0.98	1,548.13	1801.44	0.43	78.84	378.00
+1.20D+0.50Lr-W					1.000	1.00	1.00	1.00	1.00	0.79			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.211	0.051	1.00	1.000	1.00	1.00	1.00	1.00	0.79	0.24	379.80	1801.44	0.11	19.34	378.00
+1.20D+W					1.000	1.00	1.00	1.00	1.00	0.79			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.770	0.187	1.00	1.000	1.00	1.00	1.00	1.00	0.79	0.87	1,387.47	1801.44	0.39	70.66	378.00
+1.20D-W					1.000	1.00	1.00	1.00	1.00	0.79			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.300	0.073	1.00	1.000	1.00	1.00	1.00	1.00	0.79	0.34	540.46	1801.44	0.15	27.52	378.00
+0.90D+W					1.000	1.00	1.00	1.00	1.00	0.79			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.711	0.173	1.00	1.000	1.00	1.00	1.00	1.00	0.79	0.81	1,281.60	1801.44	0.36	65.27	378.00
+0.90D-W					1.000	1.00	1.00	1.00	1.00	0.79			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.359	0.087	1.00	1.000	1.00	1.00	1.00	1.00	0.79	0.41	646.34	1801.44	0.18	32.92	378.00
+0.90D					1.000	1.00	1.00	1.00	1.00	0.79			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.176	0.043	1.00	1.000	1.00	1.00	1.00	1.00	0.79	0.20	317.63	1801.44	0.09	16.18	378.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750Lr+0.450W	1	0.2854	4.533		0.0000	0.000

Maximum Deflections for Load Combinations

Load Combination	Span	Max. Downward Defl	Location in Span	Max. Upward Defl	Location in Span
D Only	1	0.0980	in 4.533 ft	0.0000	in 0.000 ft
+D+Lr	1	0.1873	in 4.533 ft	0.0000	in 0.000 ft
+D+0.750Lr	1	0.1650	in 4.533 ft	0.0000	in 0.000 ft
+D+0.60W	1	0.2587	in 4.533 ft	0.0000	in 0.000 ft
+D+0.750Lr+0.450W	1	0.2854	in 4.533 ft	0.0000	in 0.000 ft
+D+0.450W	1	0.2185	in 4.533 ft	0.0000	in 0.000 ft
+0.60D+0.60W	1	0.2195	in 4.533 ft	0.0000	in 0.000 ft
+0.60D	1	0.0588	in 4.533 ft	0.0000	in 0.000 ft
Lr Only	1	0.0892	in 4.533 ft	0.0000	in 0.000 ft
W Only	1	0.2677	in 4.533 ft	0.0000	in 0.000 ft

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.288	0.288
Overall MINimum	0.270	0.270
D Only	0.099	0.099
+D+Lr	0.189	0.189
+D+0.750Lr	0.166	0.166
+D+0.60W	0.261	0.261
+D+0.750Lr+0.450W	0.288	0.288
+D+0.450W	0.220	0.220
+0.60D+0.60W	0.221	0.221
+0.60D	0.059	0.059
Lr Only	0.090	0.090
W Only	0.270	0.270

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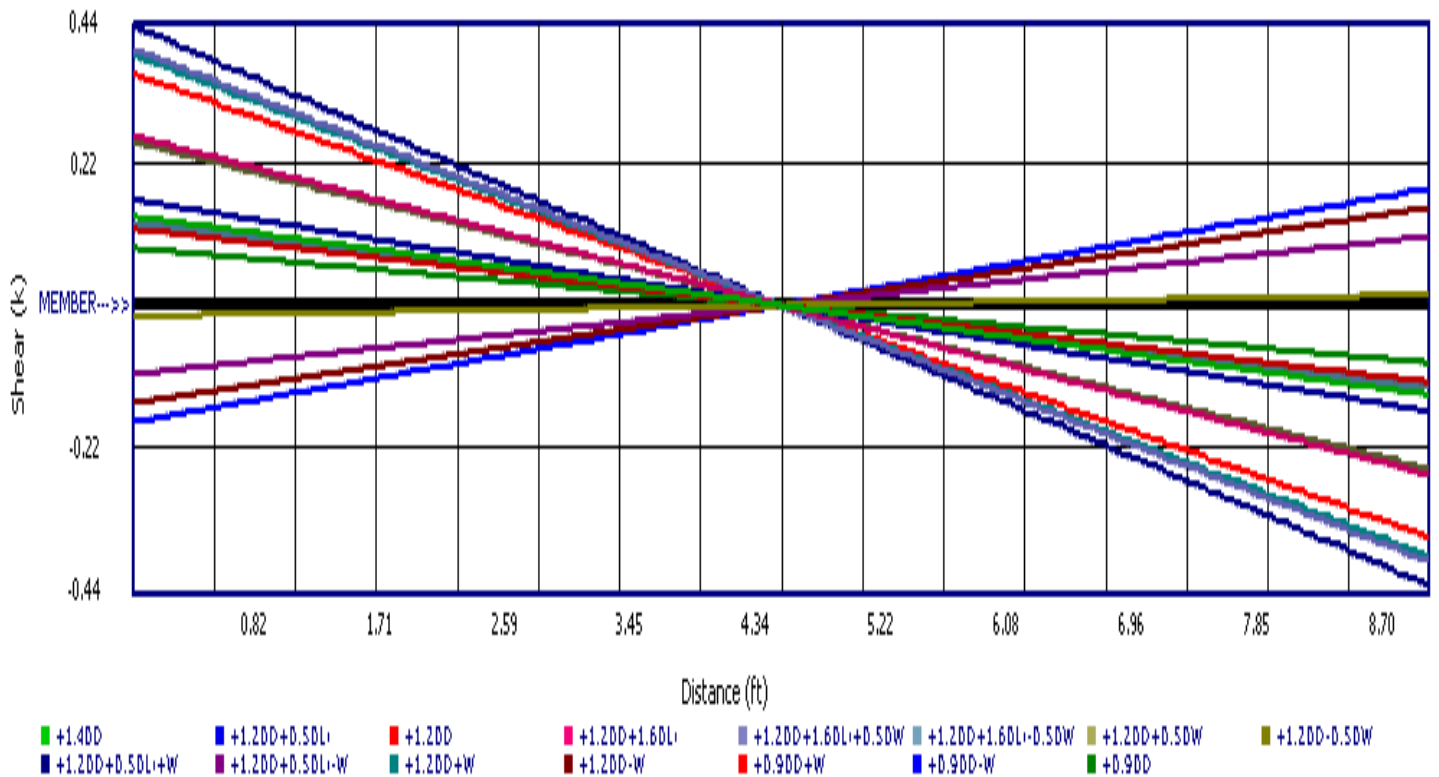
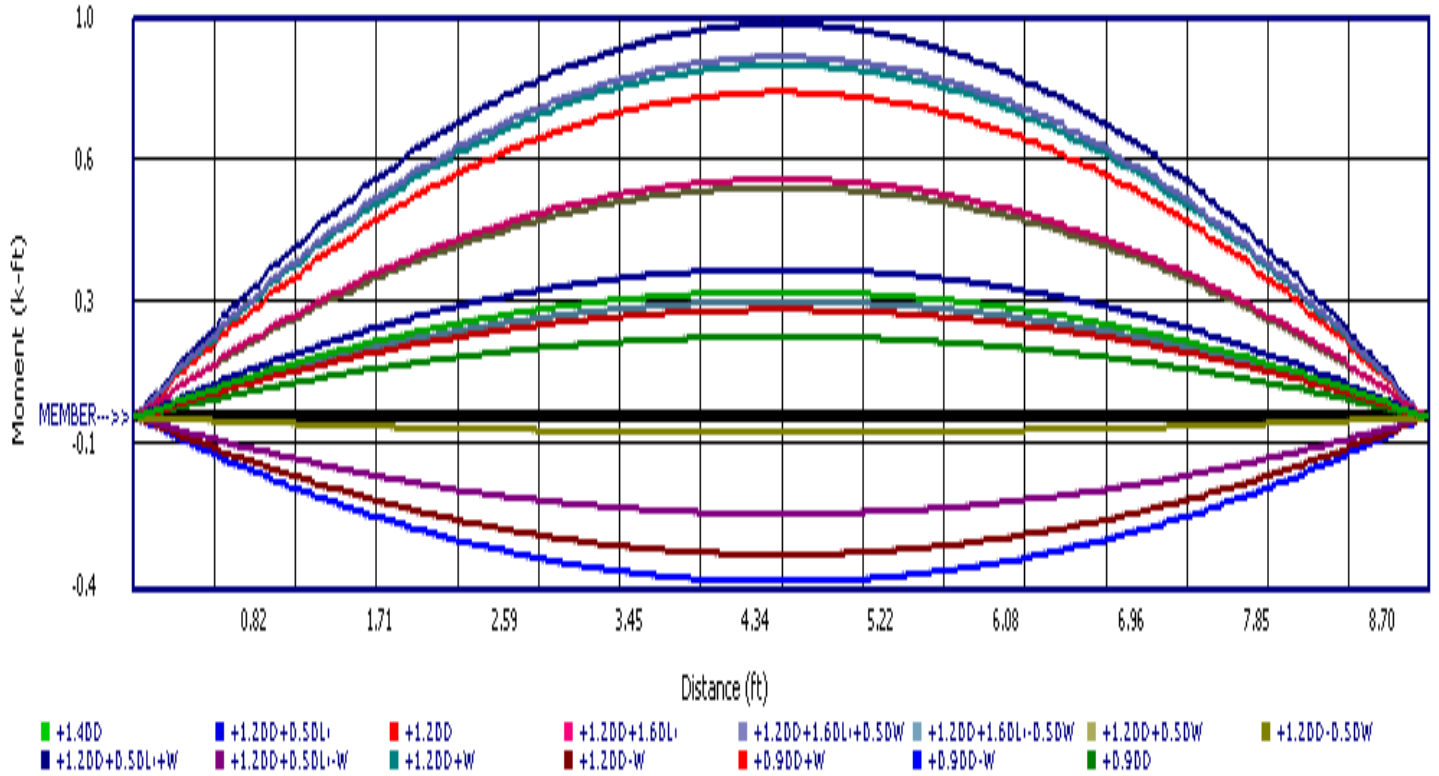
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Wood Beam

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 DDA Engineers, P.A.

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)



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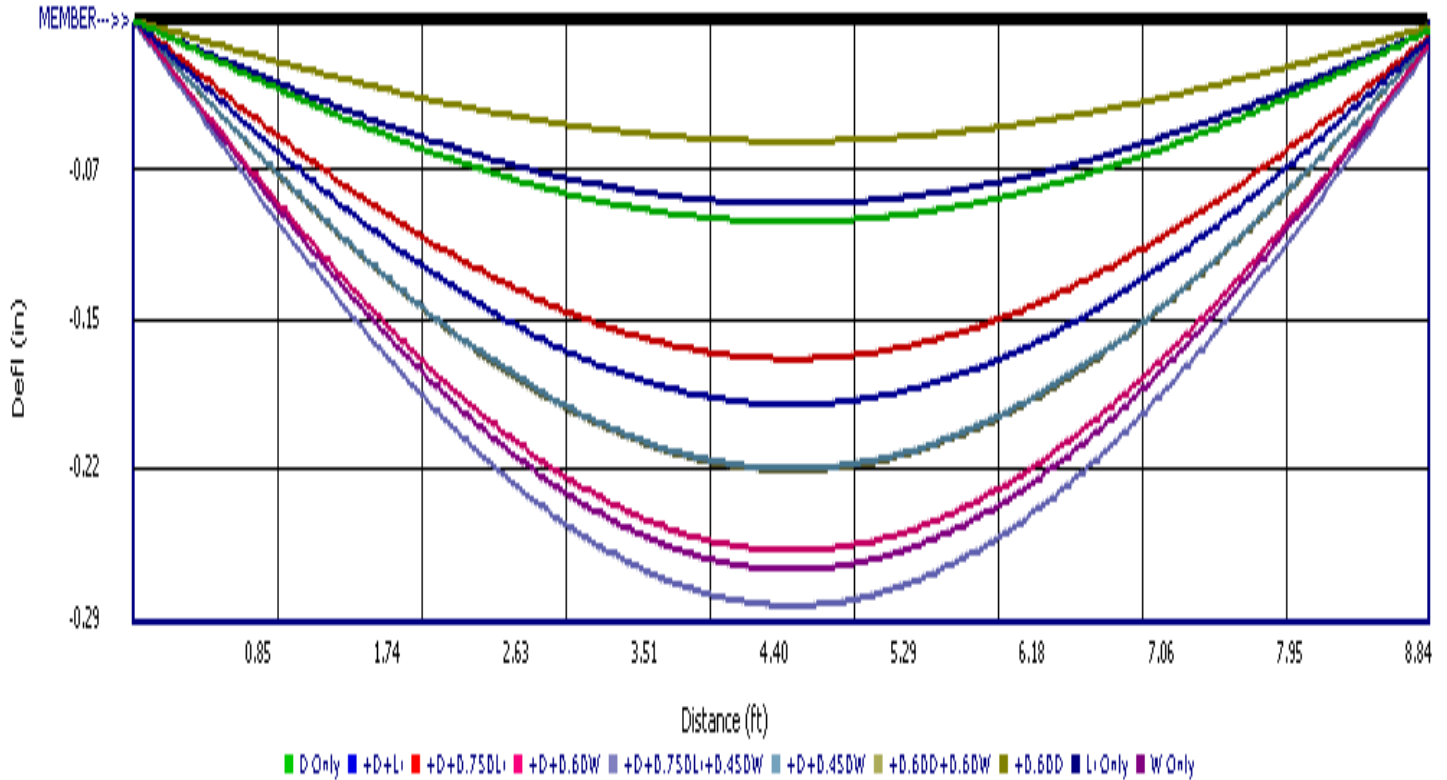
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DDA Engineers, P.A.

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)



Summary of Values per Beam Span

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.40D	0.00	Span 1	0.138	0.000
+1.40D	0.23	Span 1	0.131	0.031
+1.40D	0.46	Span 1	0.124	0.060
+1.40D	0.69	Span 1	0.117	0.088
+1.40D	0.92	Span 1	0.110	0.114
+1.40D	1.15	Span 1	0.103	0.139
+1.40D	1.38	Span 1	0.096	0.162
+1.40D	1.61	Span 1	0.089	0.183
+1.40D	1.84	Span 1	0.082	0.203
+1.40D	2.07	Span 1	0.075	0.221
+1.40D	2.30	Span 1	0.068	0.237
+1.40D	2.53	Span 1	0.061	0.252
+1.40D	2.76	Span 1	0.054	0.265
+1.40D	2.99	Span 1	0.046	0.276
+1.40D	3.22	Span 1	0.039	0.286
+1.40D	3.45	Span 1	0.032	0.294
+1.40D	3.68	Span 1	0.025	0.301
+1.40D	3.91	Span 1	0.018	0.306
+1.40D	4.14	Span 1	0.011	0.309
+1.40D	4.37	Span 1	0.004	0.311

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Wood Beam

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DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

+1.40D	4.60	Span 1	-0.003	0.311
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Wood Beam

File: wood joist.ec6
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Lic. # : KW-06010740

DESCRIPTION: 9' canopy rafter at 12" c.c w/dwn 60psf ult (2x6 works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.40D	4.83	Span 1	-0.010	0.310
+1.40D	5.06	Span 1	-0.017	0.307
+1.40D	5.29	Span 1	-0.024	0.302
+1.40D	5.52	Span 1	-0.031	0.295
+1.40D	5.75	Span 1	-0.038	0.287
+1.40D	5.98	Span 1	-0.045	0.278
+1.40D	6.21	Span 1	-0.053	0.267
+1.40D	6.44	Span 1	-0.060	0.254
+1.40D	6.67	Span 1	-0.067	0.239
+1.40D	6.90	Span 1	-0.074	0.223
+1.40D	7.13	Span 1	-0.081	0.205
+1.40D	7.36	Span 1	-0.088	0.186
+1.40D	7.59	Span 1	-0.095	0.165
+1.40D	7.82	Span 1	-0.102	0.142
+1.40D	8.05	Span 1	-0.109	0.118
+1.40D	8.28	Span 1	-0.116	0.092
+1.40D	8.51	Span 1	-0.123	0.064
+1.40D	8.74	Span 1	-0.130	0.035
+1.40D	8.97	Span 1	-0.137	0.005
+1.20D+0.50Lr	0.00	Span 1	0.164	0.000
+1.20D+0.50Lr	0.23	Span 1	0.155	0.037
+1.20D+0.50Lr	0.46	Span 1	0.147	0.071
+1.20D+0.50Lr	0.69	Span 1	0.139	0.104
+1.20D+0.50Lr	0.92	Span 1	0.130	0.135
+1.20D+0.50Lr	1.15	Span 1	0.122	0.164
+1.20D+0.50Lr	1.38	Span 1	0.113	0.191
+1.20D+0.50Lr	1.61	Span 1	0.105	0.216
+1.20D+0.50Lr	1.84	Span 1	0.097	0.239
+1.20D+0.50Lr	2.07	Span 1	0.088	0.261
+1.20D+0.50Lr	2.30	Span 1	0.080	0.280
+1.20D+0.50Lr	2.53	Span 1	0.072	0.298
+1.20D+0.50Lr	2.76	Span 1	0.063	0.313
+1.20D+0.50Lr	2.99	Span 1	0.055	0.327
+1.20D+0.50Lr	3.22	Span 1	0.047	0.338
+1.20D+0.50Lr	3.45	Span 1	0.038	0.348
+1.20D+0.50Lr	3.68	Span 1	0.030	0.356
+1.20D+0.50Lr	3.91	Span 1	0.021	0.362
+1.20D+0.50Lr	4.14	Span 1	0.013	0.366
+1.20D+0.50Lr	4.37	Span 1	0.005	0.368
+1.20D+0.50Lr	4.60	Span 1	-0.004	0.368
+1.20D+0.50Lr	4.83	Span 1	-0.012	0.366
+1.20D+0.50Lr	5.06	Span 1	-0.020	0.362
+1.20D+0.50Lr	5.29	Span 1	-0.029	0.357
+1.20D+0.50Lr	5.52	Span 1	-0.037	0.349
+1.20D+0.50Lr	5.75	Span 1	-0.045	0.340

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 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

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 Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 9'canopy rafter at 12" c.c wdown 60psf ult (2x6works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+0.50Lr	5.98	Span 1	-0.054	0.328
+1.20D+0.50Lr	6.21	Span 1	-0.062	0.315
+1.20D+0.50Lr	6.44	Span 1	-0.070	0.300
+1.20D+0.50Lr	6.67	Span 1	-0.079	0.283
+1.20D+0.50Lr	6.90	Span 1	-0.087	0.264
+1.20D+0.50Lr	7.13	Span 1	-0.096	0.243
+1.20D+0.50Lr	7.36	Span 1	-0.104	0.220
+1.20D+0.50Lr	7.59	Span 1	-0.112	0.195
+1.20D+0.50Lr	7.82	Span 1	-0.121	0.168
+1.20D+0.50Lr	8.05	Span 1	-0.129	0.139
+1.20D+0.50Lr	8.28	Span 1	-0.137	0.109
+1.20D+0.50Lr	8.51	Span 1	-0.146	0.076
+1.20D+0.50Lr	8.74	Span 1	-0.154	0.042
+1.20D+0.50Lr	8.97	Span 1	-0.162	0.005
+1.20D	0.00	Span 1	0.119	0.000
+1.20D	0.23	Span 1	0.113	0.027
+1.20D	0.46	Span 1	0.106	0.052
+1.20D	0.69	Span 1	0.100	0.076
+1.20D	0.92	Span 1	0.094	0.098
+1.20D	1.15	Span 1	0.088	0.119
+1.20D	1.38	Span 1	0.082	0.139
+1.20D	1.61	Span 1	0.076	0.157
+1.20D	1.84	Span 1	0.070	0.174
+1.20D	2.07	Span 1	0.064	0.189
+1.20D	2.30	Span 1	0.058	0.203
+1.20D	2.53	Span 1	0.052	0.216
+1.20D	2.76	Span 1	0.046	0.227
+1.20D	2.99	Span 1	0.040	0.237
+1.20D	3.22	Span 1	0.034	0.245
+1.20D	3.45	Span 1	0.028	0.252
+1.20D	3.68	Span 1	0.022	0.258
+1.20D	3.91	Span 1	0.016	0.262
+1.20D	4.14	Span 1	0.010	0.265
+1.20D	4.37	Span 1	0.003	0.267
+1.20D	4.60	Span 1	-0.003	0.267
+1.20D	4.83	Span 1	-0.009	0.265
+1.20D	5.06	Span 1	-0.015	0.263
+1.20D	5.29	Span 1	-0.021	0.259
+1.20D	5.52	Span 1	-0.027	0.253
+1.20D	5.75	Span 1	-0.033	0.246
+1.20D	5.98	Span 1	-0.039	0.238
+1.20D	6.21	Span 1	-0.045	0.228
+1.20D	6.44	Span 1	-0.051	0.217
+1.20D	6.67	Span 1	-0.057	0.205
+1.20D	6.90	Span 1	-0.063	0.191

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Wood Beam

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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D	7.13	Span 1	-0.069	0.176
+1.20D	7.36	Span 1	-0.075	0.159
+1.20D	7.59	Span 1	-0.081	0.141
+1.20D	7.82	Span 1	-0.087	0.122
+1.20D	8.05	Span 1	-0.094	0.101
+1.20D	8.28	Span 1	-0.100	0.079
+1.20D	8.51	Span 1	-0.106	0.055
+1.20D	8.74	Span 1	-0.112	0.030
+1.20D	8.97	Span 1	-0.118	0.004
+1.20D+1.60Lr	0.00	Span 1	0.263	0.000
+1.20D+1.60Lr	0.23	Span 1	0.249	0.059
+1.20D+1.60Lr	0.46	Span 1	0.236	0.115
+1.20D+1.60Lr	0.69	Span 1	0.222	0.167
+1.20D+1.60Lr	0.92	Span 1	0.209	0.217
+1.20D+1.60Lr	1.15	Span 1	0.196	0.263
+1.20D+1.60Lr	1.38	Span 1	0.182	0.307
+1.20D+1.60Lr	1.61	Span 1	0.169	0.347
+1.20D+1.60Lr	1.84	Span 1	0.155	0.384
+1.20D+1.60Lr	2.07	Span 1	0.142	0.418
+1.20D+1.60Lr	2.30	Span 1	0.128	0.450
+1.20D+1.60Lr	2.53	Span 1	0.115	0.478
+1.20D+1.60Lr	2.76	Span 1	0.102	0.502
+1.20D+1.60Lr	2.99	Span 1	0.088	0.524
+1.20D+1.60Lr	3.22	Span 1	0.075	0.543
+1.20D+1.60Lr	3.45	Span 1	0.061	0.559
+1.20D+1.60Lr	3.68	Span 1	0.048	0.571
+1.20D+1.60Lr	3.91	Span 1	0.035	0.581
+1.20D+1.60Lr	4.14	Span 1	0.021	0.587
+1.20D+1.60Lr	4.37	Span 1	0.008	0.590
+1.20D+1.60Lr	4.60	Span 1	-0.006	0.591
+1.20D+1.60Lr	4.83	Span 1	-0.019	0.588
+1.20D+1.60Lr	5.06	Span 1	-0.033	0.582
+1.20D+1.60Lr	5.29	Span 1	-0.046	0.573
+1.20D+1.60Lr	5.52	Span 1	-0.059	0.561
+1.20D+1.60Lr	5.75	Span 1	-0.073	0.545
+1.20D+1.60Lr	5.98	Span 1	-0.086	0.527
+1.20D+1.60Lr	6.21	Span 1	-0.100	0.506
+1.20D+1.60Lr	6.44	Span 1	-0.113	0.481
+1.20D+1.60Lr	6.67	Span 1	-0.127	0.454
+1.20D+1.60Lr	6.90	Span 1	-0.140	0.423
+1.20D+1.60Lr	7.13	Span 1	-0.153	0.389
+1.20D+1.60Lr	7.36	Span 1	-0.167	0.353
+1.20D+1.60Lr	7.59	Span 1	-0.180	0.313
+1.20D+1.60Lr	7.82	Span 1	-0.194	0.270
+1.20D+1.60Lr	8.05	Span 1	-0.207	0.224

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DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+1.60Lr	8.28	Span 1	-0.220	0.175
+1.20D+1.60Lr	8.51	Span 1	-0.234	0.122
+1.20D+1.60Lr	8.74	Span 1	-0.247	0.067
+1.20D+1.60Lr	8.97	Span 1	-0.261	0.009
+1.20D+1.60Lr+0.50W	0.00	Span 1	0.398	0.000
+1.20D+1.60Lr+0.50W	0.23	Span 1	0.377	0.089
+1.20D+1.60Lr+0.50W	0.46	Span 1	0.357	0.174
+1.20D+1.60Lr+0.50W	0.69	Span 1	0.337	0.253
+1.20D+1.60Lr+0.50W	0.92	Span 1	0.316	0.328
+1.20D+1.60Lr+0.50W	1.15	Span 1	0.296	0.399
+1.20D+1.60Lr+0.50W	1.38	Span 1	0.276	0.464
+1.20D+1.60Lr+0.50W	1.61	Span 1	0.255	0.526
+1.20D+1.60Lr+0.50W	1.84	Span 1	0.235	0.582
+1.20D+1.60Lr+0.50W	2.07	Span 1	0.215	0.634
+1.20D+1.60Lr+0.50W	2.30	Span 1	0.194	0.681
+1.20D+1.60Lr+0.50W	2.53	Span 1	0.174	0.723
+1.20D+1.60Lr+0.50W	2.76	Span 1	0.154	0.761
+1.20D+1.60Lr+0.50W	2.99	Span 1	0.134	0.794
+1.20D+1.60Lr+0.50W	3.22	Span 1	0.113	0.822
+1.20D+1.60Lr+0.50W	3.45	Span 1	0.093	0.846
+1.20D+1.60Lr+0.50W	3.68	Span 1	0.073	0.865
+1.20D+1.60Lr+0.50W	3.91	Span 1	0.052	0.879
+1.20D+1.60Lr+0.50W	4.14	Span 1	0.032	0.889
+1.20D+1.60Lr+0.50W	4.37	Span 1	0.012	0.894
+1.20D+1.60Lr+0.50W	4.60	Span 1	-0.009	0.894
+1.20D+1.60Lr+0.50W	4.83	Span 1	-0.029	0.890
+1.20D+1.60Lr+0.50W	5.06	Span 1	-0.049	0.881
+1.20D+1.60Lr+0.50W	5.29	Span 1	-0.070	0.867
+1.20D+1.60Lr+0.50W	5.52	Span 1	-0.090	0.849
+1.20D+1.60Lr+0.50W	5.75	Span 1	-0.110	0.826
+1.20D+1.60Lr+0.50W	5.98	Span 1	-0.131	0.798
+1.20D+1.60Lr+0.50W	6.21	Span 1	-0.151	0.766
+1.20D+1.60Lr+0.50W	6.44	Span 1	-0.171	0.729
+1.20D+1.60Lr+0.50W	6.67	Span 1	-0.192	0.687
+1.20D+1.60Lr+0.50W	6.90	Span 1	-0.212	0.641
+1.20D+1.60Lr+0.50W	7.13	Span 1	-0.232	0.590
+1.20D+1.60Lr+0.50W	7.36	Span 1	-0.253	0.534
+1.20D+1.60Lr+0.50W	7.59	Span 1	-0.273	0.473
+1.20D+1.60Lr+0.50W	7.82	Span 1	-0.293	0.408
+1.20D+1.60Lr+0.50W	8.05	Span 1	-0.313	0.339
+1.20D+1.60Lr+0.50W	8.28	Span 1	-0.334	0.264
+1.20D+1.60Lr+0.50W	8.51	Span 1	-0.354	0.185
+1.20D+1.60Lr+0.50W	8.74	Span 1	-0.374	0.101
+1.20D+1.60Lr+0.50W	8.97	Span 1	-0.395	0.013

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DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+1.60Lr-0.50W	0.00	Span 1	0.128	0.000
+1.20D+1.60Lr-0.50W	0.23	Span 1	0.121	0.029
+1.20D+1.60Lr-0.50W	0.46	Span 1	0.115	0.056
+1.20D+1.60Lr-0.50W	0.69	Span 1	0.108	0.081
+1.20D+1.60Lr-0.50W	0.92	Span 1	0.102	0.105
+1.20D+1.60Lr-0.50W	1.15	Span 1	0.095	0.128
+1.20D+1.60Lr-0.50W	1.38	Span 1	0.088	0.149
+1.20D+1.60Lr-0.50W	1.61	Span 1	0.082	0.169
+1.20D+1.60Lr-0.50W	1.84	Span 1	0.075	0.187
+1.20D+1.60Lr-0.50W	2.07	Span 1	0.069	0.203
+1.20D+1.60Lr-0.50W	2.30	Span 1	0.062	0.218
+1.20D+1.60Lr-0.50W	2.53	Span 1	0.056	0.232
+1.20D+1.60Lr-0.50W	2.76	Span 1	0.049	0.244
+1.20D+1.60Lr-0.50W	2.99	Span 1	0.043	0.255
+1.20D+1.60Lr-0.50W	3.22	Span 1	0.036	0.264
+1.20D+1.60Lr-0.50W	3.45	Span 1	0.030	0.271
+1.20D+1.60Lr-0.50W	3.68	Span 1	0.023	0.278
+1.20D+1.60Lr-0.50W	3.91	Span 1	0.017	0.282
+1.20D+1.60Lr-0.50W	4.14	Span 1	0.010	0.285
+1.20D+1.60Lr-0.50W	4.37	Span 1	0.004	0.287
+1.20D+1.60Lr-0.50W	4.60	Span 1	-0.003	0.287
+1.20D+1.60Lr-0.50W	4.83	Span 1	-0.009	0.286
+1.20D+1.60Lr-0.50W	5.06	Span 1	-0.016	0.283
+1.20D+1.60Lr-0.50W	5.29	Span 1	-0.022	0.278
+1.20D+1.60Lr-0.50W	5.52	Span 1	-0.029	0.272
+1.20D+1.60Lr-0.50W	5.75	Span 1	-0.035	0.265
+1.20D+1.60Lr-0.50W	5.98	Span 1	-0.042	0.256
+1.20D+1.60Lr-0.50W	6.21	Span 1	-0.048	0.246
+1.20D+1.60Lr-0.50W	6.44	Span 1	-0.055	0.234
+1.20D+1.60Lr-0.50W	6.67	Span 1	-0.061	0.221
+1.20D+1.60Lr-0.50W	6.90	Span 1	-0.068	0.206
+1.20D+1.60Lr-0.50W	7.13	Span 1	-0.075	0.189
+1.20D+1.60Lr-0.50W	7.36	Span 1	-0.081	0.171
+1.20D+1.60Lr-0.50W	7.59	Span 1	-0.088	0.152
+1.20D+1.60Lr-0.50W	7.82	Span 1	-0.094	0.131
+1.20D+1.60Lr-0.50W	8.05	Span 1	-0.101	0.109
+1.20D+1.60Lr-0.50W	8.28	Span 1	-0.107	0.085
+1.20D+1.60Lr-0.50W	8.51	Span 1	-0.114	0.059
+1.20D+1.60Lr-0.50W	8.74	Span 1	-0.120	0.033
+1.20D+1.60Lr-0.50W	8.97	Span 1	-0.127	0.004
+1.20D+0.50W	0.00	Span 1	0.254	0.000
+1.20D+0.50W	0.23	Span 1	0.241	0.057
+1.20D+0.50W	0.46	Span 1	0.228	0.111
+1.20D+0.50W	0.69	Span 1	0.215	0.162
+1.20D+0.50W	0.92	Span 1	0.202	0.209

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Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+0.50W	1.15	Span 1	0.189	0.254
+1.20D+0.50W	1.38	Span 1	0.176	0.296
+1.20D+0.50W	1.61	Span 1	0.163	0.335
+1.20D+0.50W	1.84	Span 1	0.150	0.371
+1.20D+0.50W	2.07	Span 1	0.137	0.404
+1.20D+0.50W	2.30	Span 1	0.124	0.434
+1.20D+0.50W	2.53	Span 1	0.111	0.461
+1.20D+0.50W	2.76	Span 1	0.098	0.485
+1.20D+0.50W	2.99	Span 1	0.085	0.506
+1.20D+0.50W	3.22	Span 1	0.072	0.524
+1.20D+0.50W	3.45	Span 1	0.059	0.540
+1.20D+0.50W	3.68	Span 1	0.046	0.552
+1.20D+0.50W	3.91	Span 1	0.033	0.561
+1.20D+0.50W	4.14	Span 1	0.020	0.567
+1.20D+0.50W	4.37	Span 1	0.007	0.570
+1.20D+0.50W	4.60	Span 1	-0.006	0.570
+1.20D+0.50W	4.83	Span 1	-0.019	0.568
+1.20D+0.50W	5.06	Span 1	-0.031	0.562
+1.20D+0.50W	5.29	Span 1	-0.044	0.553
+1.20D+0.50W	5.52	Span 1	-0.057	0.541
+1.20D+0.50W	5.75	Span 1	-0.070	0.527
+1.20D+0.50W	5.98	Span 1	-0.083	0.509
+1.20D+0.50W	6.21	Span 1	-0.096	0.488
+1.20D+0.50W	6.44	Span 1	-0.109	0.465
+1.20D+0.50W	6.67	Span 1	-0.122	0.438
+1.20D+0.50W	6.90	Span 1	-0.135	0.409
+1.20D+0.50W	7.13	Span 1	-0.148	0.376
+1.20D+0.50W	7.36	Span 1	-0.161	0.341
+1.20D+0.50W	7.59	Span 1	-0.174	0.302
+1.20D+0.50W	7.82	Span 1	-0.187	0.260
+1.20D+0.50W	8.05	Span 1	-0.200	0.216
+1.20D+0.50W	8.28	Span 1	-0.213	0.169
+1.20D+0.50W	8.51	Span 1	-0.226	0.118
+1.20D+0.50W	8.74	Span 1	-0.239	0.065
+1.20D+0.50W	8.97	Span 1	-0.252	0.008
+1.20D-0.50W	0.00	Span 1	-0.016	0.000
+1.20D-0.50W	0.23	Span 1	-0.016	-0.004
+1.20D-0.50W	0.46	Span 1	-0.015	-0.007
+1.20D-0.50W	0.69	Span 1	-0.014	-0.010
+1.20D-0.50W	0.92	Span 1	-0.013	-0.014
+1.20D-0.50W	1.15	Span 1	-0.012	-0.016
+1.20D-0.50W	1.38	Span 1	-0.011	-0.019
+1.20D-0.50W	1.61	Span 1	-0.011	-0.022
+1.20D-0.50W	1.84	Span 1	-0.010	-0.024
+1.20D-0.50W	2.07	Span 1	-0.009	-0.026

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Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D-0.50W	2.30	Span 1	-0.008	-0.028
+1.20D-0.50W	2.53	Span 1	-0.007	-0.030
+1.20D-0.50W	2.76	Span 1	-0.006	-0.031
+1.20D-0.50W	2.99	Span 1	-0.005	-0.033
+1.20D-0.50W	3.22	Span 1	-0.005	-0.034
+1.20D-0.50W	3.45	Span 1	-0.004	-0.035
+1.20D-0.50W	3.68	Span 1	-0.003	-0.036
+1.20D-0.50W	3.91	Span 1	-0.002	-0.036
+1.20D-0.50W	4.14	Span 1	-0.001	-0.037
+1.20D-0.50W	4.37	Span 1	-0.000	-0.037
+1.20D-0.50W	4.60	Span 1	0.000	-0.037
+1.20D-0.50W	4.83	Span 1	0.001	-0.037
+1.20D-0.50W	5.06	Span 1	0.002	-0.036
+1.20D-0.50W	5.29	Span 1	0.003	-0.036
+1.20D-0.50W	5.52	Span 1	0.004	-0.035
+1.20D-0.50W	5.75	Span 1	0.005	-0.034
+1.20D-0.50W	5.98	Span 1	0.005	-0.033
+1.20D-0.50W	6.21	Span 1	0.006	-0.032
+1.20D-0.50W	6.44	Span 1	0.007	-0.030
+1.20D-0.50W	6.67	Span 1	0.008	-0.028
+1.20D-0.50W	6.90	Span 1	0.009	-0.026
+1.20D-0.50W	7.13	Span 1	0.010	-0.024
+1.20D-0.50W	7.36	Span 1	0.010	-0.022
+1.20D-0.50W	7.59	Span 1	0.011	-0.020
+1.20D-0.50W	7.82	Span 1	0.012	-0.017
+1.20D-0.50W	8.05	Span 1	0.013	-0.014
+1.20D-0.50W	8.28	Span 1	0.014	-0.011
+1.20D-0.50W	8.51	Span 1	0.015	-0.008
+1.20D-0.50W	8.74	Span 1	0.015	-0.004
+1.20D-0.50W	8.97	Span 1	0.016	-0.001
+1.20D+0.50Lr+W	0.00	Span 1	0.434	0.000
+1.20D+0.50Lr+W	0.23	Span 1	0.411	0.097
+1.20D+0.50Lr+W	0.46	Span 1	0.389	0.189
+1.20D+0.50Lr+W	0.69	Span 1	0.367	0.276
+1.20D+0.50Lr+W	0.92	Span 1	0.345	0.358
+1.20D+0.50Lr+W	1.15	Span 1	0.323	0.435
+1.20D+0.50Lr+W	1.38	Span 1	0.301	0.507
+1.20D+0.50Lr+W	1.61	Span 1	0.279	0.573
+1.20D+0.50Lr+W	1.84	Span 1	0.256	0.635
+1.20D+0.50Lr+W	2.07	Span 1	0.234	0.691
+1.20D+0.50Lr+W	2.30	Span 1	0.212	0.742
+1.20D+0.50Lr+W	2.53	Span 1	0.190	0.789
+1.20D+0.50Lr+W	2.76	Span 1	0.168	0.830
+1.20D+0.50Lr+W	2.99	Span 1	0.146	0.866
+1.20D+0.50Lr+W	3.22	Span 1	0.123	0.897

Title Block Line 1
 You can change this area
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. #: KW-06010740

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+0.50Lr+W	3.45	Span 1	0.101	0.922
+1.20D+0.50Lr+W	3.68	Span 1	0.079	0.943
+1.20D+0.50Lr+W	3.91	Span 1	0.057	0.959
+1.20D+0.50Lr+W	4.14	Span 1	0.035	0.969
+1.20D+0.50Lr+W	4.37	Span 1	0.013	0.975
+1.20D+0.50Lr+W	4.60	Span 1	-0.009	0.975
+1.20D+0.50Lr+W	4.83	Span 1	-0.032	0.970
+1.20D+0.50Lr+W	5.06	Span 1	-0.054	0.961
+1.20D+0.50Lr+W	5.29	Span 1	-0.076	0.946
+1.20D+0.50Lr+W	5.52	Span 1	-0.098	0.926
+1.20D+0.50Lr+W	5.75	Span 1	-0.120	0.901
+1.20D+0.50Lr+W	5.98	Span 1	-0.142	0.870
+1.20D+0.50Lr+W	6.21	Span 1	-0.165	0.835
+1.20D+0.50Lr+W	6.44	Span 1	-0.187	0.795
+1.20D+0.50Lr+W	6.67	Span 1	-0.209	0.749
+1.20D+0.50Lr+W	6.90	Span 1	-0.231	0.699
+1.20D+0.50Lr+W	7.13	Span 1	-0.253	0.643
+1.20D+0.50Lr+W	7.36	Span 1	-0.275	0.582
+1.20D+0.50Lr+W	7.59	Span 1	-0.298	0.516
+1.20D+0.50Lr+W	7.82	Span 1	-0.320	0.445
+1.20D+0.50Lr+W	8.05	Span 1	-0.342	0.369
+1.20D+0.50Lr+W	8.28	Span 1	-0.364	0.288
+1.20D+0.50Lr+W	8.51	Span 1	-0.386	0.202
+1.20D+0.50Lr+W	8.74	Span 1	-0.408	0.111
+1.20D+0.50Lr+W	8.97	Span 1	-0.430	0.014
+1.20D+0.50Lr-W	0.00	Span 1	-0.106	0.000
+1.20D+0.50Lr-W	0.23	Span 1	-0.101	-0.024
+1.20D+0.50Lr-W	0.46	Span 1	-0.096	-0.046
+1.20D+0.50Lr-W	0.69	Span 1	-0.090	-0.068
+1.20D+0.50Lr-W	0.92	Span 1	-0.085	-0.088
+1.20D+0.50Lr-W	1.15	Span 1	-0.079	-0.107
+1.20D+0.50Lr-W	1.38	Span 1	-0.074	-0.124
+1.20D+0.50Lr-W	1.61	Span 1	-0.068	-0.141
+1.20D+0.50Lr-W	1.84	Span 1	-0.063	-0.156
+1.20D+0.50Lr-W	2.07	Span 1	-0.057	-0.170
+1.20D+0.50Lr-W	2.30	Span 1	-0.052	-0.182
+1.20D+0.50Lr-W	2.53	Span 1	-0.047	-0.193
+1.20D+0.50Lr-W	2.76	Span 1	-0.041	-0.204
+1.20D+0.50Lr-W	2.99	Span 1	-0.036	-0.212
+1.20D+0.50Lr-W	3.22	Span 1	-0.030	-0.220
+1.20D+0.50Lr-W	3.45	Span 1	-0.025	-0.226
+1.20D+0.50Lr-W	3.68	Span 1	-0.019	-0.231
+1.20D+0.50Lr-W	3.91	Span 1	-0.014	-0.235
+1.20D+0.50Lr-W	4.14	Span 1	-0.009	-0.238
+1.20D+0.50Lr-W	4.37	Span 1	-0.003	-0.239

Title Block Line 1
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 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+0.50Lr-W	4.60	Span 1	0.002	-0.239
+1.20D+0.50Lr-W	4.83	Span 1	0.008	-0.238
+1.20D+0.50Lr-W	5.06	Span 1	0.013	-0.236
+1.20D+0.50Lr-W	5.29	Span 1	0.019	-0.232
+1.20D+0.50Lr-W	5.52	Span 1	0.024	-0.227
+1.20D+0.50Lr-W	5.75	Span 1	0.030	-0.221
+1.20D+0.50Lr-W	5.98	Span 1	0.035	-0.214
+1.20D+0.50Lr-W	6.21	Span 1	0.040	-0.205
+1.20D+0.50Lr-W	6.44	Span 1	0.046	-0.195
+1.20D+0.50Lr-W	6.67	Span 1	0.051	-0.184
+1.20D+0.50Lr-W	6.90	Span 1	0.057	-0.171
+1.20D+0.50Lr-W	7.13	Span 1	0.062	-0.158
+1.20D+0.50Lr-W	7.36	Span 1	0.068	-0.143
+1.20D+0.50Lr-W	7.59	Span 1	0.073	-0.127
+1.20D+0.50Lr-W	7.82	Span 1	0.078	-0.109
+1.20D+0.50Lr-W	8.05	Span 1	0.084	-0.091
+1.20D+0.50Lr-W	8.28	Span 1	0.089	-0.071
+1.20D+0.50Lr-W	8.51	Span 1	0.095	-0.050
+1.20D+0.50Lr-W	8.74	Span 1	0.100	-0.027
+1.20D+0.50Lr-W	8.97	Span 1	0.106	-0.003
+1.20D+W	0.00	Span 1	0.389	0.000
+1.20D+W	0.23	Span 1	0.369	0.087
+1.20D+W	0.46	Span 1	0.349	0.170
+1.20D+W	0.69	Span 1	0.329	0.248
+1.20D+W	0.92	Span 1	0.309	0.321
+1.20D+W	1.15	Span 1	0.289	0.390
+1.20D+W	1.38	Span 1	0.269	0.454
+1.20D+W	1.61	Span 1	0.250	0.514
+1.20D+W	1.84	Span 1	0.230	0.569
+1.20D+W	2.07	Span 1	0.210	0.619
+1.20D+W	2.30	Span 1	0.190	0.665
+1.20D+W	2.53	Span 1	0.170	0.707
+1.20D+W	2.76	Span 1	0.150	0.744
+1.20D+W	2.99	Span 1	0.130	0.776
+1.20D+W	3.22	Span 1	0.111	0.804
+1.20D+W	3.45	Span 1	0.091	0.827
+1.20D+W	3.68	Span 1	0.071	0.845
+1.20D+W	3.91	Span 1	0.051	0.859
+1.20D+W	4.14	Span 1	0.031	0.869
+1.20D+W	4.37	Span 1	0.011	0.874
+1.20D+W	4.60	Span 1	-0.009	0.874
+1.20D+W	4.83	Span 1	-0.028	0.870
+1.20D+W	5.06	Span 1	-0.048	0.861
+1.20D+W	5.29	Span 1	-0.068	0.848
+1.20D+W	5.52	Span 1	-0.088	0.830

Title Block Line 1
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 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 9'canopy rafter at 12" c.c wdown 60psf ult (2x6works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D+W	5.75	Span 1	-0.108	0.807
+1.20D+W	5.98	Span 1	-0.128	0.780
+1.20D+W	6.21	Span 1	-0.148	0.748
+1.20D+W	6.44	Span 1	-0.167	0.712
+1.20D+W	6.67	Span 1	-0.187	0.671
+1.20D+W	6.90	Span 1	-0.207	0.626
+1.20D+W	7.13	Span 1	-0.227	0.576
+1.20D+W	7.36	Span 1	-0.247	0.522
+1.20D+W	7.59	Span 1	-0.267	0.463
+1.20D+W	7.82	Span 1	-0.287	0.399
+1.20D+W	8.05	Span 1	-0.306	0.331
+1.20D+W	8.28	Span 1	-0.326	0.258
+1.20D+W	8.51	Span 1	-0.346	0.181
+1.20D+W	8.74	Span 1	-0.366	0.099
+1.20D+W	8.97	Span 1	-0.386	0.013
+1.20D-W	0.00	Span 1	-0.151	0.000
+1.20D-W	0.23	Span 1	-0.144	-0.034
+1.20D-W	0.46	Span 1	-0.136	-0.066
+1.20D-W	0.69	Span 1	-0.128	-0.096
+1.20D-W	0.92	Span 1	-0.120	-0.125
+1.20D-W	1.15	Span 1	-0.113	-0.152
+1.20D-W	1.38	Span 1	-0.105	-0.177
+1.20D-W	1.61	Span 1	-0.097	-0.200
+1.20D-W	1.84	Span 1	-0.090	-0.222
+1.20D-W	2.07	Span 1	-0.082	-0.241
+1.20D-W	2.30	Span 1	-0.074	-0.259
+1.20D-W	2.53	Span 1	-0.066	-0.275
+1.20D-W	2.76	Span 1	-0.059	-0.290
+1.20D-W	2.99	Span 1	-0.051	-0.302
+1.20D-W	3.22	Span 1	-0.043	-0.313
+1.20D-W	3.45	Span 1	-0.035	-0.322
+1.20D-W	3.68	Span 1	-0.028	-0.329
+1.20D-W	3.91	Span 1	-0.020	-0.335
+1.20D-W	4.14	Span 1	-0.012	-0.338
+1.20D-W	4.37	Span 1	-0.004	-0.340
+1.20D-W	4.60	Span 1	0.003	-0.340
+1.20D-W	4.83	Span 1	0.011	-0.339
+1.20D-W	5.06	Span 1	0.019	-0.335
+1.20D-W	5.29	Span 1	0.027	-0.330
+1.20D-W	5.52	Span 1	0.034	-0.323
+1.20D-W	5.75	Span 1	0.042	-0.314
+1.20D-W	5.98	Span 1	0.050	-0.304
+1.20D-W	6.21	Span 1	0.057	-0.292
+1.20D-W	6.44	Span 1	0.065	-0.277
+1.20D-W	6.67	Span 1	0.073	-0.262

Title Block Line 1
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 Title Block Line 6

Project Title:
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Wood Beam

File: wood joist.ec6
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DESCRIPTION: 9'canopy rafter at 12" c.c wdown 60psf ult (2x6works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+1.20D-W	6.90	Span 1	0.081	-0.244
+1.20D-W	7.13	Span 1	0.088	-0.224
+1.20D-W	7.36	Span 1	0.096	-0.203
+1.20D-W	7.59	Span 1	0.104	-0.180
+1.20D-W	7.82	Span 1	0.112	-0.155
+1.20D-W	8.05	Span 1	0.119	-0.129
+1.20D-W	8.28	Span 1	0.127	-0.101
+1.20D-W	8.51	Span 1	0.135	-0.071
+1.20D-W	8.74	Span 1	0.143	-0.039
+1.20D-W	8.97	Span 1	0.150	-0.005
+0.90D+W	0.00	Span 1	0.359	0.000
+0.90D+W	0.23	Span 1	0.341	0.080
+0.90D+W	0.46	Span 1	0.322	0.157
+0.90D+W	0.69	Span 1	0.304	0.229
+0.90D+W	0.92	Span 1	0.286	0.296
+0.90D+W	1.15	Span 1	0.267	0.360
+0.90D+W	1.38	Span 1	0.249	0.419
+0.90D+W	1.61	Span 1	0.231	0.474
+0.90D+W	1.84	Span 1	0.212	0.525
+0.90D+W	2.07	Span 1	0.194	0.572
+0.90D+W	2.30	Span 1	0.176	0.615
+0.90D+W	2.53	Span 1	0.157	0.653
+0.90D+W	2.76	Span 1	0.139	0.687
+0.90D+W	2.99	Span 1	0.121	0.717
+0.90D+W	3.22	Span 1	0.102	0.742
+0.90D+W	3.45	Span 1	0.084	0.764
+0.90D+W	3.68	Span 1	0.066	0.781
+0.90D+W	3.91	Span 1	0.047	0.794
+0.90D+W	4.14	Span 1	0.029	0.802
+0.90D+W	4.37	Span 1	0.010	0.807
+0.90D+W	4.60	Span 1	-0.008	0.807
+0.90D+W	4.83	Span 1	-0.026	0.803
+0.90D+W	5.06	Span 1	-0.045	0.795
+0.90D+W	5.29	Span 1	-0.063	0.783
+0.90D+W	5.52	Span 1	-0.081	0.766
+0.90D+W	5.75	Span 1	-0.100	0.746
+0.90D+W	5.98	Span 1	-0.118	0.721
+0.90D+W	6.21	Span 1	-0.136	0.691
+0.90D+W	6.44	Span 1	-0.155	0.658
+0.90D+W	6.67	Span 1	-0.173	0.620
+0.90D+W	6.90	Span 1	-0.191	0.578
+0.90D+W	7.13	Span 1	-0.210	0.532
+0.90D+W	7.36	Span 1	-0.228	0.482
+0.90D+W	7.59	Span 1	-0.246	0.427
+0.90D+W	7.82	Span 1	-0.265	0.369

Title Block Line 1
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 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 9'canopy rafter at 12" c.c wdown 60psf ult (2x6works)

Beam Span Moments & Shears at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Shear (k)	Moment (ft-k)
+0.90D+W	8.05	Span 1	-0.283	0.306
+0.90D+W	8.28	Span 1	-0.301	0.239
+0.90D+W	8.51	Span 1	-0.320	0.167
+0.90D+W	8.74	Span 1	-0.338	0.092
+0.90D+W	8.97	Span 1	-0.356	0.012
+0.90D-W	0.00	Span 1	-0.181	0.000
+0.90D-W	0.23	Span 1	-0.172	-0.041
+0.90D-W	0.46	Span 1	-0.163	-0.079
+0.90D-W	0.69	Span 1	-0.153	-0.115
+0.90D-W	0.92	Span 1	-0.144	-0.149
+0.90D-W	1.15	Span 1	-0.135	-0.182
+0.90D-W	1.38	Span 1	-0.126	-0.211
+0.90D-W	1.61	Span 1	-0.116	-0.239
+0.90D-W	1.84	Span 1	-0.107	-0.265
+0.90D-W	2.07	Span 1	-0.098	-0.288
+0.90D-W	2.30	Span 1	-0.089	-0.310
+0.90D-W	2.53	Span 1	-0.079	-0.329
+0.90D-W	2.76	Span 1	-0.070	-0.346
+0.90D-W	2.99	Span 1	-0.061	-0.361
+0.90D-W	3.22	Span 1	-0.052	-0.374
+0.90D-W	3.45	Span 1	-0.042	-0.385
+0.90D-W	3.68	Span 1	-0.033	-0.394
+0.90D-W	3.91	Span 1	-0.024	-0.400
+0.90D-W	4.14	Span 1	-0.015	-0.405
+0.90D-W	4.37	Span 1	-0.005	-0.407
+0.90D-W	4.60	Span 1	0.004	-0.407
+0.90D-W	4.83	Span 1	0.013	-0.405
+0.90D-W	5.06	Span 1	0.022	-0.401
+0.90D-W	5.29	Span 1	0.032	-0.395
+0.90D-W	5.52	Span 1	0.041	-0.386
+0.90D-W	5.75	Span 1	0.050	-0.376
+0.90D-W	5.98	Span 1	0.059	-0.363
+0.90D-W	6.21	Span 1	0.069	-0.349
+0.90D-W	6.44	Span 1	0.078	-0.332
+0.90D-W	6.67	Span 1	0.087	-0.313
+0.90D-W	6.90	Span 1	0.096	-0.292
+0.90D-W	7.13	Span 1	0.106	-0.268
+0.90D-W	7.36	Span 1	0.115	-0.243
+0.90D-W	7.59	Span 1	0.124	-0.216
+0.90D-W	7.82	Span 1	0.133	-0.186
+0.90D-W	8.05	Span 1	0.143	-0.154
+0.90D-W	8.28	Span 1	0.152	-0.120
+0.90D-W	8.51	Span 1	0.161	-0.084
+0.90D-W	8.74	Span 1	0.170	-0.046
+0.90D-W	8.97	Span 1	0.180	-0.006

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID:
Project Descr:

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Wood Beam

File: wood joist.ec6
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DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

+0.90D	0.00	Span 1	0.089	0.000
+0.90D	0.23	Span 1	0.084	0.020
+0.90D	0.46	Span 1	0.080	0.039
+0.90D	0.69	Span 1	0.075	0.057
+0.90D	0.92	Span 1	0.071	0.073
+0.90D	1.15	Span 1	0.066	0.089
+0.90D	1.38	Span 1	0.062	0.104
+0.90D	1.61	Span 1	0.057	0.118
+0.90D	1.84	Span 1	0.053	0.130
+0.90D	2.07	Span 1	0.048	0.142
+0.90D	2.30	Span 1	0.044	0.152
+0.90D	2.53	Span 1	0.039	0.162
+0.90D	2.76	Span 1	0.034	0.170
+0.90D	2.99	Span 1	0.030	0.178
+0.90D	3.22	Span 1	0.025	0.184
+0.90D	3.45	Span 1	0.021	0.189
+0.90D	3.68	Span 1	0.016	0.194
+0.90D	3.91	Span 1	0.012	0.197
+0.90D	4.14	Span 1	0.007	0.199
+0.90D	4.37	Span 1	0.003	0.200
+0.90D	4.60	Span 1	-0.002	0.200
+0.90D	4.83	Span 1	-0.006	0.199
+0.90D	5.06	Span 1	-0.011	0.197
+0.90D	5.29	Span 1	-0.016	0.194
+0.90D	5.52	Span 1	-0.020	0.190
+0.90D	5.75	Span 1	-0.025	0.185
+0.90D	5.98	Span 1	-0.029	0.179
+0.90D	6.21	Span 1	-0.034	0.171
+0.90D	6.44	Span 1	-0.038	0.163
+0.90D	6.67	Span 1	-0.043	0.154
+0.90D	6.90	Span 1	-0.047	0.143
+0.90D	7.13	Span 1	-0.052	0.132
+0.90D	7.36	Span 1	-0.056	0.119
+0.90D	7.59	Span 1	-0.061	0.106
+0.90D	7.82	Span 1	-0.066	0.091
+0.90D	8.05	Span 1	-0.070	0.076
+0.90D	8.28	Span 1	-0.075	0.059
+0.90D	8.51	Span 1	-0.079	0.041
+0.90D	8.74	Span 1	-0.084	0.023
+0.90D	8.97	Span 1	-0.088	0.003

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
Overall MAXimum Envelope	0.00	Span 1	0.000
Overall MAXimum Envelope	0.23	Span 1	0.023
Overall MAXimum Envelope	0.46	Span 1	0.046
Overall MAXimum Envelope	0.69	Span 1	0.069

Title Block Line 1
 You can change this area
 using the "Settings" menu item
 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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Wood Beam

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DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
Overall MAXimum Envelope	0.92	Span 1	0.091
Overall MAXimum Envelope	1.15	Span 1	0.113
Overall MAXimum Envelope	1.38	Span 1	0.133
Overall MAXimum Envelope	1.61	Span 1	0.153
Overall MAXimum Envelope	1.84	Span 1	0.172
Overall MAXimum Envelope	2.07	Span 1	0.190
Overall MAXimum Envelope	2.30	Span 1	0.206
Overall MAXimum Envelope	2.53	Span 1	0.221
Overall MAXimum Envelope	2.76	Span 1	0.235
Overall MAXimum Envelope	2.99	Span 1	0.247
Overall MAXimum Envelope	3.22	Span 1	0.258
Overall MAXimum Envelope	3.45	Span 1	0.266
Overall MAXimum Envelope	3.68	Span 1	0.274
Overall MAXimum Envelope	3.91	Span 1	0.279
Overall MAXimum Envelope	4.14	Span 1	0.283
Overall MAXimum Envelope	4.37	Span 1	0.285
Overall MAXimum Envelope	4.60	Span 1	0.285
Overall MAXimum Envelope	4.83	Span 1	0.284
Overall MAXimum Envelope	5.06	Span 1	0.281
Overall MAXimum Envelope	5.29	Span 1	0.275
Overall MAXimum Envelope	5.52	Span 1	0.269
Overall MAXimum Envelope	5.75	Span 1	0.260
Overall MAXimum Envelope	5.98	Span 1	0.250
Overall MAXimum Envelope	6.21	Span 1	0.238
Overall MAXimum Envelope	6.44	Span 1	0.225
Overall MAXimum Envelope	6.67	Span 1	0.211
Overall MAXimum Envelope	6.90	Span 1	0.195
Overall MAXimum Envelope	7.13	Span 1	0.177
Overall MAXimum Envelope	7.36	Span 1	0.159
Overall MAXimum Envelope	7.59	Span 1	0.139
Overall MAXimum Envelope	7.82	Span 1	0.119
Overall MAXimum Envelope	8.05	Span 1	0.097
Overall MAXimum Envelope	8.28	Span 1	0.075
Overall MAXimum Envelope	8.51	Span 1	0.053
Overall MAXimum Envelope	8.74	Span 1	0.030
Overall MAXimum Envelope	8.97	Span 1	0.007
Overall MAXimum Envelope	9.00	Span 1	0.003
D Only	0.00	Span 1	0.000
D Only	0.23	Span 1	0.008
D Only	0.46	Span 1	0.016
D Only	0.69	Span 1	0.024
D Only	0.92	Span 1	0.031

Title Block Line 1
 You can change this area
 using the "Settings" menu item
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 Title Block" selection.
 Title Block Line 6

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Wood Beam

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DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
D Only	1.15	Span 1	0.039
D Only	1.38	Span 1	0.046
D Only	1.61	Span 1	0.053
D Only	1.84	Span 1	0.059
D Only	2.07	Span 1	0.065
D Only	2.30	Span 1	0.071
D Only	2.53	Span 1	0.076
D Only	2.76	Span 1	0.081
D Only	2.99	Span 1	0.085
D Only	3.22	Span 1	0.088
D Only	3.45	Span 1	0.092
D Only	3.68	Span 1	0.094
D Only	3.91	Span 1	0.096
D Only	4.14	Span 1	0.097
D Only	4.37	Span 1	0.098
D Only	4.60	Span 1	0.098
D Only	4.83	Span 1	0.097
D Only	5.06	Span 1	0.096
D Only	5.29	Span 1	0.095
D Only	5.52	Span 1	0.092
D Only	5.75	Span 1	0.089
D Only	5.98	Span 1	0.086
D Only	6.21	Span 1	0.082
D Only	6.44	Span 1	0.077
D Only	6.67	Span 1	0.072
D Only	6.90	Span 1	0.067
D Only	7.13	Span 1	0.061
D Only	7.36	Span 1	0.055
D Only	7.59	Span 1	0.048
D Only	7.82	Span 1	0.041
D Only	8.05	Span 1	0.033
D Only	8.28	Span 1	0.026
D Only	8.51	Span 1	0.018
D Only	8.74	Span 1	0.010
D Only	8.97	Span 1	0.002
D Only	9.00	Span 1	0.001
+D+Lr	0.00	Span 1	0.000
+D+Lr	0.23	Span 1	0.015
+D+Lr	0.46	Span 1	0.030
+D+Lr	0.69	Span 1	0.045
+D+Lr	0.92	Span 1	0.060
+D+Lr	1.15	Span 1	0.074

Title Block Line 1
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DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+Lr	1.38	Span 1	0.087
+D+Lr	1.61	Span 1	0.101
+D+Lr	1.84	Span 1	0.113
+D+Lr	2.07	Span 1	0.124
+D+Lr	2.30	Span 1	0.135
+D+Lr	2.53	Span 1	0.145
+D+Lr	2.76	Span 1	0.154
+D+Lr	2.99	Span 1	0.162
+D+Lr	3.22	Span 1	0.169
+D+Lr	3.45	Span 1	0.175
+D+Lr	3.68	Span 1	0.180
+D+Lr	3.91	Span 1	0.183
+D+Lr	4.14	Span 1	0.186
+D+Lr	4.37	Span 1	0.187
+D+Lr	4.60	Span 1	0.187
+D+Lr	4.83	Span 1	0.186
+D+Lr	5.06	Span 1	0.184
+D+Lr	5.29	Span 1	0.181
+D+Lr	5.52	Span 1	0.176
+D+Lr	5.75	Span 1	0.171
+D+Lr	5.98	Span 1	0.164
+D+Lr	6.21	Span 1	0.156
+D+Lr	6.44	Span 1	0.148
+D+Lr	6.67	Span 1	0.138
+D+Lr	6.90	Span 1	0.128
+D+Lr	7.13	Span 1	0.116
+D+Lr	7.36	Span 1	0.104
+D+Lr	7.59	Span 1	0.091
+D+Lr	7.82	Span 1	0.078
+D+Lr	8.05	Span 1	0.064
+D+Lr	8.28	Span 1	0.049
+D+Lr	8.51	Span 1	0.035
+D+Lr	8.74	Span 1	0.020
+D+Lr	8.97	Span 1	0.004
+D+Lr	9.00	Span 1	0.002
+D+0.750Lr	0.00	Span 1	0.000
+D+0.750Lr	0.23	Span 1	0.013
+D+0.750Lr	0.46	Span 1	0.027
+D+0.750Lr	0.69	Span 1	0.040
+D+0.750Lr	0.92	Span 1	0.053
+D+0.750Lr	1.15	Span 1	0.065
+D+0.750Lr	1.38	Span 1	0.077

Title Block Line 1
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 Title Block Line 6

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DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+0.750Lr	1.61	Span 1	0.089
+D+0.750Lr	1.84	Span 1	0.099
+D+0.750Lr	2.07	Span 1	0.110
+D+0.750Lr	2.30	Span 1	0.119
+D+0.750Lr	2.53	Span 1	0.128
+D+0.750Lr	2.76	Span 1	0.136
+D+0.750Lr	2.99	Span 1	0.143
+D+0.750Lr	3.22	Span 1	0.149
+D+0.750Lr	3.45	Span 1	0.154
+D+0.750Lr	3.68	Span 1	0.158
+D+0.750Lr	3.91	Span 1	0.161
+D+0.750Lr	4.14	Span 1	0.164
+D+0.750Lr	4.37	Span 1	0.165
+D+0.750Lr	4.60	Span 1	0.165
+D+0.750Lr	4.83	Span 1	0.164
+D+0.750Lr	5.06	Span 1	0.162
+D+0.750Lr	5.29	Span 1	0.159
+D+0.750Lr	5.52	Span 1	0.155
+D+0.750Lr	5.75	Span 1	0.150
+D+0.750Lr	5.98	Span 1	0.145
+D+0.750Lr	6.21	Span 1	0.138
+D+0.750Lr	6.44	Span 1	0.130
+D+0.750Lr	6.67	Span 1	0.122
+D+0.750Lr	6.90	Span 1	0.112
+D+0.750Lr	7.13	Span 1	0.102
+D+0.750Lr	7.36	Span 1	0.092
+D+0.750Lr	7.59	Span 1	0.080
+D+0.750Lr	7.82	Span 1	0.069
+D+0.750Lr	8.05	Span 1	0.056
+D+0.750Lr	8.28	Span 1	0.044
+D+0.750Lr	8.51	Span 1	0.030
+D+0.750Lr	8.74	Span 1	0.017
+D+0.750Lr	8.97	Span 1	0.004
+D+0.750Lr	9.00	Span 1	0.002
+D+0.60W	0.00	Span 1	0.000
+D+0.60W	0.23	Span 1	0.021
+D+0.60W	0.46	Span 1	0.042
+D+0.60W	0.69	Span 1	0.062
+D+0.60W	0.92	Span 1	0.083
+D+0.60W	1.15	Span 1	0.102
+D+0.60W	1.38	Span 1	0.121
+D+0.60W	1.61	Span 1	0.139

Title Block Line 1
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 Title Block Line 6

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DESCRIPTION: 9'canopy rafter at 12" c.c wdown 60psf ult (2x6works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+0.60W	1.84	Span 1	0.156
+D+0.60W	2.07	Span 1	0.172
+D+0.60W	2.30	Span 1	0.187
+D+0.60W	2.53	Span 1	0.200
+D+0.60W	2.76	Span 1	0.213
+D+0.60W	2.99	Span 1	0.224
+D+0.60W	3.22	Span 1	0.233
+D+0.60W	3.45	Span 1	0.241
+D+0.60W	3.68	Span 1	0.248
+D+0.60W	3.91	Span 1	0.253
+D+0.60W	4.14	Span 1	0.256
+D+0.60W	4.37	Span 1	0.258
+D+0.60W	4.60	Span 1	0.259
+D+0.60W	4.83	Span 1	0.257
+D+0.60W	5.06	Span 1	0.254
+D+0.60W	5.29	Span 1	0.250
+D+0.60W	5.52	Span 1	0.244
+D+0.60W	5.75	Span 1	0.236
+D+0.60W	5.98	Span 1	0.227
+D+0.60W	6.21	Span 1	0.216
+D+0.60W	6.44	Span 1	0.204
+D+0.60W	6.67	Span 1	0.191
+D+0.60W	6.90	Span 1	0.176
+D+0.60W	7.13	Span 1	0.161
+D+0.60W	7.36	Span 1	0.144
+D+0.60W	7.59	Span 1	0.126
+D+0.60W	7.82	Span 1	0.108
+D+0.60W	8.05	Span 1	0.088
+D+0.60W	8.28	Span 1	0.068
+D+0.60W	8.51	Span 1	0.048
+D+0.60W	8.74	Span 1	0.027
+D+0.60W	8.97	Span 1	0.006
+D+0.60W	9.00	Span 1	0.003
+D+0.750Lr+0.450W	0.00	Span 1	0.000
+D+0.750Lr+0.450W	0.23	Span 1	0.023
+D+0.750Lr+0.450W	0.46	Span 1	0.046
+D+0.750Lr+0.450W	0.69	Span 1	0.069
+D+0.750Lr+0.450W	0.92	Span 1	0.091
+D+0.750Lr+0.450W	1.15	Span 1	0.113
+D+0.750Lr+0.450W	1.38	Span 1	0.133
+D+0.750Lr+0.450W	1.61	Span 1	0.153
+D+0.750Lr+0.450W	1.84	Span 1	0.172

Title Block Line 1
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 Title Block" selection.
 Title Block Line 6

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DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+0.750Lr+0.450W	2.07	Span 1	0.190
+D+0.750Lr+0.450W	2.30	Span 1	0.206
+D+0.750Lr+0.450W	2.53	Span 1	0.221
+D+0.750Lr+0.450W	2.76	Span 1	0.235
+D+0.750Lr+0.450W	2.99	Span 1	0.247
+D+0.750Lr+0.450W	3.22	Span 1	0.258
+D+0.750Lr+0.450W	3.45	Span 1	0.266
+D+0.750Lr+0.450W	3.68	Span 1	0.274
+D+0.750Lr+0.450W	3.91	Span 1	0.279
+D+0.750Lr+0.450W	4.14	Span 1	0.283
+D+0.750Lr+0.450W	4.37	Span 1	0.285
+D+0.750Lr+0.450W	4.60	Span 1	0.285
+D+0.750Lr+0.450W	4.83	Span 1	0.284
+D+0.750Lr+0.450W	5.06	Span 1	0.281
+D+0.750Lr+0.450W	5.29	Span 1	0.275
+D+0.750Lr+0.450W	5.52	Span 1	0.269
+D+0.750Lr+0.450W	5.75	Span 1	0.260
+D+0.750Lr+0.450W	5.98	Span 1	0.250
+D+0.750Lr+0.450W	6.21	Span 1	0.238
+D+0.750Lr+0.450W	6.44	Span 1	0.225
+D+0.750Lr+0.450W	6.67	Span 1	0.211
+D+0.750Lr+0.450W	6.90	Span 1	0.195
+D+0.750Lr+0.450W	7.13	Span 1	0.177
+D+0.750Lr+0.450W	7.36	Span 1	0.159
+D+0.750Lr+0.450W	7.59	Span 1	0.139
+D+0.750Lr+0.450W	7.82	Span 1	0.119
+D+0.750Lr+0.450W	8.05	Span 1	0.097
+D+0.750Lr+0.450W	8.28	Span 1	0.075
+D+0.750Lr+0.450W	8.51	Span 1	0.053
+D+0.750Lr+0.450W	8.74	Span 1	0.030
+D+0.750Lr+0.450W	8.97	Span 1	0.007
+D+0.750Lr+0.450W	9.00	Span 1	0.003
+D+0.450W	0.00	Span 1	0.000
+D+0.450W	0.23	Span 1	0.018
+D+0.450W	0.46	Span 1	0.035
+D+0.450W	0.69	Span 1	0.053
+D+0.450W	0.92	Span 1	0.070
+D+0.450W	1.15	Span 1	0.086
+D+0.450W	1.38	Span 1	0.102
+D+0.450W	1.61	Span 1	0.117
+D+0.450W	1.84	Span 1	0.132
+D+0.450W	2.07	Span 1	0.145

Title Block Line 1
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 Title Block Line 6

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DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+D+0.450W	2.30	Span 1	0.158
+D+0.450W	2.53	Span 1	0.169
+D+0.450W	2.76	Span 1	0.180
+D+0.450W	2.99	Span 1	0.189
+D+0.450W	3.22	Span 1	0.197
+D+0.450W	3.45	Span 1	0.204
+D+0.450W	3.68	Span 1	0.210
+D+0.450W	3.91	Span 1	0.214
+D+0.450W	4.14	Span 1	0.217
+D+0.450W	4.37	Span 1	0.218
+D+0.450W	4.60	Span 1	0.218
+D+0.450W	4.83	Span 1	0.217
+D+0.450W	5.06	Span 1	0.215
+D+0.450W	5.29	Span 1	0.211
+D+0.450W	5.52	Span 1	0.206
+D+0.450W	5.75	Span 1	0.199
+D+0.450W	5.98	Span 1	0.191
+D+0.450W	6.21	Span 1	0.183
+D+0.450W	6.44	Span 1	0.172
+D+0.450W	6.67	Span 1	0.161
+D+0.450W	6.90	Span 1	0.149
+D+0.450W	7.13	Span 1	0.136
+D+0.450W	7.36	Span 1	0.121
+D+0.450W	7.59	Span 1	0.107
+D+0.450W	7.82	Span 1	0.091
+D+0.450W	8.05	Span 1	0.074
+D+0.450W	8.28	Span 1	0.058
+D+0.450W	8.51	Span 1	0.040
+D+0.450W	8.74	Span 1	0.023
+D+0.450W	8.97	Span 1	0.005
+D+0.450W	9.00	Span 1	0.003
+0.60D+0.60W	0.00	Span 1	0.000
+0.60D+0.60W	0.23	Span 1	0.018
+0.60D+0.60W	0.46	Span 1	0.036
+0.60D+0.60W	0.69	Span 1	0.053
+0.60D+0.60W	0.92	Span 1	0.070
+0.60D+0.60W	1.15	Span 1	0.087
+0.60D+0.60W	1.38	Span 1	0.103
+0.60D+0.60W	1.61	Span 1	0.118
+0.60D+0.60W	1.84	Span 1	0.132
+0.60D+0.60W	2.07	Span 1	0.146
+0.60D+0.60W	2.30	Span 1	0.158

Title Block Line 1
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 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
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Wood Beam

File: wood joist.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+0.60D+0.60W	2.53	Span 1	0.170
+0.60D+0.60W	2.76	Span 1	0.181
+0.60D+0.60W	2.99	Span 1	0.190
+0.60D+0.60W	3.22	Span 1	0.198
+0.60D+0.60W	3.45	Span 1	0.205
+0.60D+0.60W	3.68	Span 1	0.210
+0.60D+0.60W	3.91	Span 1	0.215
+0.60D+0.60W	4.14	Span 1	0.218
+0.60D+0.60W	4.37	Span 1	0.219
+0.60D+0.60W	4.60	Span 1	0.219
+0.60D+0.60W	4.83	Span 1	0.218
+0.60D+0.60W	5.06	Span 1	0.216
+0.60D+0.60W	5.29	Span 1	0.212
+0.60D+0.60W	5.52	Span 1	0.207
+0.60D+0.60W	5.75	Span 1	0.200
+0.60D+0.60W	5.98	Span 1	0.192
+0.60D+0.60W	6.21	Span 1	0.183
+0.60D+0.60W	6.44	Span 1	0.173
+0.60D+0.60W	6.67	Span 1	0.162
+0.60D+0.60W	6.90	Span 1	0.150
+0.60D+0.60W	7.13	Span 1	0.136
+0.60D+0.60W	7.36	Span 1	0.122
+0.60D+0.60W	7.59	Span 1	0.107
+0.60D+0.60W	7.82	Span 1	0.091
+0.60D+0.60W	8.05	Span 1	0.075
+0.60D+0.60W	8.28	Span 1	0.058
+0.60D+0.60W	8.51	Span 1	0.041
+0.60D+0.60W	8.74	Span 1	0.023
+0.60D+0.60W	8.97	Span 1	0.005
+0.60D+0.60W	9.00	Span 1	0.003
+0.60D	0.00	Span 1	0.000
+0.60D	0.23	Span 1	0.005
+0.60D	0.46	Span 1	0.010
+0.60D	0.69	Span 1	0.014
+0.60D	0.92	Span 1	0.019
+0.60D	1.15	Span 1	0.023
+0.60D	1.38	Span 1	0.027
+0.60D	1.61	Span 1	0.032
+0.60D	1.84	Span 1	0.035
+0.60D	2.07	Span 1	0.039
+0.60D	2.30	Span 1	0.042
+0.60D	2.53	Span 1	0.046

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Wood Beam

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Lic. # : KW-06010740

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
+0.60D	2.76	Span 1	0.048
+0.60D	2.99	Span 1	0.051
+0.60D	3.22	Span 1	0.053
+0.60D	3.45	Span 1	0.055
+0.60D	3.68	Span 1	0.056
+0.60D	3.91	Span 1	0.058
+0.60D	4.14	Span 1	0.058
+0.60D	4.37	Span 1	0.059
+0.60D	4.60	Span 1	0.059
+0.60D	4.83	Span 1	0.058
+0.60D	5.06	Span 1	0.058
+0.60D	5.29	Span 1	0.057
+0.60D	5.52	Span 1	0.055
+0.60D	5.75	Span 1	0.054
+0.60D	5.98	Span 1	0.052
+0.60D	6.21	Span 1	0.049
+0.60D	6.44	Span 1	0.046
+0.60D	6.67	Span 1	0.043
+0.60D	6.90	Span 1	0.040
+0.60D	7.13	Span 1	0.037
+0.60D	7.36	Span 1	0.033
+0.60D	7.59	Span 1	0.029
+0.60D	7.82	Span 1	0.024
+0.60D	8.05	Span 1	0.020
+0.60D	8.28	Span 1	0.016
+0.60D	8.51	Span 1	0.011
+0.60D	8.74	Span 1	0.006
+0.60D	8.97	Span 1	0.001
+0.60D	9.00	Span 1	0.001
Lr Only	0.00	Span 1	0.000
Lr Only	0.23	Span 1	0.007
Lr Only	0.46	Span 1	0.014
Lr Only	0.69	Span 1	0.022
Lr Only	0.92	Span 1	0.028
Lr Only	1.15	Span 1	0.035
Lr Only	1.38	Span 1	0.042
Lr Only	1.61	Span 1	0.048
Lr Only	1.84	Span 1	0.054
Lr Only	2.07	Span 1	0.059
Lr Only	2.30	Span 1	0.064
Lr Only	2.53	Span 1	0.069
Lr Only	2.76	Span 1	0.073

Title Block Line 1
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Wood Beam

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Lic. # : KW-06010740

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
Lr Only	2.99	Span 1	0.077
Lr Only	3.22	Span 1	0.081
Lr Only	3.45	Span 1	0.083
Lr Only	3.68	Span 1	0.086
Lr Only	3.91	Span 1	0.087
Lr Only	4.14	Span 1	0.088
Lr Only	4.37	Span 1	0.089
Lr Only	4.60	Span 1	0.089
Lr Only	4.83	Span 1	0.089
Lr Only	5.06	Span 1	0.088
Lr Only	5.29	Span 1	0.086
Lr Only	5.52	Span 1	0.084
Lr Only	5.75	Span 1	0.081
Lr Only	5.98	Span 1	0.078
Lr Only	6.21	Span 1	0.075
Lr Only	6.44	Span 1	0.070
Lr Only	6.67	Span 1	0.066
Lr Only	6.90	Span 1	0.061
Lr Only	7.13	Span 1	0.055
Lr Only	7.36	Span 1	0.050
Lr Only	7.59	Span 1	0.044
Lr Only	7.82	Span 1	0.037
Lr Only	8.05	Span 1	0.030
Lr Only	8.28	Span 1	0.024
Lr Only	8.51	Span 1	0.016
Lr Only	8.74	Span 1	0.009
Lr Only	8.97	Span 1	0.002
Lr Only	9.00	Span 1	0.001
W Only	0.00	Span 1	0.000
W Only	0.23	Span 1	0.022
W Only	0.46	Span 1	0.043
W Only	0.69	Span 1	0.065
W Only	0.92	Span 1	0.085
W Only	1.15	Span 1	0.106
W Only	1.38	Span 1	0.125
W Only	1.61	Span 1	0.144
W Only	1.84	Span 1	0.161
W Only	2.07	Span 1	0.178
W Only	2.30	Span 1	0.193
W Only	2.53	Span 1	0.207
W Only	2.76	Span 1	0.220
W Only	2.99	Span 1	0.232

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Wood Beam

File: wood joist.ec6
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Lic. # : KW-06010740

DESCRIPTION: 9'canopy rafter at12"c.c wdown 60psf ult (2x6works)

Beam Span Deflections at Incremental Locations

Load Type/ Combination	Span Location (ft)	Span ID	Deflection (in)
W Only	3.22	Span 1	0.242
W Only	3.45	Span 1	0.250
W Only	3.68	Span 1	0.257
W Only	3.91	Span 1	0.262
W Only	4.14	Span 1	0.265
W Only	4.37	Span 1	0.267
W Only	4.60	Span 1	0.268
W Only	4.83	Span 1	0.266
W Only	5.06	Span 1	0.263
W Only	5.29	Span 1	0.258
W Only	5.52	Span 1	0.252
W Only	5.75	Span 1	0.244
W Only	5.98	Span 1	0.235
W Only	6.21	Span 1	0.224
W Only	6.44	Span 1	0.211
W Only	6.67	Span 1	0.198
W Only	6.90	Span 1	0.182
W Only	7.13	Span 1	0.166
W Only	7.36	Span 1	0.149
W Only	7.59	Span 1	0.131
W Only	7.82	Span 1	0.111
W Only	8.05	Span 1	0.091
W Only	8.28	Span 1	0.071
W Only	8.51	Span 1	0.049
W Only	8.74	Span 1	0.028
W Only	8.97	Span 1	0.006
W Only	9.00	Span 1	0.003

Title Block Line 1
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 Engineer:
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Masonry Shear Wall

File: shear wall.ec6
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 DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 4' shear wall with 7k wind force

Code References

Calculations per ACI 530-11, IBC 2012, CBC 2013, ASCE 7-10
 Load Combinations Used : ASCE 7-16

General Information

Wall Material	MASONRY	f'm	2.0 ksi	Block Class	
Total Wall Height	15.0 ft	Fy - Rebar	60.0 ksi	Concrete Density	150.0 pcf
Base Wall Length	4.0 ft	Fy - HJR	70.0 ksi	Min. Bending As %	0.00180
R: Resp. Mod Factor	5.0	Em	1,800.0 ksi		
Ie: Seismic Import. Factor	1.0	Phi - Shear	0.80	Phi : Axial & Flexure	0.90

Wall Data

Bottom

Analysis Height	0.00 ft
Wall Offset	(datum) ft
Wall Length	4.0 ft
Effective Length 'd'	40.0 in
Nominal Block Thickness	8.0 in
Solid Grout?	Partial Groute

Reinforcing in Field of Wall

Vertical Bar Size #	5
Vertical Bar Spacing	48 in
Horiz. joint reinf. area (HJR)	in
HJR Spacing	24 in
Bond beam reinf. area	in
Spacing of bond beams	48 in

In each chord cell:

Vertical rebar size #	5
# Chord Cells @ Each End	2.0

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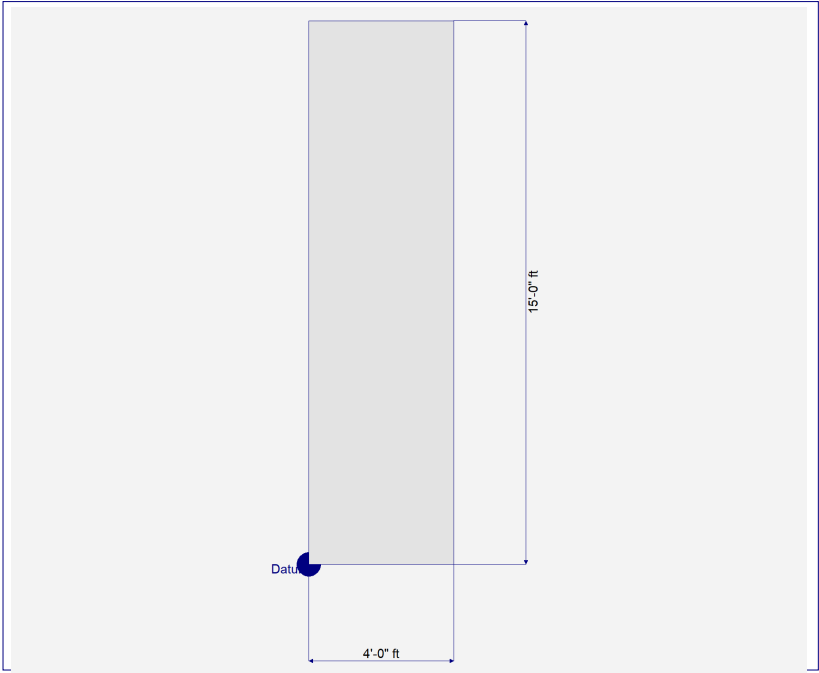
Masonry Shear Wall

File: shear wall.ec6
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Lic. # : KW-06010740

DESCRIPTION: 4' shear wall with 7k wind force

Wall Sketch



Applied Distributed Vertical Loads

Load Location (ft)			Load Magnitude (kips)				
Start Location	End Location	Height of Application	Dead Load	Roof Live Load	Live Load	Snow Load	Earth Load
0.0	4.0	13.0	0.280	0.270	0.0	0.0	0.0

Applied Concentrated Lateral Loads

Load "Y" Location (ft)		Load Magnitude (kips)					
Dead Load	Roof Live Load	Floor Live Load	Wind Load	Seismic Load	Earth Load		
15.0	0.0	0.0	0.0	7.0	0.0	0.0	

SHEAR ANALYSIS

Special Boundary		Bottom Level
Elements Req'd?		Not Req'd
Vu : Story Shear		7.0 k
for Load Combination		+1.20D+0.50Lr+W
Controlling Mu/(Vud)		1.00
Vn Masonry		32.645 k
Vn Steel		0.0 k
Vn Masonry + Vn Steel		32.645 k
Vn Max		42.503 k
Phi Vn		26.116 k
Ratio: Vu/PhiVn (controlling)		0.2680
Vertical As >= Av/3		OK
Vertical Bar Spacing <= 96"		OK

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Masonry Shear Wall

File: shear wall.ec6
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 DDA Engineers, P.A.

Lic. #: KW-06010740

DESCRIPTION: 4' shear wall with 7k wind force

AXIAL ANALYSIS

Bottom Level

H / d Ratio 4.50
 Pu 3.072 k
 for Load Combination +1.20D+1.60Lr
 Phi Pn +1.20D+1.60Lr k
 Ratio: Pu/PhiPn (controlling) 0.006486

BENDING ANALYSIS

Bottom Level

"a" : Flexural compression 3.05 in
 Length of defined chord zone
 is >= the "a" dimension or the
 masonry (the compression zone) OK
 "d" : Eff depth to tension reinf 40.0
 As-flex < As-max ? 0.620 <= 3.604
 Mu 105.0 k
 for Load Combination +1.20D+0.50Lr+W
 Phi Mn 107.346 k
 Ratio: Mu/PhiMn (controlling) 0.9781

Force Summary

Load Combination Wall Level	Values for Wall section			Resultant Ecc (ft)	Overturning Ratio	Uplift (k)	
	Vu (k)	Mu (k)	Pu (k)			Left	Right
+1.40D							
Wall Level : 1			1.568				
+1.20D+0.50Lr							
Wall Level : 1			1.884				
+1.20D							
Wall Level : 1			1.344				
+1.20D+1.60Lr							
Wall Level : 1			3.072				
+1.20D+1.60Lr+0.50W							
Wall Level : 1	3.500	52.500	3.072	17.090	0.117	13.907	13.907
+1.20D+1.60Lr-0.50W							
Wall Level : 1	3.500	52.500	3.072	17.090	0.117	13.907	13.907
+1.20D+0.50W							
Wall Level : 1	3.500	52.500	1.344	39.063	0.051	14.944	14.944
+1.20D-0.50W							
Wall Level : 1	3.500	52.500	1.344	39.063	0.051	14.944	14.944
+1.20D+0.50Lr+W							
Wall Level : 1	7.000	105.000	1.884	55.732	0.036	30.370	30.370
+1.20D+0.50Lr-W							
Wall Level : 1	7.000	105.000	1.884	55.732	0.036	30.370	30.370
+1.20D+W							
Wall Level : 1	7.000	105.000	1.344	78.125	0.026	30.694	30.694
+1.20D-W							
Wall Level : 1	7.000	105.000	1.344	78.125	0.026	30.694	30.694
+0.90D+W							
Wall Level : 1	7.000	105.000	1.008	104.167	0.019	30.895	30.895
+0.90D-W							

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Masonry Shear Wall

File: shear wall.ec6
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Lic. # : KW-06010740

DESCRIPTION: 4' shear wall with 7k wind force

Force Summary

Load Combination Wall Level	Values for Wall section			Resultant Ecc (ft)	Overturning Ratio	Uplift (k)	
	Vu (k)	Mu (k)	Pu (k)			Left	Right
Wall Level : 1	7.000	105.000	1.008	104.167	0.019	30.895	30.895
+0.90D							
Wall Level : 1			1.008				

Footing Information

Footing Dimensions

Dist. Left	5.0 ft	f _c	3.0 ksi	Rebar Cover	3.0 in
Wall Length	4.0 ft	F _y	60.0 ksi	Footing Thickness	24.0 in
Dist. Right	5.0 ft			Width	3.0 ft
Total Ftg Length	14.0 ft				

Max Factored Soil Pressures

@ Left Side of Footing	1,762,175 psf
.... governing load comb	+1.20D+0.50Lr-W
@ Right Side of Footing	1,762,175 psf
.... governing load comb	+1.20D+0.50Lr+W

Max UNfactored Soil Pressures

@ Left Side of Footing	352.405 psf
.... governing load comb	+D+Lr
@ Right Side of Footing	1,697.44 psf
.... governing load comb	+D+0.60W

Footing One-Way Shear Check...

vu @ Left End of Footing	26.463 psi
vu @ Right End of Footing	14.059 psi
vn * phi : Allowable	93.113 psi

Overturning Stability...

Overturning Moment	71.40 k-ft
Resisting Moment	47.040 k-ft
Stability Ratio	0.6588 : 1
.... governing load comb	+0.60D+0.60W

@ Left End of Ftg

Overturning Moment	71.40 k-ft
Resisting Moment	47.040 k-ft
Stability Ratio	0.6588 : 1
.... governing load comb	+0.60D+0.60W

@ Right End of Ftg

Overturning Moment	71.40 k-ft
Resisting Moment	47.040 k-ft
Stability Ratio	0.6588 : 1
.... governing load comb	+0.60D+0.60W

Footing Bending Design...

Mu	84.990 k-ft
Ru	71.378 psi
As % Req'd	0.00180 in^2
As Req'd in Footing Width	1.555 in^2

@ Left End

Mu	84.990 k-ft
Ru	71.378 psi
As % Req'd	0.00180 in^2
As Req'd in Footing Width	1.555 in^2

@ Right End

Mu	34.596 k-ft
Ru	29.055 psi
As % Req'd	0.00180 in^2
As Req'd in Footing Width	1.555 in^2

Title Block Line 1
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Masonry Slender Wall

File: shear wall.ec6
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DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 16 feet wall 7@24 works zone 4

Code References

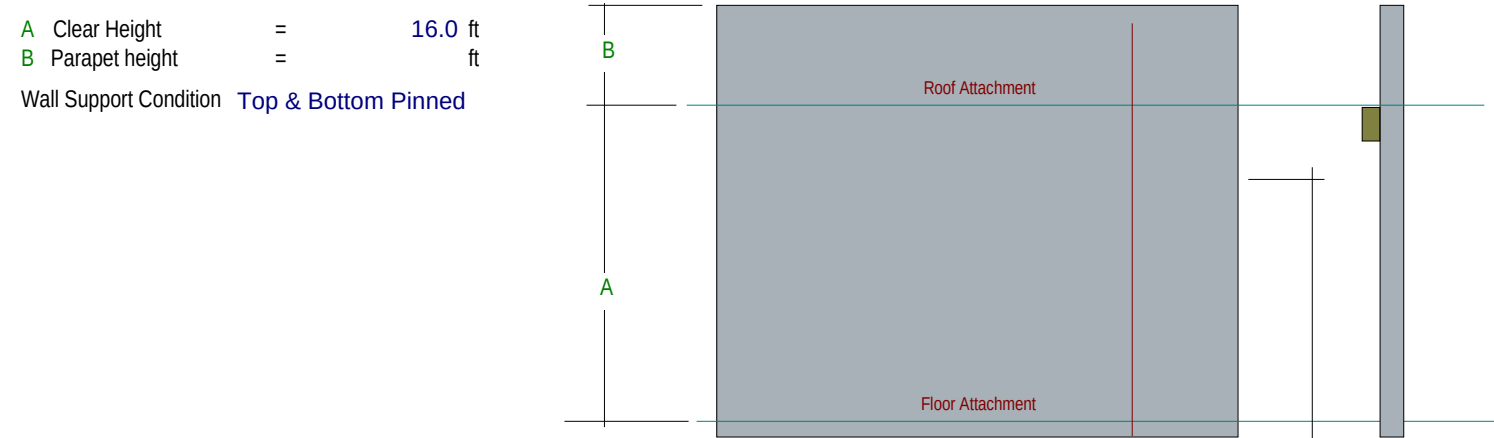
Calculations per ACI 530-11, IBC 2012, CBC 2013, ASCE 7-10
Load Combinations Used : ASCE 7-16

General Information

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

Construction Type : Grouted Hollow Concrete Masonry										
F'm	=	2.0	ksi	Nom. Wall Thickness	8	in	Temp Diff across thickness	=		deg F
Fy - Yield	=	60.0	ksi	Actual Thickness	7.625	in	Min Allow Out-of-plane Defl Ratio	=	0.0	
Fr - Rupture	=	111.0	psi	Rebar "d" distance	3.8125	in				
Em = f'm *	=	1,800.0		Lower Level Rebar . . .			Minimum Vertical Steel %	=	0.0020	
Max % of ρ bal.	=	0.01185		Bar Size	#	7				
Grout Density	=	140	pcf	Bar Spacing		24	in			
Block Weight	Normal Weight									
Wall Weight	=	61.0	psf							
Wall is grouted at rebar cells only										

One-Story Wall Dimensions



Vertical Loads

Vertical Uniform Loads . . . (Applied per foot of Strip Width)		DL : Dead	Lr : Roof Live	Lf : Floor Live	S : Snow	W : Wind
Ledger Load	Eccentricity	0.10				k/ft
Concentric Load						k/ft

Lateral Loads

Wind Loads :		Seismic Loads :	
Full area WIND load	66.0 psf	Wall Weight Seismic Load Input Method :	Direct entry of Lateral Wall Weight
		Seismic Wall Lateral Load	psf
		Fp	1.0 = 0.0 psf

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Masonry Slender Wall

File: shear wall.ec6
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Lic. # : KW-06010740

DESCRIPTION: 16 feet wall 7@24 works zone 4

DESIGN SUMMARY

Results reported for "Strip Width" of 12.0 in

Governing Load Combination . . .		Actual Values . . .		Allowable Values . . .	
PASS	Moment Capacity Check +0.90D+W	Maximum Bending Stress Ratio = 0.5017			
		Max Mu	2.142 k-ft	Phi * Mn	4.269 k-ft
PASS	Service Deflection Check W Only	Actual Defl. Ratio L/	241	Allowable Defl. Ratio	240.0
		Max. Deflection	0.7969 in		
PASS	Axial Load Check +1.20D+W	Max Pu / Ag	11.933 psi	Max. Allow. Defl.	0.80 in
		Location	7.733 ft	0.2 * f'm	400.0 psi
PASS	Reinforcing Limit Check				
		Actual As/bd	0.006557	Max Allow As/bd	0.01186
Maximum Reactions . . . for Load Combination....					
		Top Horizontal	W Only		0.5280 k
		Base Horizontal	W Only		0.5280 k
		Vertical Reaction	+D+0.60W		1.076 k

Design Maximum Combinations - Moments

Results reported for "Strip Width" = 12 in.

Load Combination	Axial Load		Mcr k-ft	Mu k-ft	Moment Values			As Ratio	0.6 * rho bal
	Pu k	0.2*f'm*b*t k			Phi	Phi Mn k-ft	As in^2		
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000
+1.20D+0.50W at 7.47 to 8.00	0.745	24.960	0.86	1.06	0.90	4.32	0.300	0.0066	0.0116
+1.20D+W at 7.47 to 8.00	0.745	24.960	0.86	2.16	0.90	4.32	0.300	0.0066	0.0116
+0.90D+W at 7.47 to 8.00	0.558	24.960	0.86	2.14	0.90	4.28	0.300	0.0066	0.0117
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000

Design Maximum Combinations - Deflections

Results reported for "Strip Width" = 12 in.

Load Combination	Axial Load Pu k	Moment Values		I gross in^4	Stiffness		Deflections	
		Mcr k-ft	Mactual k-ft		I cracked in^4	I effective in^4	Deflection in	Defl. Ratio
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
+D+0.60W at 7.47 to 8.00	0.621	0.86	1.28	353.60	23.70	26.268	0.257	748.2
+D+0.450W at 7.47 to 8.00	0.621	0.86	0.95	353.60	23.70	36.942	0.065	2,936.5
+0.60D+0.60W at 7.47 to 8.00	0.372	0.86	1.27	353.60	23.45	26.036	0.256	750.5
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
W Only at 8.00 to 8.53	0.000	0.86	2.11	353.60	23.07	23.463	0.797	240.9
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0

Reactions - Vertical & Horizontal

Load Combination	Base Horizontal	Top Horizontal	Vertical @ Wall Base
D Only	0.0 k	0.00 k	1.076 k
+D+0.60W	0.3 k	0.32 k	1.076 k
+D+0.450W	0.2 k	0.24 k	1.076 k
+0.60D+0.60W	0.3 k	0.32 k	0.646 k
+D+0.70E	0.0 k	0.00 k	1.076 k
+D+0.5250E	0.0 k	0.00 k	1.076 k
+0.60D+0.70E	0.0 k	0.00 k	0.646 k
W Only	0.5 k	0.53 k	0.000 k

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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID:
Project Descr:

Printed: 19 NOV 2024, 9:48AM

Masonry Slender Wall

File: shear wall.ec6
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DDA Engineers, P.A.

Lic. # : KW-06010740

DESCRIPTION: 16 feet wall 7@24 works zone 4

E Only	0.0 k	0.00 k	0.000 k
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Title Block Line 1
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and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID:
Project Descr:

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Masonry Slender Wall

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DESCRIPTION: 11 feet wall 5@48 works zone 4&5

Code References

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

Load Combinations Used : ASCE 7-16

General Information

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

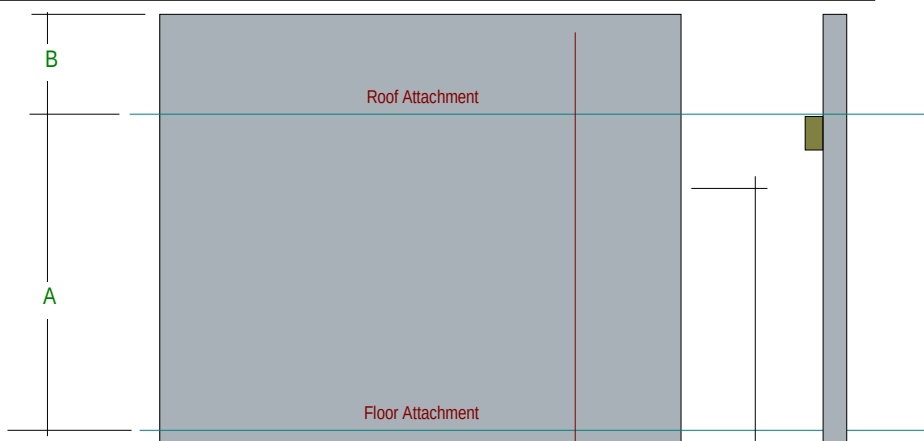
Construction Type : Grouted Hollow Concrete Masonry

F'm	=	2.0	ksi	Nom. Wall Thickness	8	in	Temp Diff across thickness	=		deg F
Fy - Yield	=	60.0	ksi	Actual Thickness	7.625	in	Min Allow Out-of-plane Defl Ratio	=	0.0	
Fr - Rupture	=	97.0	psi	Rebar "d" distance	3.8125	in	Minimum Vertical Steel %	=	0.0020	
Em = f'm *	=	1,800.0		Lower Level Rebar . . .						
Max % of ρ bal.	=	0.01186		Bar Size	#	5				
Grout Density	=	140	pcf	Bar Spacing		48	in			
Block Weight		Normal Weight								
Wall Weight	=	55.0	psf							

Wall is grouted at rebar cells only

One-Story Wall Dimensions

A Clear Height	=	11.0	ft
B Parapet height	=		ft
Wall Support Condition	Top & Bottom Pinned		



Vertical Loads

Vertical Uniform Loads . . . (Applied per foot of Strip Width)

Ledger Load	Eccentricity	in	DL : Dead	Lr : Roof Live	Lf : Floor Live	S : Snow	W : Wind
Concentric Load			0.10				k/ft k/ft

Lateral Loads

Wind Loads :

Full area WIND load 74.0 psf

Seismic Loads :

Wall Weight Seismic Load Input Method :

Seismic Wall Lateral Load

Direct entry of Lateral Wall Weight

psf

Fp 1.0 = 0.0 psf

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 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
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Masonry Slender Wall

Lic. # : KW-06010740

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DESCRIPTION: 11 feet wall 5@48 works zone 4&5

DESIGN SUMMARY

Results reported for "Strip Width" of 12.0 in

Governing Load Combination . . .		Actual Values . . .		Allowable Values . . .	
PASS	Moment Capacity Check +0.90D+W	Maximum Bending Stress Ratio = 0.8925			
		Max Mu	1.127 k-ft	Phi * Mn	1.262 k-ft
PASS	Service Deflection Check W Only	Actual Defl. Ratio L/	360	Allowable Defl. Ratio	240.0
		Max. Deflection	0.3669 in		
PASS	Axial Load Check +1.20D+W	Max Pu / Ag	9.188 psi	Max. Allow. Defl.	0.550 in
		Location	5.317 ft	0.2 * f'm	400.0 psi
PASS	Reinforcing Limit Check				
		Actual As/bd	0.001694	Max Allow As/bd	0.01186
		Maximum Reactions . . . for Load Combination....			
		Top Horizontal	W Only		0.4070 k
		Base Horizontal	W Only		0.4070 k
		Vertical Reaction	D Only		0.7050 k

Design Maximum Combinations - Moments

Results reported for "Strip Width" = 12 in.

Load Combination	Axial Load		Mcr k-ft	Mu k-ft	Moment Values			As Ratio	0.6 * rho bal
	Pu k	0.2*f'm*b*t k			Phi	Phi Mn k-ft	As in^2		
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000
+1.20D+0.50W at 5.13 to 5.50	0.507	22.080	0.70	0.56	0.90	1.30	0.078	0.0017	0.0117
+1.20D+W at 5.13 to 5.50	0.507	22.080	0.70	1.13	0.90	1.30	0.078	0.0017	0.0117
+0.90D+W at 5.13 to 5.50	0.380	22.080	0.70	1.13	0.90	1.27	0.078	0.0017	0.0118
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000

Design Maximum Combinations - Deflections

Results reported for "Strip Width" = 12 in.

Load Combination	Axial Load Pu k	Moment Values		I gross in^4	Stiffness		Deflections	
		Mcr k-ft	Mactual k-ft		I cracked in^4	I effective in^4	Deflection in	Defl. Ratio
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
+D+0.60W at 5.13 to 5.50	0.423	0.70	0.67	331.10	7.89	331.100	0.012	10,774.7
+D+0.450W at 5.13 to 5.50	0.423	0.70	0.50	331.10	7.89	331.100	0.009	14,366.3
+0.60D+0.60W at 5.13 to 5.50	0.254	0.70	0.67	331.10	7.66	331.100	0.012	10,777.3
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
W Only at 5.50 to 5.87	0.000	0.70	1.12	331.10	7.30	7.935	0.367	359.8
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0

Reactions - Vertical & Horizontal

Load Combination	Base Horizontal	Top Horizontal	Vertical @ Wall Base
D Only	0.0 k	0.00 k	0.705 k
+D+0.60W	0.2 k	0.24 k	0.705 k
+D+0.450W	0.2 k	0.18 k	0.705 k
+0.60D+0.60W	0.2 k	0.24 k	0.423 k
+D+0.70E	0.0 k	0.00 k	0.705 k
+D+0.5250E	0.0 k	0.00 k	0.705 k
+0.60D+0.70E	0.0 k	0.00 k	0.423 k
W Only	0.4 k	0.41 k	0.000 k

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Title Block Line 6

Project Title:
Engineer:
Project ID:
Project Descr:

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Masonry Slender Wall

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Lic. # : KW-06010740

DESCRIPTION: 11 feet wall 5@48 works zone 4&5

E Only	0.0 k	0.00 k	0.000 k
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10 Wall Partially Grouted. For 8" and 12" thick Block Walls.

NBV		Date: 10/17/2024 9:21	
		Design by: yr	

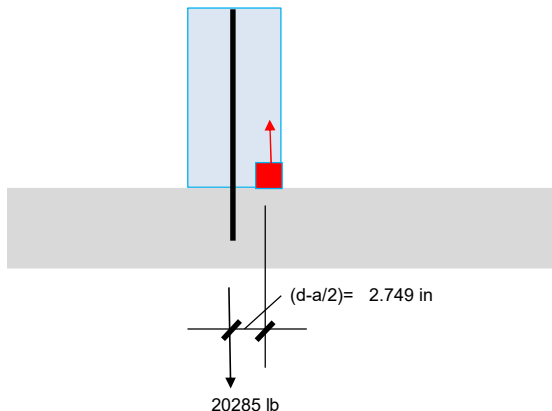
Reinforcing			ACI 530-11
4th floor 12ft jamb for 3.5ft opening zone5(semienclosed)			
400 lb/ft	Mparapet=	8448	Tie Column width ft 2.00
0 lb/ft	Mwall=	2112	
6969.6 lb-ft/ft	M jamb=	6970	Wind Pr [psf]= 66 psf ultimate
84.0 lb/ft2	M jamb Triang=	4646	
2000.0 psi	M Trapezoid	6873	Fs [psi]= 32000
1800 ksi	M general window	6970	Es [ksi]= 29000
192 in			Bar # = 6
8 in			Spacing [in]= 8
91.5 in2/ft			3 As [in2/ft]= 0.66
443 in4 / ft			b [in]= 12
116 in3/ ft			d [in]= 3.81
2 in			h/r = 87.67
60 ksi			n = 16.11
2.61			φ = 0.90
1689.94			Fr = 163.0 psi
2.1227			Ag= 91.50
			H'/t= 24

nts for Out-of-Plane Design	
1387.2 lb / ft	Only 1. or 2. Must be satisfied
Pu < 9150.0	
9150.0 < Pu < 36600	
OK	

Inertia Calculation	
n(As+Pu/fy)((d-c)^2)+(bc^3)/3	
86.56 in^4	86.58460064

ith Moment Magnification Factor	
$P_e = \frac{\pi^2 E_m I_{eff}}{h^2}$ Euler bucking load 41.7 k	$P_w = \gamma_w \left(\frac{h}{2} + 1 \text{ ft} \right) b$ 756 lb/ft
$\psi = \frac{1}{1 - \frac{P_u}{P_e}}$ Moment magnifier 1.02558	$P = P_w + P_f =$ 1156 lb/ft
$\psi * M$ 7147.9 Lb - ft / ft	$P_u = 0.9(P_w + P_f)$ 1040 lb/ft

Moment.	
$(As * f_y + Pu / \phi) (d - a / 2)$ 9335.317 Lb - ft / ft	$M_n = A_s f_y \left(d - \frac{a}{2} \right)$
8401.786 Lb - ft / ft	Mu= 0.851
OK	



10 Wall Partially Grouted. For 8" and 12" thick Block Walls.

NBV		Date: 10/17/2024 9:10	
		Design by: yr	

Reinforcing			ACI 530-11
4th floor 12ft jamb for 3.5ft opening zone5(semienclosed)			
400 lb/ft	Mparapet=	8448	Tie Column width ft
0 lb/ft	Mwall=	2112	
7669.9 lb-ft/ft	M jamb=	7670	1.33
84.0 lb/ft ²	M jamb Triang=	5113	
2000.0 psi	M Trapezoid	7642	
1800 ksi	M general window	7670	
192 in			
8 in			
91.5 in/2 ft			
443 in/4 ft			
116 in/3 ft			
2 in			
60 ksi			
2.61			
1689.94			
2.1227			

Wind Pr [psf]=	66 psf ultimate	
Fs [psi]=	32000	
Es [ksi]=	29000	
Bar # =	6	Wall Reb Sp(in)
Spacing [in]=	8	48
3 As [in/ft]=	0.66	trapz udl
b [in]=	12	74.4
d [in]=	3.81	rect udl
h/r =	87.67	165.2
n =	16.11	239.7
φ =	0.90	Eq. W. Prss.udl per ft
Fr =	163.0 psi	239.7
Ag=	91.50	Eq udl [plf]
H'/t=	24	318.8

nts for Out-of-Plane Design	
1387.2 lb / ft	Only 1. or 2. Must be satisfied
Pu < 9150.0	
9150.0 < Pu < 36600	
OK	

Inertia Calculation	
n(As+Pu/fy)((d-c)^2)+(bc^3)/3	
86.56 in^4	86.58460064

ith Moment Magnification Factor	
$P_e = \frac{\pi^2 E_m I_{eff}}{h^2}$ $\psi = \frac{1}{1 - \frac{P_u}{P_e}}$ $\psi^* M$	$P_w = \gamma_w \left(\frac{h}{2} + 1 \text{ ft} \right) b$ $P = P_w + P_f$ $P_u = 0.9(P_w + P_f)$
Euler bucking load 41.7 k Moment magnifier 1.02558 7866.1 Lb - ft / ft	756 lb/ft 1156 lb/ft 1040 lb/ft

Moment.	
$M_n = A_s f_y \left(d - \frac{a}{2} \right)$	
(As*fy+Pu/φ)(d-a/2) 9335.317 Lb - ft / ft	Mu= 0.936
8401.786 Lb - ft / ft	
OK	

