

SCAN

BDG

BENTHIN DESIGN GROUP LLC
RESIDENTIAL STRUCTURAL CONSULTANTS
plans@bendg.com
http://www.bendg.com

PO BOX 42
BEAVERCREEK, OREGON 97004
503-632-2862
1-800-698-9144

JANUARY 2017

CALCULATIONS: BEAM (GRAVITY LOAD) CALCULATIONS

CODE REFERENCE: 2014 ORSC – OREGON RESIDENTIAL SPECIALTY CODE

PROJECT NAME: FIRE – ADAMS RESIDENCE (FIRE RESTORATION & REMODEL)

PROJECT ADDRESS: 27 NE COOK STREET, PORTLAND OREGON 97212
MULTNOMAH COUNTY

PLAN NO.: RESIDENTIAL RESTORATION (FIRE DAMAGE)

PROJECT NO.: 2016-7226

SEISMIC DESIGN CATEGORY: D1

WIND SPEED: 95 MPH (3 SECOND GUSTS)

EXPOSURE: B (95 MPH WIND SPEED)

SITE ELEVATION: 186' ABOVE SEA LEVEL (APPROXIMATELY)

LOAD SPECIFICATIONS: LIVE LOADS

ROOF	25 PSF (SNOW LOAD)
ATTIC WITH STORAGE	20 PSF
ATTIC WITHOUT STORAGE	10 PSF
EXTERIOR BALCONIES	7 PSF
DECKS	40 PSF
LIVING AREAS	40 PSF
SLEEPING AREAS	30 PSF
GUARDRAILS/HANDRAILS	200 PSF
STAIRS	40 PSF

SOIL BEARING CAPACITY 1500 PSF ASSUMED
FROST DEPTH 18" (MULTNOMAH COUNTY)

LUMBER GRADES & SPECIES: FRAMING MEMBERS

WALLS: STUD GRADE OR BETTER
CEILING/FLOOR JOIST: DF/HF #2 OR BETTER
DECK MATERIALS: HF #2 OR BETTER; PRESSURE TREATED, CEDAR OR CERTIFIED
OUTDOOR WOOD.

RECEIVED
MAR 31 2017
BDS
DOCUMENT SERVICES

17-126902RS

FIRE_RILEY FIRE RESTORATION

UPPER FLOOR WINDOW HEADERS

MEMBER 1

Date: 3/25/17

Selection

4x 6 DF-L #2

Lu = 0.0 Ft

Conditions

NDS 2012

Min Bearing Area R1= 2.1 in² R2= 2.1 in² (1.5) DL Defl= 0.10 in

Data

Beam Span	4.5 ft				
Beam Wt per ft	4.68 #	Reaction 1 TL	1286 #	Reaction 2 TL	1286 #
Bm Wt Included	21 #	Maximum V	1286 #		
Max Moment	1447 #	Max V (Reduced)	1024 #		
TL Max Defl	L / 240	TL Actual Defl	L / 531		

Attributes

Section (in³) Shear (in²) TL Defl (in)

Actual	17.65	19.25	0.10
Critical	14.84	8.54	0.23
Status	OK	OK	OK
Ratio	84%	44%	45%

Values

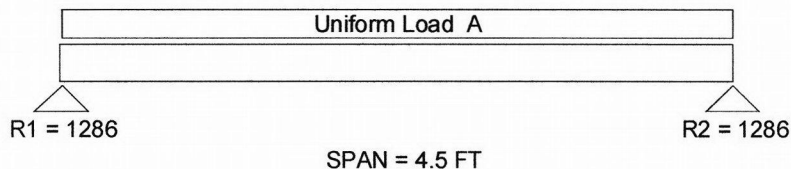
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc _⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625

Adjustments

CF Size Factor	1.300			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Uniform TL: 567 = A



Uniform and partial uniform loads are lbs per lineal ft.

FIRE_RILEY FIRE RESTORATION

UPPER FLOOR HEADER

MEMBER 2

Date: 3/25/17

Selection**4x 8 DF-L #2**

Lu = 0.0 Ft

Conditions

NDS 2012

Min Bearing Area R1= 4.5 in² R2= 2.9 in² (1.5) DL Defl= 0.03 inData

Beam Span	3.0 ft				
Beam Wt per ft	6.17 #	Reaction 1 TL	2784 #	Reaction 2 TL	1822 #
Bm Wt Included	18 #	Maximum V	2784 #		
Max Moment	2495 #	Max V (Reduced)	2438 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		

AttributesSection (in³) Shear (in²) TL Defl (in)

Actual	30.66	25.38	0.03
Critical	25.59	20.32	0.15
Status	OK	OK	OK
Ratio	83%	80%	20%

Values

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc _L (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625

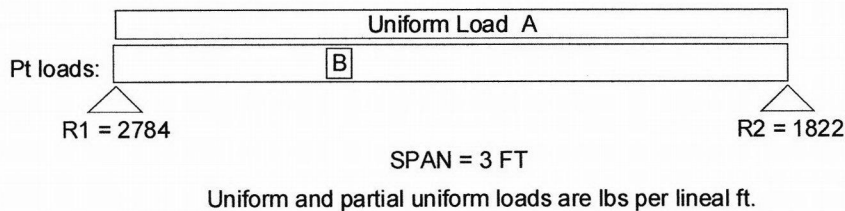
Adjustments

CF Size Factor	1.300			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Uniform TL: 567 = A

Point TL	Distance
B = 2887	1.0



FIRE_RILEY FIRE RESTORATION

BEAM ABOVE MAIN STAIRS

MEMBER 3

Date: 3/25/17

Selection

3-1/8x 13-1/2 GLB 24F-V4 DF/DF

Lu = 0.0 Ft

Conditions

NDS 2012

Min Bearing Area R1= 12.0 in² R2= 8.8 in² (1.5) DL Defl= 0.16 in Recom Camber= 0.24 in

Data

Beam Span	7.5 ft				
Beam Wt per ft	10.25 #	Reaction 1 TL	7806 #	Reaction 2 TL	5688 #
Bm Wt Included	77 #	Maximum V	7806 #		
Max Moment	11440 #	Max V (Reduced)	5894 #		
TL Max Defl	L / 240	TL Actual Defl	L / 574		

Attributes

	Section (in ³)	Shear (in ²)	TL Defl (in)
Actual	94.92	42.19	0.16
Critical	57.20	36.84	0.38
Status	OK	OK	OK
Ratio	60%	87%	42%

Values

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc _⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2400	240	1.8	650

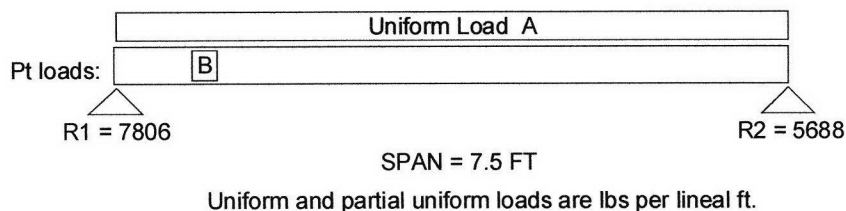
Adjustments

Cv Volume	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Uniform TL: 1404 = A

Point TL	Distance
B = 2887	1.0



FIRE_RILEY FIRE RESTORATION

MAIN FLOOR HEADERS

MEMBER 4

Date: 3/25/17

Selection

4x 6 DF-L #2

Lu = 0.0 Ft

Conditions

NDS 2012

Min Bearing Area R1= 2.5 in² R2= 2.5 in² (1.5) DL Defl= 0.04 in

Data

Beam Span	3.0 ft				
Beam Wt per ft	4.68 #	Reaction 1 TL	1545 #	Reaction 2 TL	1545 #
Bm Wt Included	14 #	Maximum V	1545 #		
Max Moment	1158 #	Max V (Reduced)	1073 #		
TL Max Defl	L / 240	TL Actual Defl	L / 995		

Attributes

Section (in³) Shear (in²) TL Defl (in)

Actual	17.65	19.25	0.04
Critical	11.88	8.94	0.15
Status	OK	OK	OK
Ratio	67%	46%	24%

Values

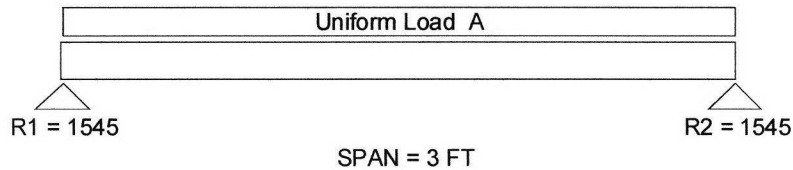
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc _⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625

Adjustments

CF Size Factor	1.300			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Uniform TL: 1025 = A



Uniform and partial uniform loads are lbs per lineal ft.

FIRE_RILEY FIRE RESTORATION

MAIN FLOOR HEADERS

MEMBER 5

Date: 3/25/17

Selection**4x 10 DF-L #2**

Lu = 0.0 Ft

Conditions

NDS 2012

Min Bearing Area R1= 2.7 in² R2= 2.7 in² (1.5) DL Defl= 0.16 inData

Beam Span	8.0 ft				
Beam Wt per ft	7.87 #	Reaction 1 TL	1663 #	Reaction 2 TL	1663 #
Bm Wt Included	63 #	Maximum V	1663 #		
Max Moment	3327 #	Max V (Reduced)	1343 #		
TL Max Defl	L / 240	TL Actual Defl	L / 618		

AttributesSection (in³) Shear (in²) TL Defl (in)

Actual	49.91	32.38	0.16
Critical	36.97	11.19	0.40
Status	OK	OK	OK
Ratio	74%	35%	39%

Values

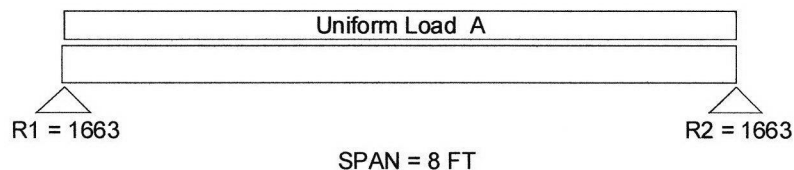
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc _L (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1080	180	1.6	625

Adjustments

CF Size Factor	1.200			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Uniform TL: 408 = A



Uniform and partial uniform loads are lbs per lineal ft.

FIRE_RILEY FIRE RESTORATION

MAIN FLOOR HEADERS

MEMBER 6

Date: 3/25/17

Selection**4x 4 DF-L #2**

Lu = 0.0 Ft

Conditions

NDS 2012

Min Bearing Area R1= 1.0 in² R2= 1.0 in² (1.5) DL Defl= 0.06 inData

Beam Span	3.0 ft				
Beam Wt per ft	2.98 #	Reaction 1 TL	616 #	Reaction 2 TL	616 #
Bm Wt Included	9 #	Maximum V	616 #		
Max Moment	462 #	Max V (Reduced)	497 #		
TL Max Defl	L / 240	TL Actual Defl	L / 642		

AttributesSection (in³) Shear (in²) TL Defl (in)

Actual	7.15	12.25	0.06
Critical	4.11	4.14	0.15
Status	OK	OK	OK
Ratio	58%	34%	37%

Values

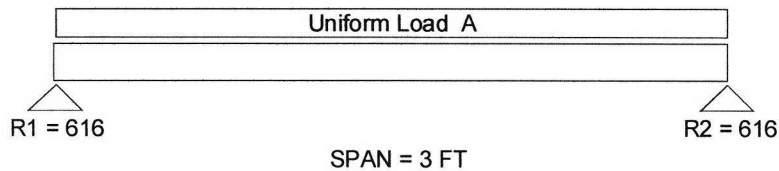
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc _⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1350	180	1.6	625

Adjustments

CF Size Factor	1.500			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Uniform TL: 408 = A



Uniform and partial uniform loads are lbs per lineal ft.

FIRE_RILEY FIRE RESTORATION

MAIN FLOOR BEAM

MEMBER 7

Date: 3/26/17

Selection

3-1/8x 13-1/2 GLB 24F-V4 DF/DF

Lu = 0.0 Ft

Conditions

NDS 2012

Min Bearing Area R1= 6.7 in² R2= 8.5 in² (1.5) DL Defl= 0.35 in Recom Camber= 0.53 in

Data

Beam Span	10.0 ft				
Beam Wt per ft	10.25 #	Reaction 1 TL	4366 #	Reaction 2 TL	5544 #
Bm Wt Included	103 #	Maximum V	5544 #		
Max Moment	14930 #	Max V (Reduced)	4386 #		
TL Max Defl	L / 240	TL Actual Defl	L / 340		

Attributes

Section (in³) Shear (in²) TL Defl (in)

Actual	94.92	42.19	0.35
Critical	74.65	27.41	0.50
Status	OK	OK	OK
Ratio	79%	65%	71%

Values

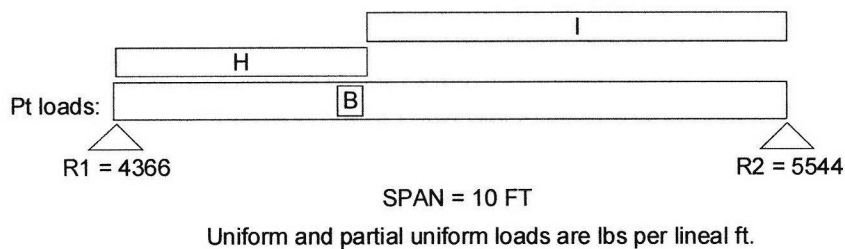
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc.L (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2400	240	1.8	650

Adjustments

Cv Volume	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Point TL	Distance	Par Unif TL	Start	End
B = 2887	3.5	H = 147	0	3.75
		I = 1019	3.75	10.0



FIRE_RILEY FIRE RESTORATION

MAIN FLOOR BEAM

MEMBER 8

Date: 3/25/17

Selection

3-1/8x 15 GLB 24F-V4 DF/DF

Lu = 0.0 Ft

Conditions

NDS 2012

Min Bearing Area R1= 4.9 in² R2= 4.9 in² (1.5) DL Defl= 0.67 in Recom Camber= 1.00 in

Data

Beam Span	17.0 ft				
Beam Wt per ft	11.39 #	Reaction 1 TL	3191 #	Reaction 2 TL	3191 #
Bm Wt Included	194 #	Maximum V	3191 #		
Max Moment	13561 #	Max V (Reduced)	2722 #		
TL Max Defl	L / 240	TL Actual Defl	L / 305		

Attributes

	Section (in ³)	Shear (in ²)	TL Defl (in)
Actual	117.19	46.88	0.67
Critical	67.80	17.01	0.85
Status	OK	OK	OK
Ratio	58%	36%	79%

Values

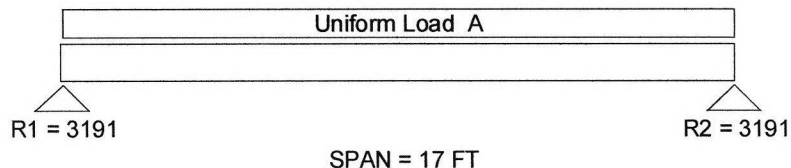
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc _⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2400	240	1.8	650

Adjustments

Cv Volume	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Uniform TL: 364 = A



Uniform and partial uniform loads are lbs per lineal ft.

FIRE_RILEY FIRE RESTORATION

MAIN FLOOR HEADER

MEMBER 9

Date: 3/25/17

Selection

4x 4 DF-L #2

Lu = 0.0 Ft

Conditions

NDS 2012

Min Bearing Area R1= 0.5 in² R2= 0.5 in² (1.5) DL Defl= 0.03 in

Data

Beam Span	3.0 ft				
Beam Wt per ft	2.98 #	Reaction 1 TL	288 #	Reaction 2 TL	288 #
Bm Wt Included	9 #	Maximum V	288 #		
Max Moment	216 #	Max V (Reduced)	232 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		

Attributes

	Section (in ³)	Shear (in ²)	TL Defl (in)
Actual	7.15	12.25	0.03
Critical	1.92	1.93	0.15
Status	OK	OK	OK
Ratio	27%	16%	17%

Values

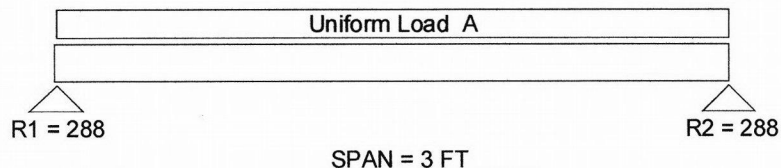
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc _L (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1350	180	1.6	625

Adjustments

CF Size Factor	1.500			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Uniform TL: 189 = A



Uniform and partial uniform loads are lbs per lineal ft.

FIRE_RILEY FIRE RESTORATION

REAR DECK JOIST

MEMBER 10

Date: 3/25/17

Selection

2x 8 HF #2 @ 16 in oc

Lu = 0.0 Ft

Conditions

NDS 2012, Repetitive Use

Min Bearing Area R1= 1.0 in² R2= 1.0 in² (1.5) DL Defl= 0.53 in

Data

Beam Span	10.75 ft				
Beam Wt per ft	0 #	Reaction 1 TL	394 #	Reaction 2 TL	394 #
Bm Wt Included	0 #	Maximum V	394 #		
Max Moment	1059 #	Max V (Reduced)	350 #		
TL Max Defl	L / 240	TL Actual Defl	L / 242		

Attributes

	Section (in ³)	Shear (in ²)	TL Defl (in)
Actual	13.14	10.88	0.53
Critical	10.84	3.50	0.54
Status	OK	OK	OK
Ratio	82%	32%	99%

Values

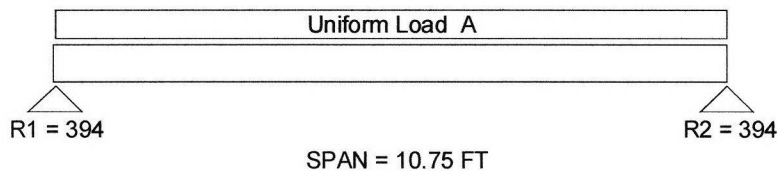
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc _⊥ (psi)
Reference Values	850	150	1.3	405
Adjusted Values	1173	150	1.3	405

Adjustments

CF Size Factor	1.200			
Cd Duration	1.00	1.00		
Cr Repetitive	1.15			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Uniform TL: 73 = A



Uniform and partial uniform loads are lbs per lineal ft.

FIRE_RILEY FIRE RESTORATION

REAR DECK BEAMS

MEMBER 11

Date: 3/25/17

Selection **6x 10 HF #2** Lu = 0.0 Ft

Conditions NDS 2012

Min Bearing Area R1= 3.6 in² R2= 3.6 in² (1.5) DL Defl= 0.06 in

Data

Beam Span	6.0 ft				
Beam Wt per ft	12.7 #	Reaction 1 TL	1439 #	Reaction 2 TL	1439 #
Bm Wt Included	76 #	Maximum V	1439 #		
Max Moment	2834 #	Max V (Reduced)	1178 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		

Attributes

	Section (in ³)	Shear (in ²)	TL Defl (in)
Actual	82.73	52.25	0.06
Critical	50.38	12.62	0.30
Status	OK	OK	OK
Ratio	61%	24%	19%

Values

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc _L (psi)
Reference Values	675	140	1.1	405
Adjusted Values	675	140	1.1	405

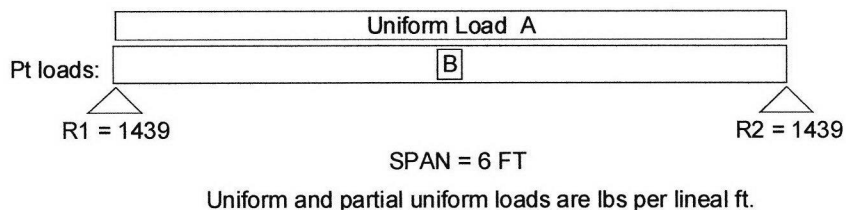
Adjustments

CF Size Factor	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Point TL	Distance
B = 900	3.0

Uniform TL: 317 = A



FIRE_RILEY FIRE RESTORATION

STAIR JACK 1 (SIDES)

MEMBER 12

Date: 3/26/17

Selection

2x 6 DF-L #2

Lu = 0.0 Ft

Conditions

NDS 2012

Min Bearing Area R1= 0.4 in² R2= 0.4 in² (1.5) DL Defl= 0.11 in

Data

Beam Span	6.0 ft				
Beam Wt per ft	2.0 #	Reaction 1 TL	255 #	Reaction 2 TL	255 #
Bm Wt Included	12 #	Maximum V	255 #		
Max Moment	383 #	Max V (Reduced)	216 #		
TL Max Defl	L / 240	TL Actual Defl	L / 645		

Attributes

Section (in³) Shear (in²) TL Defl (in)

Actual	7.56	8.25	0.11
Critical	3.92	1.80	0.30
Status	OK	OK	OK
Ratio	52%	22%	37%

Values

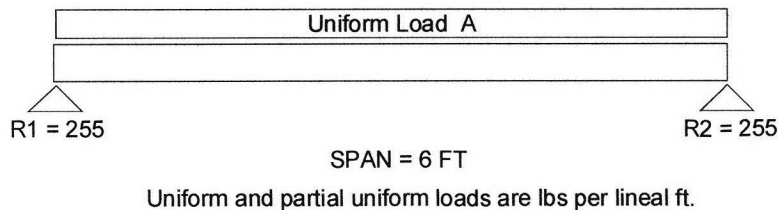
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc _L (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625

Adjustments

CF Size Factor	1.300			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Uniform TL: 83 = A



FIRE_RILEY FIRE RESTORATION

STAIR JACK 2 (CENTER)

MEMBER 13

Date: 3/26/17

Selection

(2) 2x 6 DF-L #2

Lu = 0.0 Ft

Conditions

NDS 2012

Min Bearing Area R1= 0.8 in² R2= 0.8 in² (1.5) DL Defl= 0.11 in

Data

Beam Span	6.0 ft				
Beam Wt per ft	4.01 #	Reaction 1 TL	507 #	Reaction 2 TL	507 #
Bm Wt Included	24 #	Maximum V	507 #		
Max Moment	761 #	Max V (Reduced)	430 #		
TL Max Defl	L / 240	TL Actual Defl	L / 649		

Attributes

	Section (in ³)	Shear (in ²)	TL Defl (in)
Actual	15.13	16.50	0.11
Critical	7.80	3.58	0.30
Status	OK	OK	OK
Ratio	52%	22%	37%

Values

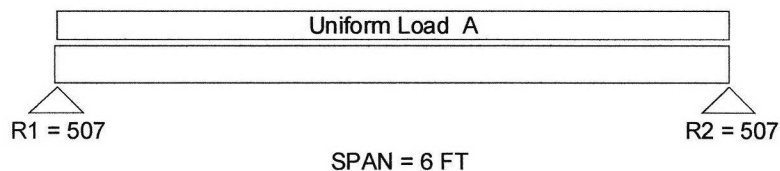
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc _⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625

Adjustments

CF Size Factor	1.300			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads

Uniform TL: 165 = A



Uniform and partial uniform loads are lbs per lineal ft.