

SCE
STERLING CONSULTING ENGINEERS

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[Handwritten signature]
12/12/2017

Structural Calculations

ON

GOLDEN APARTMENTS
CONVERSION FROM TOWNHOMES TO FLATS

@

2312 N. GOLDEN AVE.
SAN BERNARDINO, CA 92404

(SCE JOB # 122017)
(December 11, 2017)

BB00173



COMPANY

PROJECT
GOLDEN APARTMENTS
NEW HDR @ ACCESSIBLE
GOLDEN APTS. Beam1.wwb

Dec. 10, 2017 18:37

BM # 1

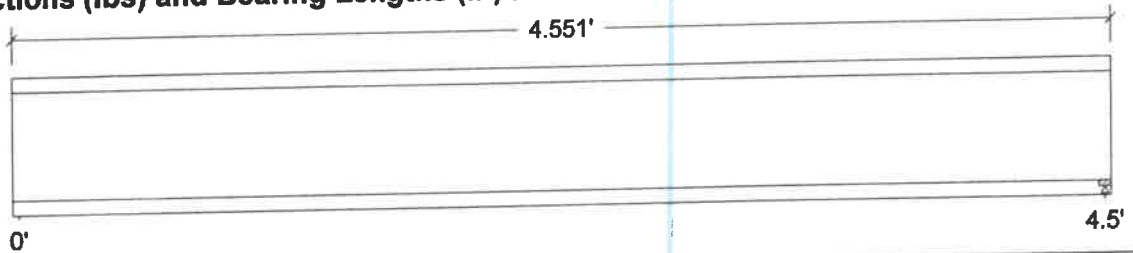
Design Check Calculation Sheet
WoodWorks Sizer 11.1

Sheet #: B-2

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
FLOOR DEAD	Dead	Full UDL			165.0	plf
FLOOR LIVE	Live	Full UDL			350.0	plf
WALL	Dead	Full UDL			80.0	plf
Self-weight	Dead	Full UDL			4.6	plf

Maximum Reactions (lbs) and Bearing Lengths (in) :



Unfactored:				562
Dead	562			788
Live	788			
Factored:				1349
Total	1349			
Bearing:				0.62
Length	0.62			0.62
Min req'd	0.62			

Lumber-soft, D.Fir-L, No.2, 4x6 (3-1/2"x5-1/2")

Supports: All - Non-wood

Total length: 4.55'; Clear span: 4.449'; volume = 0.6 cu.ft.

Lateral support: top= full, bottom= full;

Analysis vs. Allowable Stress and Deflection using NDS 2015 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$f_v = 83$	$F_v' = 180$	psi	$f_v/F_v' = 0.46$
Bending(+)	$f_b = 1032$	$F_b' = 1170$	psi	$f_b/F_b' = 0.88$
Live Defl'n	$0.04 = <L/999$	$0.15 = L/360$	in	0.28
Total Defl'n	$0.09 = L/627$	$0.23 = L/240$	in	0.38

Design Notes:

- WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2015), the National Design Specification (NDS 2015), and NDS Design Supplement.
- Please verify that the default deflection limits are appropriate for your application.
- Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.



COMPANY

PROJECT
 GOLDEN APTS.
 NEW HDR @ ACCESSIBLE
 COMMUNITY ROOM
 GOLDEN APTS. Beam2.wwb

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B n + 2

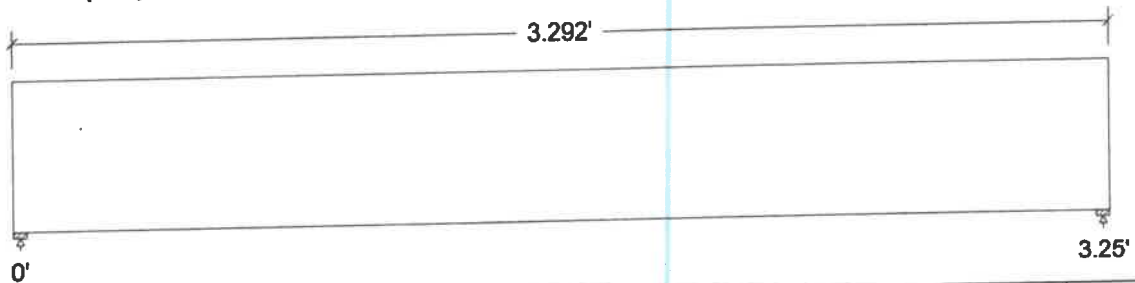
Design Check Calculation Sheet
 WoodWorks Sizer 11.1

Sheet: # B-3

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
FLOOR DEAD	Dead	Full UDL			165.0	plf
FLOOR LIVE	Live	Full UDL			350.0	plf
WALL	Dead	Full UDL			80.0	plf
Self-weight	Dead	Full UDL			4.6	plf

Maximum Reactions (lbs) and Bearing Lengths (in) :



Unfactored:					
Dead	406				406
Live	569				569
Factored:					
Total	974				974
Bearing:					
Length	0.50*				0.50*
Min req'd	0.50*				0.50*

calc 4x6

*Minimum bearing length setting used: 1/2" for end supports

Lumber-soft, D.Fir-L, No.2, 4x6 (3-1/2"x5-1/2")
 Supports: All - Non-wood
 Total length: 3.29'; Clear span: 3.208'; volume = 0.4 cu.ft.
 Lateral support: top= at supports, bottom= at supports;

Analysis vs. Allowable Stress and Deflection using NDS 2015 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$f_v = 54$	$F_v' = 180$	psi	$f_v/F_v' = 0.30$
Bending (+)	$f_b = 538$	$F_b' = 1170$	psi	$f_b/F_b' = 0.46$
Live Defl'n	$0.01 = <L/999$	$0.11 = L/360$	in	0.10
Total Defl'n	$0.02 = <L/999$	$0.16 = L/240$	in	0.14

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2015), the National Design Specification (NDS 2015), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.



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PROJECT
GOLDEN APARTMENTS
NEW HDR @ ACCESSIBLE
GOLDEN APTS. Beam3.wvb

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Beam 3

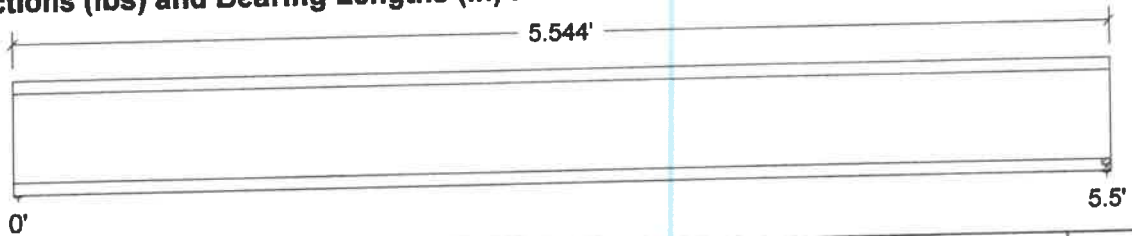
Design Check Calculation Sheet
WoodWorks Sizer 11.1

Sheet: # B-4

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
ROOF D	Dead	Full UDL			160.0	plf
ROOF L	Roof live	Full UDL			180.0	plf
WALL	Dead	Full UDL			80.0	plf
Self-weight	Dead	Full UDL			4.6	plf

Maximum Reactions (lbs) and Bearing Lengths (in) :



Unfactored:				673
Dead	673			495
Roof Live	495			
Factored:				1168
Total	1168			
Bearing:				0.53
Length	0.53			0.53
Min req'd	0.53			

Lumber-soft, D.Fir-L, No.2, 4x6 (3-1/2"x5-1/2")

Supports: All - Non-wood

Total length: 5.54'; Clear span: 5.456'; volume = 0.7 cu.ft.

Lateral support: top= full, bottom= full;

Analysis vs. Allowable Stress and Deflection using NDS 2015 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$f_v = 75$	$F_v' = 180$	psi	$f_v/F_v' = 0.42$
Bending(+)	$f_b = 1092$	$F_b' = 1170$	psi	$f_b/F_b' = 0.93$
Live Defl'n	$0.05 = <L/999$	$0.18 = L/360$	in	0.26
Total Defl'n	$0.15 = L/455$	$0.28 = L/240$	in	0.53

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2015), the National Design Specification (NDS 2015), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.



COMPANY

PROJECT
 GOLDEN APARTMENTS
 ALT. FLOOR JOISTS @ ACCESSIBLE
 GOLDEN APTS. Beam3A.wwb

Dec. 10, 2017 18:47

Bm @ 3 ALT

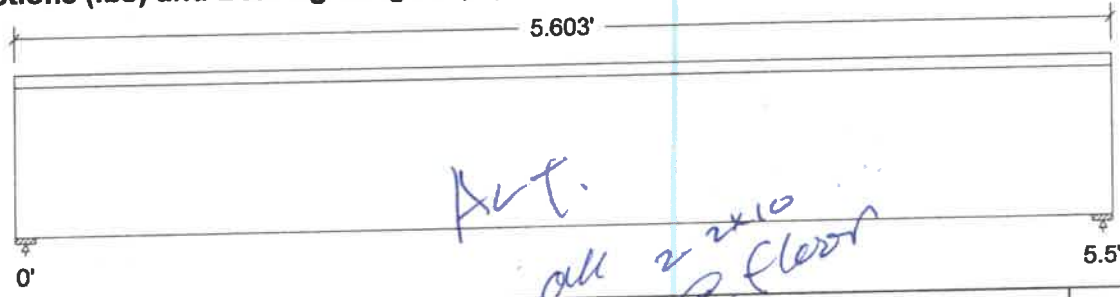
Design Check Calculation Sheet
 WoodWorks Sizer 11.1

Sheet #: B-5

Loads:

Load	Type	Distribution	Pat-tern	Location [ft]		Magnitude		Unit
				Start	End	Start	End	
ROOF D	Dead	Full UDL				160.0		plf
ROOF L	Roof live	Full UDL				180.0		plf
WALL	Dead	Full UDL				80.0		plf
Self-weight	Dead	Full UDL				3.3		plf

Maximum Reactions (lbs) and Bearing Lengths (in) :



Unfactored:				669
Dead	669			495
Roof Live	495			
Factored:				1164
Total	1164			
Bearing:				1.24
Length	1.24			1.24
Min req'd	1.24			

Lumber-soft, D.Fir-L, No.2, 2x10 (1-1/2"x9-1/4")

Supports: All - Non-wood

Floor joist spaced at 16.0" c/c; Total length: 5.6'; Clear span: 5.397'; volume = 0.5 cu.ft.

Lateral support: top= full, bottom= at supports; Repetitive factor: applied where permitted (refer to online help);

Analysis vs. Allowable Stress and Deflection using NDS 2015 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$f_v = 88$	$F_v' = 180$	psi	$f_v/F_v' = 0.49$
Bending(+)	$f_b = 898$	$F_b' = 1138$	psi	$f_b/F_b' = 0.79$
Live Defl'n	$0.02 = <L/999$	$0.18 = L/360$	in	0.13
Total Defl'n	$0.07 = L/931$	$0.28 = L/240$	in	0.26

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2015), the National Design Specification (NDS 2015), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.