BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ garage car door

HDR # 1 - alt # — Prepared by: LA — Date: 1/28/20

Selection **3-1/8x 18 GLB 24F-V4 DF/DF** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 3.8 in² R2= 3.8 in² (1.5) DL Defl= 0.21 in Recom Camber= 0.32 in

Data

Beam Span	18.75 ft	Reaction 1 LL	1172 #	Reaction 2 LL	1172 #
Beam Wt per ft	13.67 #	Reaction 1 TL	2472 #	Reaction 2 TL	2472 #
Bm Wt Included	256 #	Maximum V	2472 #		
Max Moment	11587 '#	Max V (Reduced)	2076 #		
TL Max Defl	L / 240	TL Actual Defl	L / 665		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

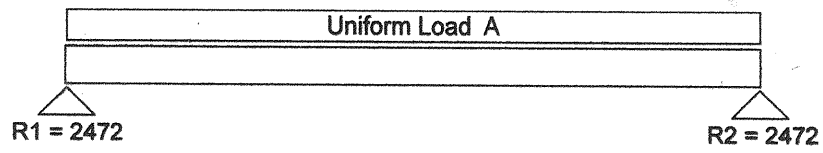
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	168.75	56.25	0.34	0.13
Critical	57.94	12.98	0.94	0.63
Status	OK	OK	OK	OK
Ratio	34%	23%	36%	20%

Values / Adjustments

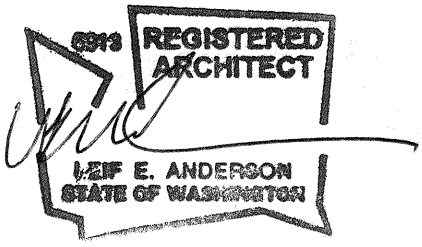
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2400	240	1.8	650
Cv Volume	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 125 Uniform TL: 250 = A



SPAN = 18.75 FT

Uniform and partial uniform loads are lbs per lineal ft.



Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ garage car door

HDR # 1 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **3-1/2x 18 2.0E TJ Parallam W.S. PSL** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 4.0 in² R2= 4.0 in² (1.5) DL Defl= 0.16 in

Data

Beam Span	18.75 ft	Reaction 1 LL	1172 #	Reaction 2 LL	1172 #
Beam Wt per ft	19.69 #	Reaction 1 TL	2528 #	Reaction 2 TL	2528 #
Bm Wt Included	369 #	Maximum V	2528 #		
Max Moment	11852 '#	Max V (Reduced)	2124 #		
TL Max Defl	L / 240	TL Actual Defl	L / 887		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

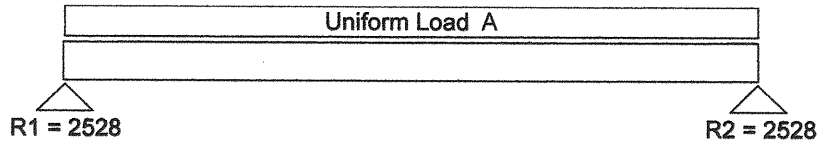
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	189.00	63.00	0.25	0.09
Critical	51.30	10.99	0.94	0.63
Status	OK	OK	OK	OK
Ratio	27%	17%	27%	15%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2772	290	2.2	625
CF Size Factor	0.956			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 125 Uniform TL: 250 = A



SPAN = 18.75 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ garage/south window

HDR # 2 - alt # — Prepared by: LA — Date: 1/28/20

Selection 3-1/8x 9 GLB 24F-V4 DF/DF — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 4.0 in² R2= 4.0 in² (1.5) DL Defl= 0.13 in Recom Camber= 0.20 in

Data

Beam Span	8.0 ft	Reaction 1 LL	1300 #	Reaction 2 LL	1300 #
Beam Wt per ft	6.83 #	Reaction 1 TL	2627 #	Reaction 2 TL	2627 #
Bm Wt Included	55 #	Maximum V	2627 #		
Max Moment	5255 '#	Max V (Reduced)	2135 #		
TL Max Defl	L / 240	TL Actual Defl	L / 433		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

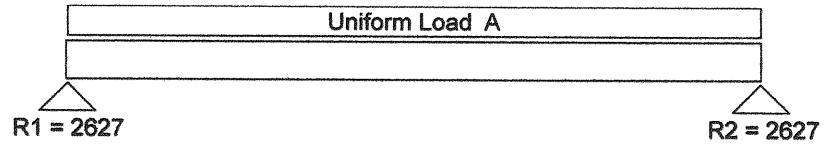
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	42.19	28.13	0.22	0.09
Critical	26.27	13.34	0.40	0.27
Status	OK	OK	OK	OK
Ratio	62%	47%	55%	33%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2400	240	1.8	650
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 325 Uniform TL: 650 = A



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ garage/south window

HDR # 2 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **3-1/2x 9-1/4 2.0E TJ Parallam W.S. PSL** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 4.2 in² R2= 4.2 in² (1.5) DL Defl= 0.09 in

Data

Beam Span	8.0 ft	Reaction 1 LL	1300 #	Reaction 2 LL	1300 #
Beam Wt per ft	10.12 #	Reaction 1 TL	2640 #	Reaction 2 TL	2640 #
Bm Wt Included	81 #	Maximum V	2640 #		
Max Moment	5281 '#	Max V (Reduced)	2132 #		
TL Max Defl	L / 240	TL Actual Defl	L / 640		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

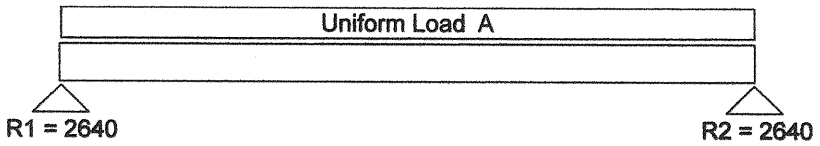
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.15	0.06
Critical	21.23	11.03	0.40	0.27
Status	OK	OK	OK	OK
Ratio	43%	34%	37%	22%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc_l (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2985	290	2.2	625
CF Size Factor	1.029			
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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 325 Uniform TL: 650 = A



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ exercise/BR # 2 window SOUTH

HDR # 3 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 10 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 2.8 in² R2= 1.9 in² (1.5) DL Defl= 0.03 in

Data

Beam Span	5.5 ft	Reaction 1 LL	869 #	Reaction 2 LL	583 #
Beam Wt per ft	7.87 #	Reaction 1 TL	1758 #	Reaction 2 TL	1185 #
Bm Wt Included	43 #	Maximum V	1758 #		
Max Moment	2743 '#	Max V (Reduced)	1444 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

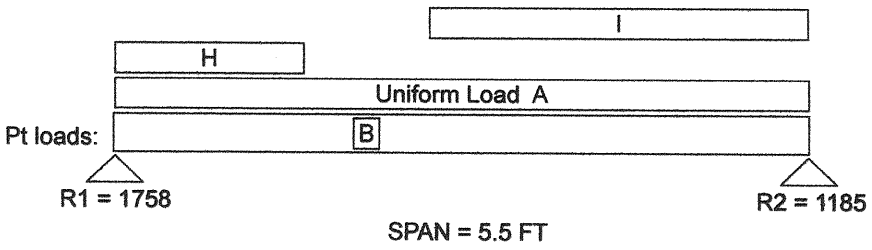
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.05	0.02
Critical	30.47	12.03	0.28	0.18
Status	OK	OK	OK	OK
Ratio	61%	37%	17%	10%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1080	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 25 Uniform TL: 50 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
788	B = 1575	2.0	175	H = 350	0	1.5
			88	I = 175	2.5	5.5



SPAN = 5.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ exercise/BR # 2 window EAST

HDR # 4 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 1.5 in² R2= 1.5 in² (1.5) DL Defl= 0.09 in

Data

Beam Span	8.0 ft	Reaction 1 LL	452 #	Reaction 2 LL	452 #
Beam Wt per ft	6.17 #	Reaction 1 TL	925 #	Reaction 2 TL	925 #
Bm Wt Included	49 #	Maximum V	925 #		
Max Moment	1849 '#	Max V (Reduced)	785 #		
TL Max Defl	L / 240	TL Actual Defl	L / 639		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

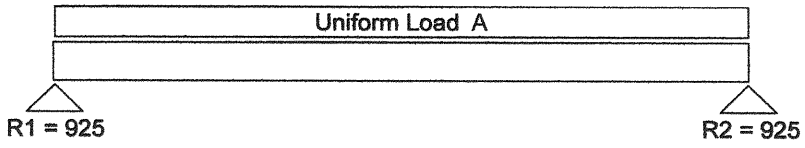
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.15	0.06
Critical	18.97	6.54	0.40	0.27
Status	OK	OK	OK	OK
Ratio	62%	26%	38%	22%

Values / *Adjustments*

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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 113 Uniform TL: 225 = A



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ exercise/BR # 2 window NORTH

HDR #5 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 1.0 in² R2= 1.0 in² (1.5) DL Defl= 0.02 in

Data

Beam Span	5.5 ft	Reaction 1 LL	311 #	Reaction 2 LL	311 #
Beam Wt per ft	6.17 #	Reaction 1 TL	636 #	Reaction 2 TL	636 #
Bm Wt Included	34 #	Maximum V	636 #		
Max Moment	874 '#	Max V (Reduced)	496 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

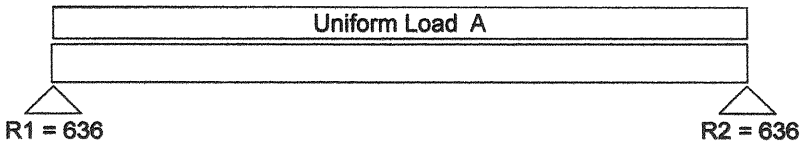
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.03	0.01
Critical	8.97	4.13	0.28	0.18
Status	OK	OK	OK	OK
Ratio	29%	16%	12%	7%

Values / *Adjustments*

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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 113 Uniform TL: 225 = A



SPAN = 5.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ mastr closet window

HDR #6 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 8 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 1.0 in² R2= 1.0 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	3.0 ft	Reaction 1 LL	320 #	Reaction 2 LL	320 #
Beam Wt per ft	6.17 #	Reaction 1 TL	647 #	Reaction 2 TL	647 #
Bm Wt Included	18 #	Maximum V	647 #		
Max Moment	485 '#	Max V (Reduced)	386 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

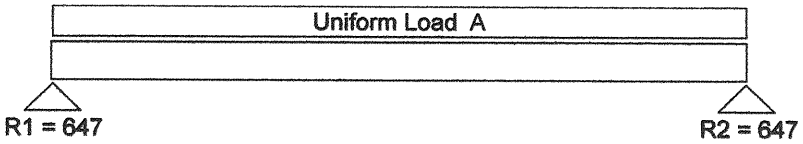
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.01	<0.01
Critical	4.97	3.22	0.15	0.10
Status	OK	OK	OK	OK
Ratio	16%	13%	4%	2%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 213 Uniform TL: 425 = A



SPAN = 3 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ mastr bedrm/dek doors

HDR # 7 - alt # — Prepared by: LA — Date: 1/28/20

Selection: **4x 10 DF-L #2** — Lu = 0.0 Ft

Conditions: NDS 2015

Min Bearing Area R1= 2.1 in² R2= 2.1 in² (1.5) DL Defl= 0.14 in

Data

Beam Span	10.5 ft	Reaction 1 LL	625 #	Reaction 2 LL	625 #
Beam Wt per ft	7.87 #	Reaction 1 TL	1291 #	Reaction 2 TL	1291 #
Bm Wt Included	83 #	Maximum V	1291 #		
Max Moment	3388 '#	Max V (Reduced)	1101 #		
TL Max Defl	L / 240	TL Actual Defl	L / 551		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

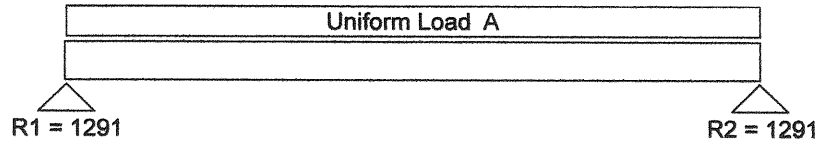
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.23	0.09
Critical	37.65	9.18	0.53	0.35
Status	OK	OK	OK	OK
Ratio	75%	28%	44%	25%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1080	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads: Uniform LL: 119 Uniform TL: 238 = A



SPAN = 10.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ mastr bathroom wdw

HDR # 8 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 10 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

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

Data

Beam Span	6.5 ft	Reaction 1 LL	1118 #	Reaction 2 LL	1118 #
Beam Wt per ft	7.87 #	Reaction 1 TL	2262 #	Reaction 2 TL	2262 #
Bm Wt Included	51 #	Maximum V	2262 #		
Max Moment	3675 '#	Max V (Reduced)	1725 #		
TL Max Defl	L / 240	TL Actual Defl	L / 824		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

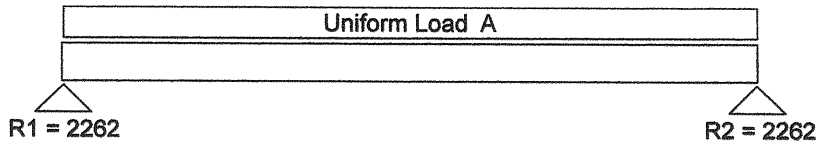
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.09	0.04
Critical	40.83	14.38	0.33	0.22
Status	OK	OK	OK	OK
Ratio	82%	44%	29%	17%

Values / *Adjustments*

	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
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 344 Uniform TL: 688 = A



SPAN = 6.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ mastr bath shwr wdw

HDR # 9 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 8 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.6 in² R2= 0.6 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	3.0 ft	Reaction 1 LL	188 #	Reaction 2 LL	188 #
Beam Wt per ft	6.17 #	Reaction 1 TL	384 #	Reaction 2 TL	384 #
Bm Wt Included	18 #	Maximum V	384 #		
Max Moment	288 '#	Max V (Reduced)	229 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

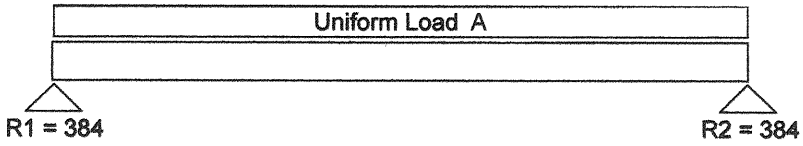
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.00	<0.01
Critical	2.96	1.91	0.15	0.10
Status	OK	OK	OK	OK
Ratio	10%	8%	2%	1%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 125 Uniform TL: 250 = A



SPAN = 3 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ office/ dek doors

HDR # 10 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 1.6 in² R2= 1.6 in² (1.5) DL Defl= 0.10 in

Data

Beam Span	8.0 ft	Reaction 1 LL	500 #	Reaction 2 LL	500 #
Beam Wt per ft	6.17 #	Reaction 1 TL	1025 #	Reaction 2 TL	1025 #
Bm Wt Included	49 #	Maximum V	1025 #		
Max Moment	2049 '#	Max V (Reduced)	870 #		
TL Max Defl	L / 240	TL Actual Defl	L / 577		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

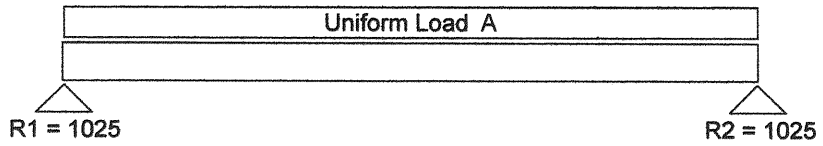
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.17	0.06
Critical	21.02	7.25	0.40	0.27
Status	OK	OK	OK	OK
Ratio	69%	29%	42%	24%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 125 Uniform TL: 250 = A



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ stairwell window

HDR # 11 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.8 in² R2= 0.8 in² (1.5) DL Defl= 0.03 in

Data

Beam Span	6.5 ft	Reaction 1 LL	244 #	Reaction 2 LL	244 #
Beam Wt per ft	6.17 #	Reaction 1 TL	508 #	Reaction 2 TL	508 #
Bm Wt Included	40 #	Maximum V	508 #		
Max Moment	825 '#	Max V (Reduced)	413 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

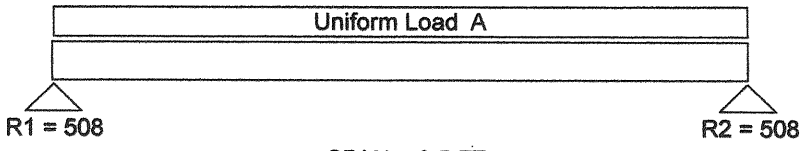
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.04	0.02
Critical	8.46	3.44	0.33	0.22
Status	OK	OK	OK	OK
Ratio	28%	14%	14%	8%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 75 Uniform TL: 150 = A



SPAN = 6.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ balcny/spiral stair door

HDR # 12 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.6 in² R2= 0.6 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	3.0 ft	Reaction 1 LL	198 #	Reaction 2 LL	198 #
Beam Wt per ft	6.17 #	Reaction 1 TL	404 #	Reaction 2 TL	404 #
Bm Wt Included	18 #	Maximum V	404 #		
Max Moment	303 '#	Max V (Reduced)	241 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

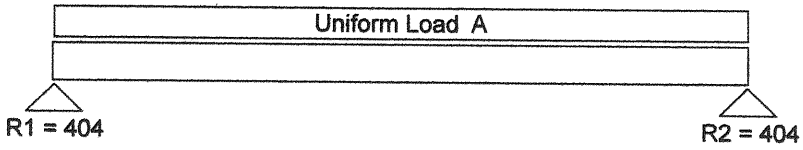
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.00	<0.01
Critical	3.11	2.01	0.15	0.10
Status	OK	OK	OK	OK
Ratio	10%	8%	2%	1%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 132 Uniform TL: 263 = A



SPAN = 3 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ balcony/clerestry window

HDR # 13 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 8 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.8 in² R2= 0.8 in² (1.5) DL Defl= 0.03 in

Data

Beam Span	6.5 ft	Reaction 1 LL	244 #	Reaction 2 LL	244 #
Beam Wt per ft	6.17 #	Reaction 1 TL	508 #	Reaction 2 TL	508 #
Bm Wt Included	40 #	Maximum V	508 #		
Max Moment	825 '#	Max V (Reduced)	413 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

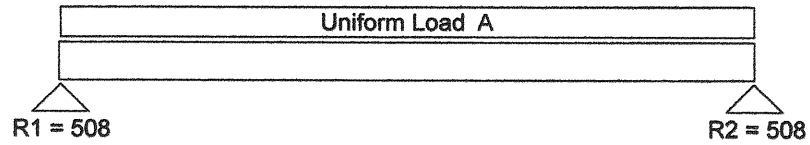
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.04	0.02
Critical	8.46	3.44	0.33	0.22
Status	OK	OK	OK	OK
Ratio	28%	14%	14%	8%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 75 Uniform TL: 150 = A



SPAN = 6.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ uppr hall/bathrm window

HDR # 14 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 1.4 in² R2= 1.4 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	2.5 ft	Reaction 1 LL	430 #	Reaction 2 LL	430 #
Beam Wt per ft	6.17 #	Reaction 1 TL	868 #	Reaction 2 TL	868 #
Bm Wt Included	15 #	Maximum V	868 #		
Max Moment	542 '#	Max V (Reduced)	448 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

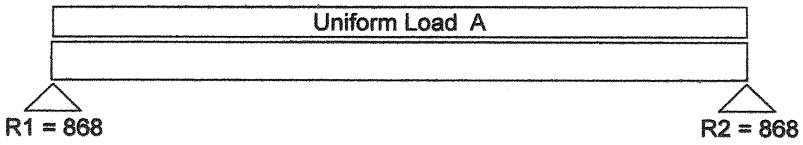
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.00	<0.01
Critical	5.56	3.74	0.13	0.08
Status	OK	OK	OK	OK
Ratio	18%	15%	3%	2%

Values / *Adjustments*

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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 344 Uniform TL: 688 = A



SPAN = 2.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ main flr/powder window

HDR # 15 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 8 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.4 in² R2= 0.4 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	3.0 ft	Reaction 1 LL	123 #	Reaction 2 LL	123 #
Beam Wt per ft	6.17 #	Reaction 1 TL	254 #	Reaction 2 TL	254 #
Bm Wt Included	18 #	Maximum V	254 #		
Max Moment	190 '#	Max V (Reduced)	152 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

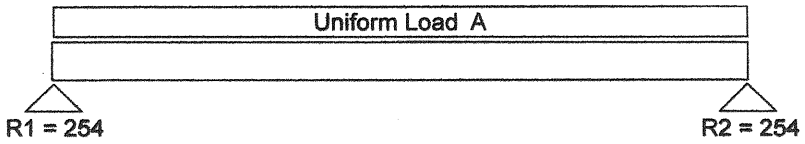
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.00	<0.01
Critical	1.95	1.26	0.15	0.10
Status	OK	OK	OK	OK
Ratio	6%	5%	1%	1%

Values / Adjustments

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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 82 Uniform TL: 163 = A



SPAN = 3 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — bm/hdr @ main entry/porch roof

BM HDR # 16 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.9 in² R2= 0.9 in² (1.5) DL Defl= 0.05 in

Data

Beam Span	7.5 ft	Reaction 1 LL	259 #	Reaction 2 LL	259 #
Beam Wt per ft	6.17 #	Reaction 1 TL	541 #	Reaction 2 TL	541 #
Bm Wt Included	46 #	Maximum V	541 #		
Max Moment	1014 '#	Max V (Reduced)	454 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

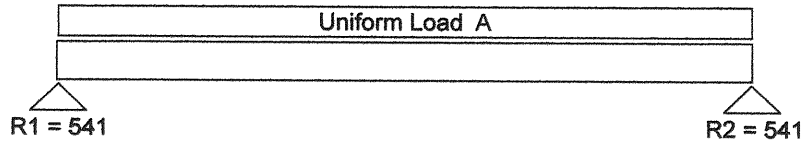
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.07	0.03
Critical	10.40	3.78	0.38	0.25
Status	OK	OK	OK	OK
Ratio	34%	15%	19%	11%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 69 Uniform TL: 138 = A



SPAN = 7.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — bm/hdr @ main entry/porch roof

BM HDR # 16 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **6x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.9 in² R2= 0.9 in² (1.5) DL Defl= 0.03 in

Data

Beam Span	7.5 ft	Reaction 1 LL	259 #	Reaction 2 LL	259 #
Beam Wt per ft	10.02 #	Reaction 1 TL	555 #	Reaction 2 TL	555 #
Bm Wt Included	75 #	Maximum V	555 #		
Max Moment	1041 '#	Max V (Reduced)	463 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

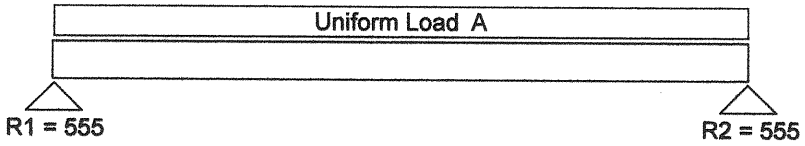
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	51.56	41.25	0.05	0.02
Critical	16.65	4.08	0.38	0.25
Status	OK	OK	OK	OK
Ratio	32%	10%	14%	8%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	750	170	1.3	625
Adjusted Values	750	170	1.3	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 69 Uniform TL: 138 = A



SPAN = 7.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ study/front wdw north

HDR # 17 - alt # — Prepared by: LA — Date: 1/28/20

Selection: **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions: NDS 2015

Min Bearing Area R1= 1.5 in² R2= 1.5 in² (1.5) DL Defl= 0.09 in

Data

Beam Span	8.0 ft	Reaction 1 LL	452 #	Reaction 2 LL	452 #
Beam Wt per ft	6.17 #	Reaction 1 TL	925 #	Reaction 2 TL	925 #
Bm Wt Included	49 #	Maximum V	925 #		
Max Moment	1849 '#	Max V (Reduced)	785 #		
TL Max Defl	L / 240	TL Actual Defl	L / 639		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

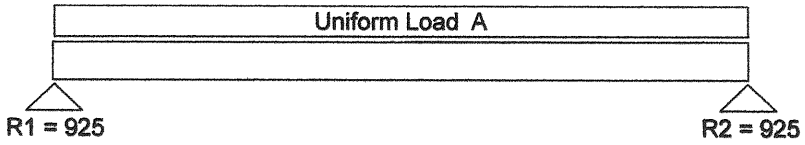
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.15	0.06
Critical	18.97	6.54	0.40	0.27
Status	OK	OK	OK	OK
Ratio	62%	26%	38%	22%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads: Uniform LL: 113 Uniform TL: 225 = A



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ study/side wdw south

HDR # 18 - alt # — Prepared by: LA — Date: 1/28/20

Selection **3-1/8x 9 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 3.4 in² R2= 2.9 in² (1.5) DL Defl= 0.13 in Recom Camber= 0.20 in

Data

Beam Span	8.0 ft	Reaction 1 LL	1051 #	Reaction 2 LL	903 #
Beam Wt per ft	6.83 #	Reaction 1 TL	2189 #	Reaction 2 TL	1894 #
Bm Wt Included	55 #	Maximum V	2189 #		
Max Moment	5640 '#	Max V (Reduced)	1893 #		
TL Max Defl	L / 240	TL Actual Defl	L / 443		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

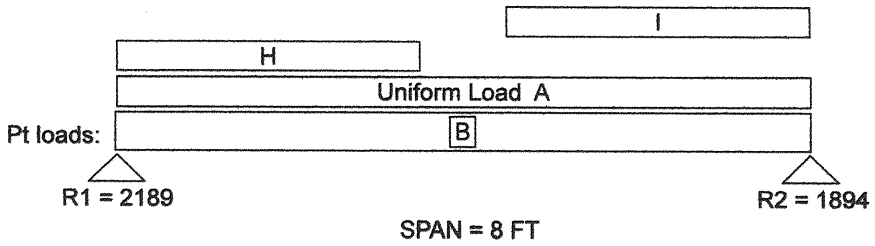
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	42.19	28.13	0.22	0.08
Critical	28.20	11.83	0.40	0.27
Status	OK	OK	OK	OK
Ratio	67%	42%	54%	31%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2400	240	1.8	650
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 25 Uniform TL: 50 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
834	B = 1787	4.0	169	H = 338	0	3.5
			94	I = 188	4.5	8.0



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr@ great room/side wdw south

HDR # 19 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.4 in² R2= 0.4 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	3.0 ft	Reaction 1 LL	132 #	Reaction 2 LL	132 #
Beam Wt per ft	6.17 #	Reaction 1 TL	272 #	Reaction 2 TL	272 #
Bm Wt Included	18 #	Maximum V	272 #		
Max Moment	204 '#	Max V (Reduced)	162 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

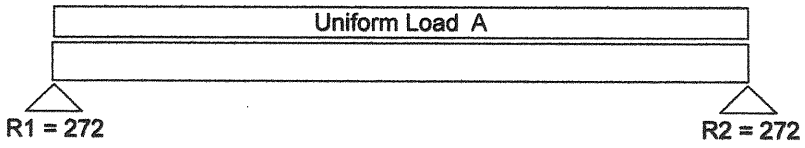
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.00	<0.01
Critical	2.09	1.35	0.15	0.10
Status	OK	OK	OK	OK
Ratio	7%	5%	2%	1%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 88 Uniform TL: 175 = A



SPAN = 3 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr@ great room/fireplacesouth

HDR # 20 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 8 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.8 in² R2= 0.8 in² (1.5) DL Defl= 0.02 in

Data

Beam Span	5.5 ft	Reaction 1 LL	242 #	Reaction 2 LL	242 #
Beam Wt per ft	6.17 #	Reaction 1 TL	498 #	Reaction 2 TL	498 #
Bm Wt Included	34 #	Maximum V	498 #		
Max Moment	685 '#	Max V (Reduced)	389 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

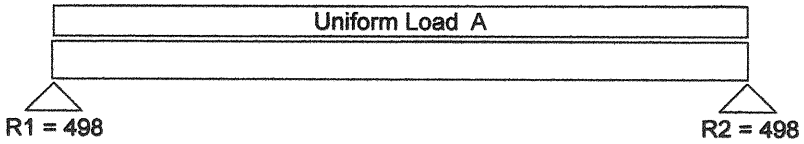
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.03	0.01
Critical	7.03	3.24	0.28	0.18
Status	OK	OK	OK	OK
Ratio	23%	13%	10%	6%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 88 Uniform TL: 175 = A



SPAN = 5.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ exerc/BR 2/east wal

FL FLR BM # 21 - alt # — Prepared by: LA — Date: 1/28/20

Selection **5-1/4x 11-7/8 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 5.4 in² R2= 5.4 in² (1.5) DL Defl= 0.21 in

Data

Beam Span	14.0 ft	Reaction 1 LL	1512 #	Reaction 2 LL	1512 #
Beam Wt per ft	19.48 #	Reaction 1 TL	3382 #	Reaction 2 TL	3382 #
Bm Wt Included	273 #	Maximum V	3382 #		
Max Moment	10233 '#	Max V (Reduced)	2915 #		
TL Max Defl	L / 240	TL Actual Defl	L / 532		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

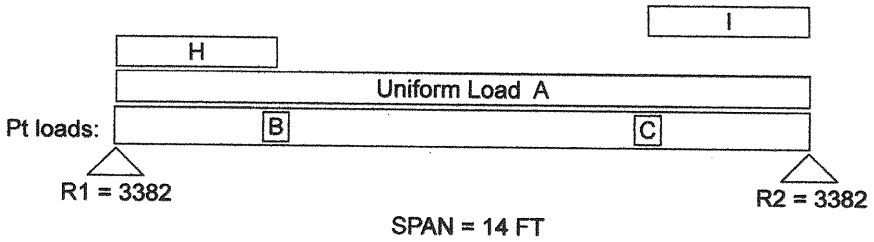
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	123.39	62.34	0.32	0.11
Critical	42.30	15.08	0.70	0.47
Status	OK	OK	OK	OK
Ratio	34%	24%	45%	24%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2903	290	2.2	625
CF Size Factor	1.001			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 99 Uniform TL: 227 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
452	B = 925	3.25	113	H = 225	0	3.25
452	C = 925	10.75	113	I = 225	10.75	14.0



SPAN = 14 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ exerc/BR 2/Southwal

FL FLR BM # 22 - alt # — Prepared by: LA — Date: 1/28/20

Selection **3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft Lu @OH = 0.0 Ft

Conditions NDS 2015, Overhang

Min Bearing Area R1= 2.0 in² R2= 14.7 in² (1.5) DL Defl= 0.08 in.

Data

Beam Span	7.5 ft	Reaction 1 LL	544 #	Reaction 2 LL	4528 #
Beam Wt per ft	12.99 #	Reaction 1 TL	1269 #	Reaction 2 TL	9174 #
Bm Wt Included	130 #	Maximum V	5477 #	Overhang Length	2.5 ft
Max Moment	11074 '#	Max V (Reduced)	4648 #	Total Beam Length	10.0 ft
TL Max Defl	L / 240	TL Actual Defl	L / < -1000	OH TL Actual Defl	L / 496
LL Max Defl	L / 360	LL Actual Defl	L / < -1000	OH LL Actual Defl	L / >1000

Attributes

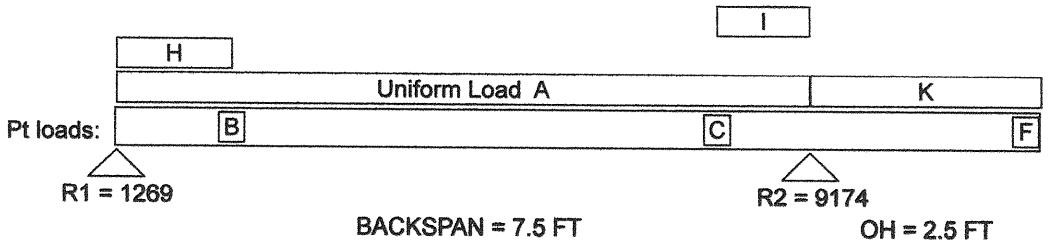
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	82.26	41.56	-0.04	-0.02	0.12	0.05
Critical	45.77	24.04	0.38	0.25	0.25	0.17
Status	OK	OK	OK	OK	OK	OK
Ratio	56%	58%	9%	6%	48%	28%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2903	290	2.2	625
CF Size Factor	1.001			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	
Cl Stability @ OH	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 60 Uniform TL: 160 = A (Uniform Ld on Backspan)

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
869	B = 1758	1.25	200	H = 400	0	1.25
583	C = 1185	6.5	113	I = 225	6.5	7.5
1512	F = 3382 (OH)	2.5	518	K = 825 (OH)	0	2.5



Uniform and partial uniform loads are lbs per lineal ft. Overhanging load distances are from R2.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ exerc/BR 2/Southwal

FL FLR BM # 22 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **5-1/4x 11-7/8 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft Lu @OH = 0.0 Ft

Conditions NDS 2015, Overhang

Min Bearing Area R1= 2.1 in² R2= 14.7 in² (1.5) DL Defl= 0.05 in.

Data

Beam Span	7.5 ft	Reaction 1 LL	544 #	Reaction 2 LL	4528 #
Beam Wt per ft	19.48 #	Reaction 1 TL	1290 #	Reaction 2 TL	9217 #
Bm Wt Included	195 #	Maximum V	5493 #	Overhang Length	2.5 ft
Max Moment	11094 '#	Max V (Reduced)	4658 #	Total Beam Length	10.0 ft
TL Max Defl	L / 240	TL Actual Defl	L / < -1000	OH TL Actual Defl	L / 746
LL Max Defl	L / 360	LL Actual Defl	L / < -1000	OH LL Actual Defl	L / >1000

Attributes

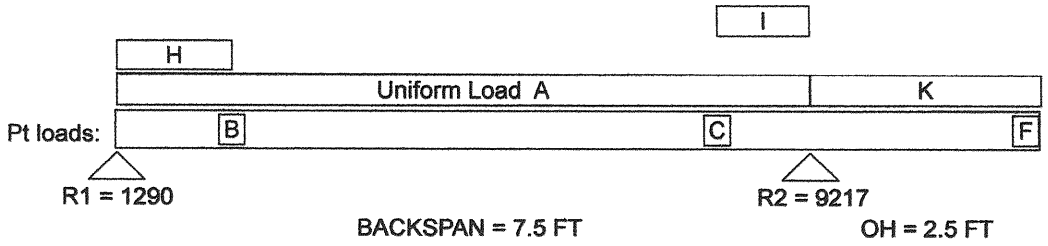
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	123.39	62.34	-0.02	-0.01	0.08	0.03
Critical	45.85	24.09	0.38	0.25	0.25	0.17
Status	OK	OK	OK	OK	OK	OK
Ratio	37%	39%	6%	4%	32%	18%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2903	290	2.2	625
CF Size Factor	1.001			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	
Cl Stability @ OH	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 60 Uniform TL: 160 = A (Uniform Ld on Backspan)

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
869	B = 1758	1.25	200	H = 400	0	1.25
583	C = 1185	6.5	113	I = 225	6.5	7.5
1512	F = 3382 (OH)	2.5	518	K = 825 (OH)	0	2.5



Uniform and partial uniform loads are lbs per lineal ft. Overhanging load distances are from R2.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ laundry rm window/south

HDR # 23 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 8 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 1.5 in² R2= 1.5 in² (1.5) DL Defl= 0.01 in

Data

Beam Span	5.5 ft	Reaction 1 LL	743 #	Reaction 2 LL	743 #
Beam Wt per ft	6.17 #	Reaction 1 TL	946 #	Reaction 2 TL	946 #
Bm Wt Included	34 #	Maximum V	946 #		
Max Moment	1301 '#	Max V (Reduced)	739 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

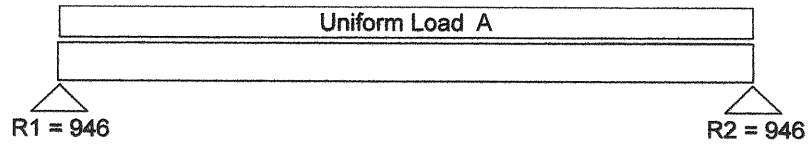
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.04	0.03
Critical	13.35	6.15	0.28	0.18
Status	OK	OK	OK	OK
Ratio	44%	24%	16%	17%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 270 Uniform TL: 338 = A



SPAN = 5.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ laundry rm window/north

HDR # 24 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 2.0 in² R2= 2.0 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	3.0 ft	Reaction 1 LL	735 #	Reaction 2 LL	735 #
Beam Wt per ft	6.17 #	Reaction 1 TL	1281 #	Reaction 2 TL	1281 #
Bm Wt Included	18 #	Maximum V	1281 #		
Max Moment	961 '#	Max V (Reduced)	765 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

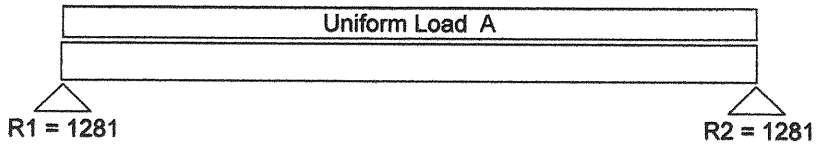
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.01	<0.01
Critical	9.86	6.38	0.15	0.10
Status	OK	OK	OK	OK
Ratio	32%	25%	7%	5%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 490 Uniform TL: 848 = A



SPAN = 3 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ elevator door

HDR # 25 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.9 in² R2= 0.9 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	3.5 ft	Reaction 1 LL	368 #	Reaction 2 LL	368 #
Beam Wt per ft	6.17 #	Reaction 1 TL	588 #	Reaction 2 TL	588 #
Bm Wt Included	22 #	Maximum V	588 #		
Max Moment	515 '#	Max V (Reduced)	385 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

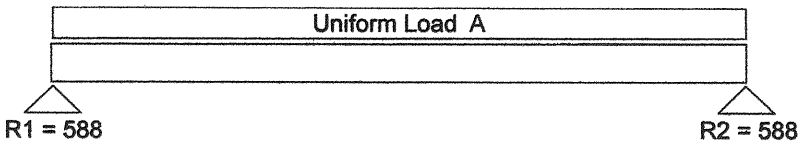
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.01	<0.01
Critical	5.28	3.21	0.18	0.12
Status	OK	OK	OK	OK
Ratio	17%	13%	4%	3%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 210 Uniform TL: 330 = A



SPAN = 3.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — dek rim above kitchen window

Dek Jst # 26 - alt # — Prepared by: LA — Date: 1/28/20

Selection **2x 8 HF #2** — Lu = 0.0 Ft — Lu @OH = 0.0 Ft

Conditions NDS 2015, Overhang, Uplift @ R1

Min Bearing Area R1= -0.4 in² R2= 1.7 in² (1.5) DL Defl= 0.08 in.

Data

Beam Span	2.0 ft	Reaction 1 LL	-121 #	Reaction 2 LL	479 #
Beam Wt per ft	2.64 #	Reaction 1 TL	-171 #	Reaction 2 TL	701 #
Bm Wt Included	16 #	Maximum V	410 #	Overhang Length	4.0 ft
Max Moment	581 '#	Max V (Reduced)	338 #	Total Beam Length	6.0 ft
TL Max Defl	L / 240	TL Actual Defl	L / < -1000	OH TL Actual Defl	L / 502
LL Max Defl	L / 360	LL Actual Defl	L / < -1000	OH LL Actual Defl	L / 827

Attributes

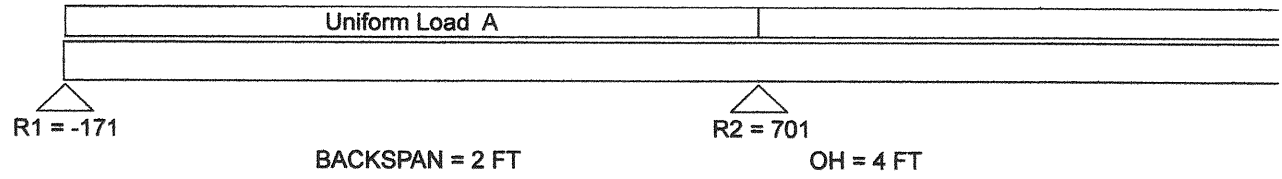
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	13.14	10.88	0.00	0.00	0.19	0.12
Critical	6.84	3.38	0.10	0.07	0.40	0.27
Status	OK	OK	OK	OK	OK	OK
Ratio	52%	31%	4%	4%	48%	44%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	850	150	1.3	405
Adjusted Values	1020	150	1.3	405
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	
Cl Stability @ OH	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 79 Uniform TL: 117 = A (Uniform Ld on Backspan)

Par Unif LL	Par Unif TL	Start	End
50	K = 70 (OH)	0	4.0



Uniform and partial uniform loads are lbs per lineal ft. Overhanging load distances are from R2.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — dek rim above kitchen window

Dek Jst # 26A - alt # — Prepared by: LA — Date: 1/28/20

Selection **2x 8 HF #2 @ 16 in oc** — Lu = 0.0 Ft — Lu @OH = 0.0 Ft

Conditions NDS 2015, Overhang, Repetitive Use, Uplift @ R1

Min Bearing Area R1= -0.7 in² R2= 2.1 in² (1.5) DL Defl= 0.09 in.

Data

Beam Span	2.0 ft	Reaction 1 LL	-200 #	Reaction 2 LL	600 #
Beam Wt per ft	0 #	Reaction 1 TL	-280 #	Reaction 2 TL	840 #
Bm Wt Included	0 #	Maximum V	467 #	Overhang Length	4.0 ft
Max Moment	747 '#	Max V (Reduced)	410 #	Total Beam Length	6.0 ft
TL Max Defl	L / 240	TL Actual Defl	L / < -1000	OH TL Actual Defl	L / 384
LL Max Defl	L / 360	LL Actual Defl	L / < -1000	OH LL Actual Defl	L / 614

Attributes

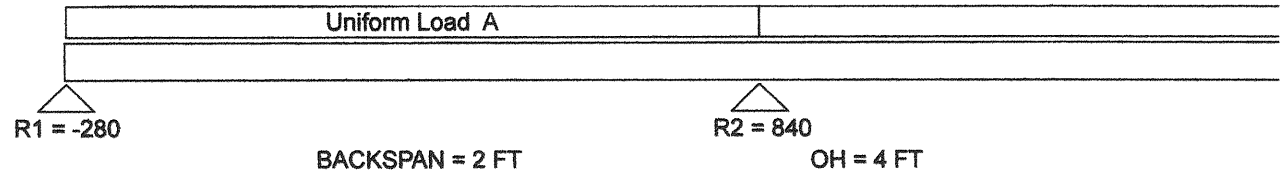
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	13.14	10.88	-0.01	0.00	0.25	0.16
Critical	7.64	4.10	0.10	0.07	0.40	0.27
Status	OK	OK	OK	OK	OK	OK
Ratio	58%	38%	5%	5%	62%	59%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	850	150	1.3	405
Adjusted Values	1173	150	1.3	405
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	
Cl Stability @ OH	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 67 Uniform TL: 93 = A (Uniform Ld on Backspan)

Par Unif LL	Par Unif TL	Start	End
67	K = 93 (OH)	0	4.0



Uniform and partial uniform loads are lbs per lineal ft. Overhanging load distances are from R2.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm near kitchen window

FL FLR BM # 27 - alt # — Prepared by: LA — Date: 1/28/20

Selection **5-1/4x 11-7/8 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 6.6 in² R2= 6.6 in² (1.5) DL Defl= 0.28 in

Data

Beam Span	15.0 ft	Reaction 1 LL	1902 #	Reaction 2 LL	1902 #
Beam Wt per ft	19.48 #	Reaction 1 TL	4133 #	Reaction 2 TL	4133 #
Bm Wt Included	292 #	Maximum V	4133 #		
Max Moment	11931 '#	Max V (Reduced)	3585 #		
TL Max Defl	L / 240	TL Actual Defl	L / 419		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

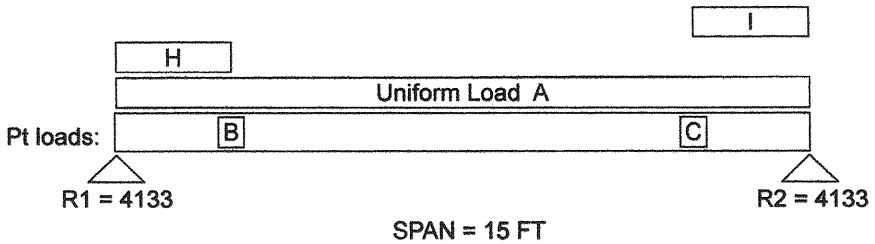
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	123.39	62.34	0.43	0.15
Critical	49.31	18.54	0.75	0.50
Status	OK	OK	OK	OK
Ratio	40%	30%	57%	31%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2903	290	2.2	625
CF Size Factor	1.001			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 114 Uniform TL: 247 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
687	B = 1415	2.5	144	H = 288	0	2.5
687	C = 1414	12.5	144	I = 288	12.5	15.0



SPAN = 15 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm near kitchen window

FL FLR BM # 27 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **7x 11-7/8 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 6.7 in² R2= 6.7 in² (1.5) DL Defl= 0.21 in

Data

Beam Span	15.0 ft	Reaction 1 LL	1902 #	Reaction 2 LL	1902 #
Beam Wt per ft	25.98 #	Reaction 1 TL	4182 #	Reaction 2 TL	4181 #
Bm Wt Included	390 #	Maximum V	4182 #		
Max Moment	12114 '#	Max V (Reduced)	3627 #		
TL Max Defl	L / 240	TL Actual Defl	L / 550		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	164.52	83.13	0.33	0.12
Critical	50.07	18.76	0.75	0.50
Status	OK	OK	OK	OK
Ratio	30%	23%	44%	23%

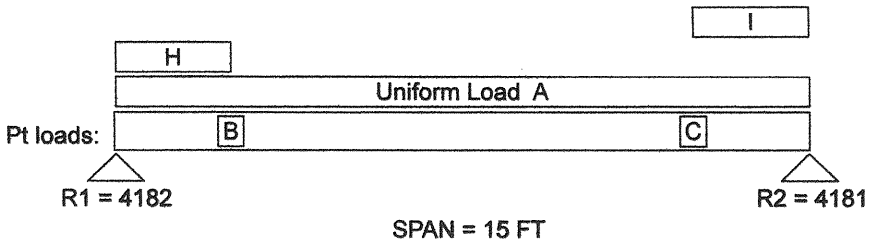
Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2903	290	2.2	625
CF Size Factor	1.001			
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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 114 Uniform TL: 247 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
687	B = 1415	2.5	144	H = 288	0	2.5
687	C = 1414	12.5	144	I = 288	12.5	15.0



SPAN = 15 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm near kitchen window

FL FLR BM # 27 - alt # 2 — Prepared by: LA — Date: 1/28/20

Selection **5-1/4x 14 2.0E TJ Parallam W.S. PSL** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 6.7 in² R2= 6.7 in² (1.5) DL Defl= 0.17 in

Data

Beam Span	15.0 ft	Reaction 1 LL	1902 #	Reaction 2 LL	1902 #
Beam Wt per ft	22.97 #	Reaction 1 TL	4160 #	Reaction 2 TL	4159 #
Bm Wt Included	345 #	Maximum V	4160 #		
Max Moment	12029 '#	Max V (Reduced)	3509 #		
TL Max Defl	L / 240	TL Actual Defl	L / 681		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

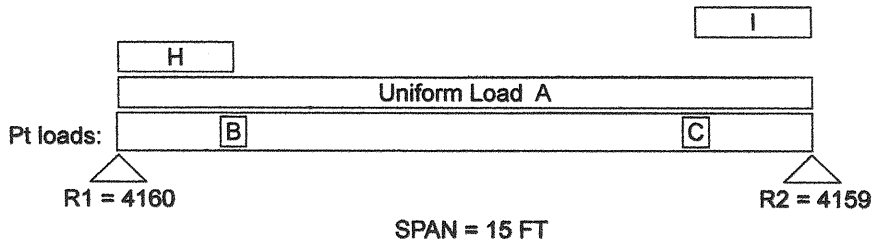
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	171.50	73.50	0.26	0.09
Critical	50.64	18.15	0.75	0.50
Status	OK	OK	OK	OK
Ratio	30%	25%	35%	19%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2851	290	2.2	625
CF Size Factor	0.983			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 114 Uniform TL: 247 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
687	B = 1415	2.5	144	H = 288	0	2.5
687	C = 1414	12.5	144	I = 288	12.5	15.0



SPAN = 15 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ kitchen/sink window

HDR # 28 - alt # — Prepared by: LA — Date: 1/28/20

Selection: **4x 10 DF-L #2** — Lu = 0.0 Ft

Conditions: NDS 2015

Min Bearing Area R1= 3.3 in² R2= 3.3 in² (1.5) DL Defl= 0.03 in

Data

Beam Span	6.5 ft	Reaction 1 LL	1466 #	Reaction 2 LL	1466 #
Beam Wt per ft	7.87 #	Reaction 1 TL	2080 #	Reaction 2 TL	2080 #
Bm Wt Included	51 #	Maximum V	2080 #		
Max Moment	3379 '#	Max V (Reduced)	1586 #		
TL Max Defl	L / 240	TL Actual Defl	L / 978		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

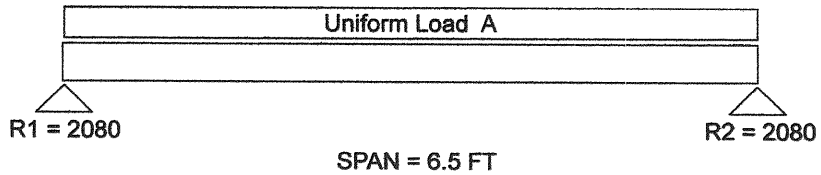
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.08	0.05
Critical	37.55	13.22	0.33	0.22
Status	OK	OK	OK	OK
Ratio	75%	41%	25%	23%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1080	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads: Uniform LL: 451 Uniform TL.: 632 = A



SPAN = 6.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ dining/deck doors

HDR # 29 - alt # — Prepared by: LA — Date: 1/28/20

Selection **3-1/8x 9 GLB 24F-V4 DF/DF** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 6.0 in² R2= 6.0 in² (1.5) DL Defl= 0.15 in Recom Camber= 0.22 in

Data

Beam Span	8.0 ft	Reaction 1 LL	1858 #	Reaction 2 LL	1858 #
Beam Wt per ft	6.83 #	Reaction 1 TL	3885 #	Reaction 2 TL	3885 #
Bm Wt Included	55 #	Maximum V	3885 #		
Max Moment	4477 '#	Max V (Reduced)	3194 #		
TL Max Defl	L / 240	TL Actual Defl	L / 410		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

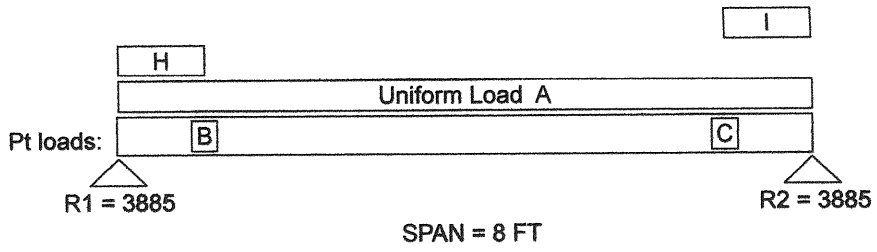
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	42.19	28.13	0.23	0.09
Critical	22.38	19.96	0.40	0.27
Status	OK	OK	OK	OK
Ratio	53%	71%	58%	33%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2400	240	1.8	650
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 99 Uniform TL: 227 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1118	B = 2262	1.0	344	H = 688	0	1.0
1118	C = 2262	7.0	344	I = 688	7.0	8.0



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ dining/deck doors

HDR # 29 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **3-1/2x 9-1/4 2.0E TJ Parallam W.S. PSL** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 6.2 in² R2= 6.2 in² (1.5) DL Defl= 0.10 in

Data

Beam Span	8.0 ft	Reaction 1 LL	1858 #	Reaction 2 LL	1858 #
Beam Wt per ft	10.12 #	Reaction 1 TL	3898 #	Reaction 2 TL	3898 #
Bm Wt Included	81 #	Maximum V	3898 #		
Max Moment	4503 '#	Max V (Reduced)	3185 #		
TL Max Defl	L / 240	TL Actual Defl	L / 607		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

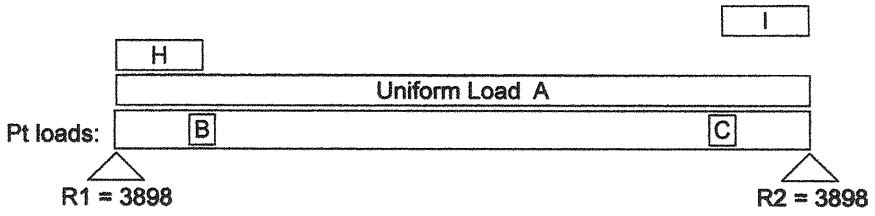
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.16	0.06
Critical	18.10	16.48	0.40	0.27
Status	OK	OK	OK	OK
Ratio	36%	51%	40%	22%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2985	290	2.2	625
CF Size Factor	1.029			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 99 Uniform TL: 227 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1118	B = 2262	1.0	344	H = 688	0	1.0
1118	C = 2262	7.0	344	I = 688	7.0	8.0



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — flr bm @ kitchen/dining

FLR BM # 30 - alt # — Prepared by: LA — Date: 1/28/20

Selection: **5-1/8x 18 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions: NDS 2015

Min Bearing Area R1= 10.8 in² R2= 10.8 in² (1.5) DL Defl= 0.26 in Recom Camber= 0.38 in

Data

Beam Span	20.0 ft	Reaction 1 LL	4900 #	Reaction 2 LL	4900 #
Beam Wt per ft	22.42 #	Reaction 1 TL	7024 #	Reaction 2 TL	7024 #
Bm Wt Included	448 #	Maximum V	7024 #		
Max Moment	35121 '#	Max V (Reduced)	5971 #		
TL Max Defl	L / 240	TL Actual Defl	L / 370		
LL Max Defl	L / 360	LL Actual Defl	L / 611		

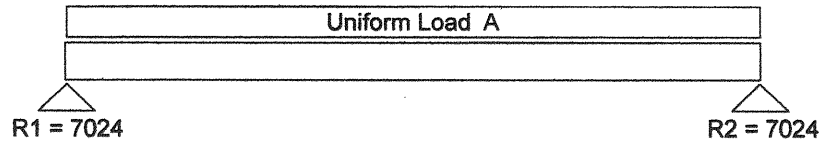
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	276.75	92.25	0.65	0.39
Critical	181.98	37.32	1.00	0.67
Status	OK	OK	OK	OK
Ratio	66%	40%	65%	59%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2316	240	1.8	650
Cv Volume	0.965			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads: Uniform LL: 490 Uniform TL: 680 = A



SPAN = 20 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — flr bm @ kitchen/dining

FLR BM # 30 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **5-1/8x 21 GLB 24F-V4 DF/DF** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 10.9 in² R2= 10.9 in² (1.5) DL Defl= 0.16 in Recom Camber= 0.25 in

Data

Beam Span	20.0 ft	Reaction 1 LL	4900 #	Reaction 2 LL	4900 #
Beam Wt per ft	26.15 #	Reaction 1 TL	7062 #	Reaction 2 TL	7062 #
Bm Wt Included	523 #	Maximum V	7062 #		
Max Moment	35308 '#	Max V (Reduced)	5826 #		
TL Max Defl	L / 240	TL Actual Defl	L / 584		
LL Max Defl	L / 360	LL Actual Defl	L / 970		

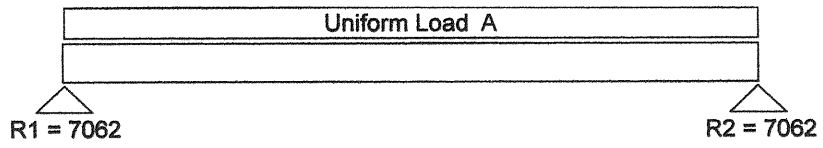
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	376.69	107.63	0.41	0.25
Critical	185.79	36.41	1.00	0.67
Status	OK	OK	OK	OK
Ratio	49%	34%	41%	37%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2280	240	1.8	650
Cv Volume	0.950			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 490 Uniform TL: 680 = A



SPAN = 20 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — flr bm @ great room/dining

FLR BM # 31 - alt # — Prepared by: LA — Date: 1/28/20

Selection **5-1/8x 18 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 13.1 in² R2= 12.5 in² (1.5) DL Defl= 0.38 in Recom Camber= 0.57 in

Data

Beam Span	20.0 ft	Reaction 1 LL	5501 #	Reaction 2 LL	4972 #
Beam Wt per ft	22.42 #	Reaction 1 TL	8508 #	Reaction 2 TL	8115 #
Bm Wt Included	448 #	Maximum V	8508 #		
Max Moment	41246 '#	Max V (Reduced)	7323 #		
TL Max Defl	L / 240	TL Actual Defl	L / 292		
LL Max Defl	L / 360	LL Actual Defl	L / 543		

Attributes

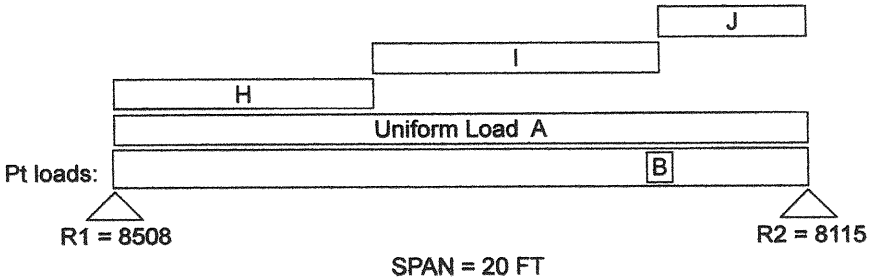
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	276.75	92.25	0.82	0.44
Critical	213.72	45.77	1.00	0.67
Status	OK	OK	OK	OK
Ratio	77%	50%	82%	66%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2316	240	1.8	650
Cv Volume	0.965			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 190 Uniform TL: 305 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1056	B = 1807	15.75	392	H = 560	0	7.5
			273	I = 390	7.5	15.75
			100	J = 200	15.75	20.0



SPAN = 20 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — flr bm @ great room/dining

FLR BM # 31 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **5-1/8x 21 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 13.1 in² R2= 12.5 in² (1.5) DL Defl= 0.24 in Recom Camber= 0.36 in

Data

Beam Span	20.0 ft	Reaction 1 LL	5501 #	Reaction 2 LL	4972 #
Beam Wt per ft	26.15 #	Reaction 1 TL	8546 #	Reaction 2 TL	8152 #
Bm Wt Included	523 #	Maximum V	8546 #		
Max Moment	41433 '#	Max V (Reduced)	7222 #		
TL Max Defl	L / 240	TL Actual Defl	L / 462		
LL Max Defl	L / 360	LL Actual Defl	L / 863		

Attributes

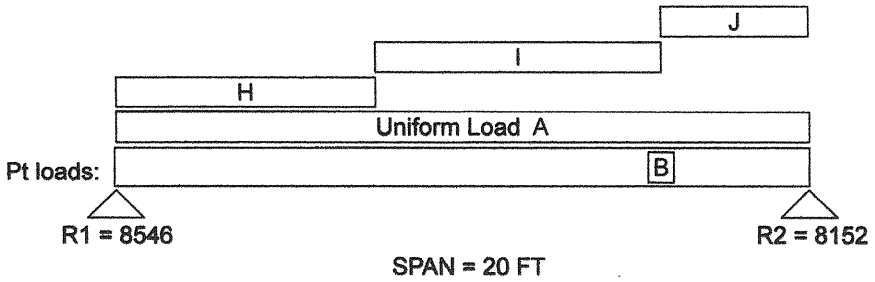
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	376.69	107.63	0.52	0.28
Critical	218.02	45.14	1.00	0.67
Status	OK	OK	OK	OK
Ratio	58%	42%	52%	42%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2280	240	1.8	650
Cv Volume	0.950			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 190 Uniform TL: 305 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1056	B = 1807	15.75	392	H = 560	0	7.5
			273	I = 390	7.5	15.75
			100	J = 200	15.75	20.0



SPAN = 20 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — deck beam @ office deck

DEK BM # 32 - alt # — Prepared by: LA — Date: 1/28/20

Selection **2x 8 HF #2** — Lu = 0.0 Ft — Lu @OH = 0.0 Ft

Conditions NDS 2015, Overhang

Min Bearing Area R1= 0.7 in² R2= 1.2 in² (1.5) DL Defl= -0.02 in.

Data

Beam Span	5.0 ft	Reaction 1 LL	168 #	Reaction 2 LL	308 #
Beam Wt per ft	2.64 #	Reaction 1 TL	278 #	Reaction 2 TL	481 #
Bm Wt Included	18 #	Maximum V	336 #	Overhang Length	2.0 ft
Max Moment	315 '#	Max V (Reduced)	262 #	Total Beam Length	7.0 ft
TL Max Defl	L / 240	TL Actual Defl	L / >1000	OH TL Actual Defl	L / < -1000
LL Max Defl	L / 360	LL Actual Defl	L / >1000	OH LL Actual Defl	L / < -1000

Attributes

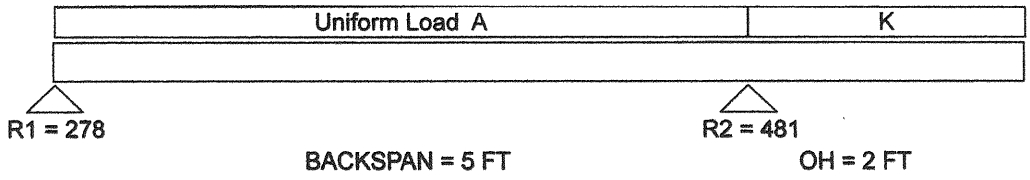
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	13.14	10.88	0.03	0.01	-0.03	-0.01
Critical	3.71	2.62	0.25	0.17	0.20	0.13
Status	OK	OK	OK	OK	OK	OK
Ratio	28%	24%	10%	8%	15%	11%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	850	150	1.3	405
Adjusted Values	1020	150	1.3	405
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	
Cl Stability @ OH	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 75 Uniform TL: 120 = A (Uniform Ld on Backspan)

Par Unif LL	Par Unif TL	Start	End
50	K = 70 (OH)	0	2.0



Uniform and partial uniform loads are lbs per lineal ft. Overhanging load distances are from R2.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — deck jsts @ office deck

DEK JSTS # 33 - alt # — Prepared by: LA — Date: 1/28/20

Selection **2x 8 HF #2** — Lu = 0.0 Ft — Lu @OH = 0.0 Ft

Conditions NDS 2015, Overhang, Wet Use

Min Bearing Area R1= 0.5 in² R2= 1.6 in² (2.0) DL Defl= 0.02 in.

Data

Beam Span	5.0 ft	Reaction 1 LL	103 #	Reaction 2 LL	252 #
Beam Wt per ft	2.64 #	Reaction 1 TL	133 #	Reaction 2 TL	426 #
Bm Wt Included	18 #	Maximum V	231 #	Overhang Length	2.0 ft
Max Moment	245 '#	Max V (Reduced)	187 #	Total Beam Length	7.0 ft
TL Max Defl	L / 240	TL Actual Defl	L / >1000	OH TL Actual Defl	L / >1000
LL Max Defl	L / 360	LL Actual Defl	L / >1000	OH LL Actual Defl	L / < -1000

Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	13.14	10.88	0.01	<0.01	0.01	-0.01
Critical	2.89	1.93	0.25	0.17	0.20	0.13
Status	OK	OK	OK	OK	OK	OK
Ratio	22%	18%	2%	4%	7%	5%

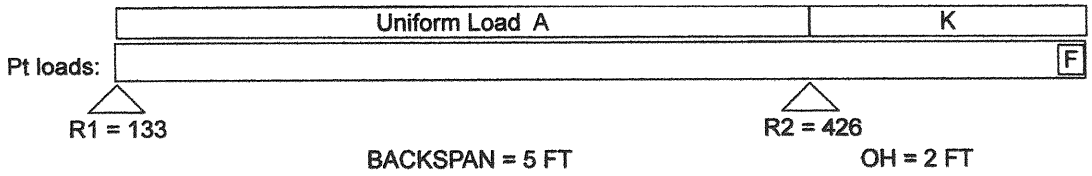
Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	850	150	1.3	405
Adjusted Values	1020	146	1.2	271
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	0.97	0.90	0.67

Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft
Cl Stability @ OH	1.0000	Rb = 0.00	Le = 0.00 Ft

Loads — Uniform LL: 50 — Uniform TL: 70 = A — (Uniform Ld on Backspan)

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
5	F = 50 (OH)	2.0	50	K = 70 (OH)	0	2.0



Uniform and partial uniform loads are lbs per lineal ft. Overhanging load distances are from R2.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ great rm/dek doors

HDR # 33A - alt # — Prepared by: LA — Date: 1/28/20

Selection **3-1/8x 12 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 16.6 in² R2= 5.2 in² (1.5) DL Defl= 0.23 in Recom Camber= 0.34 in

Data

Beam Span	12.5 ft	Reaction 1 LL	5998 #	Reaction 2 LL	1967 #
Beam Wt per ft	9.11 #	Reaction 1 TL	10817 #	Reaction 2 TL	3356 #
Bm Wt Included	114 #	Maximum V	10817 #		
Max Moment	9618 '#	Max V (Reduced)	4192 #		
TL Max Defl	L / 240	TL Actual Defl	L / 350		
LL Max Defl	L / 360	LL Actual Defl	L / 739		

Attributes

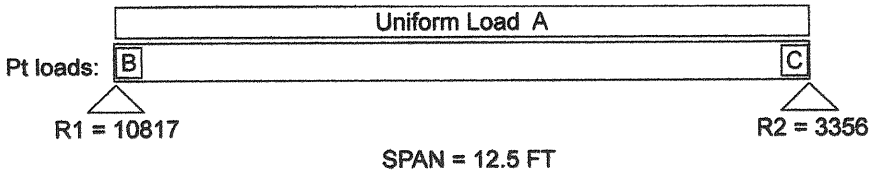
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	75.00	37.50	0.43	0.20
Critical	48.09	26.20	0.63	0.42
Status	OK	OK	OK	OK
Ratio	64%	70%	69%	49%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2400	240	1.8	650
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 252 Uniform TL: 426 = A

Point LL	Point TL	Distance
4507	B = 8253	0.25
308	C = 481	12.25



SPAN = 12.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ great rm/dek doors

HDR # 33A - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection 3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 17.3 in² R2= 5.4 in² (1.5) DL Defl= 0.17 in

Data

Beam Span	12.5 ft	Reaction 1 LL	5998 #	Reaction 2 LL	1967 #
Beam Wt per ft	12.99 #	Reaction 1 TL	10841 #	Reaction 2 TL	3380 #
Bm Wt Included	162 #	Maximum V	10841 #		
Max Moment	9694 '#	Max V (Reduced)	4239 #		
TL Max Defl	L / 240	TL Actual Defl	L / 460		
LL Max Defl	L / 360	LL Actual Defl	L / 980		

Attributes

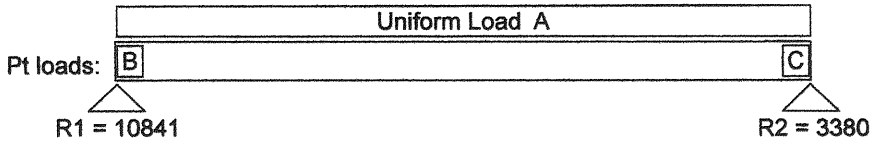
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	82.26	41.56	0.33	0.15
Critical	40.07	21.92	0.63	0.42
Status	OK	OK	OK	OK
Ratio	49%	53%	52%	37%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2903	290	2.2	625
CF Size Factor	1.001			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 252 Uniform TL: 426 = A

Point LL	Point TL	Distance
4507	B = 8253	0.25
308	C = 481	12.25



SPAN = 12.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ great rm by dek drs

HDR # 34 - alt # — Prepared by: LA — Date: 1/28/20

Selection **5-1/8x 13-1/2 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 7.7 in² R2= 7.3 in² (1.5) DL Defl= 0.37 in Recom Camber= 0.56 in

Data

Beam Span	16.25 ft	Reaction 1 LL	2559 #	Reaction 2 LL	2285 #
Beam Wt per ft	16.81 #	Reaction 1 TL	5030 #	Reaction 2 TL	4731 #
Bm Wt Included	273 #	Maximum V	5030 #		
Max Moment	19019 '#	Max V (Reduced)	4334 #		
TL Max Defl	L / 240	TL Actual Defl	L / 313		
LL Max Defl	L / 360	LL Actual Defl	L / 773		

Attributes

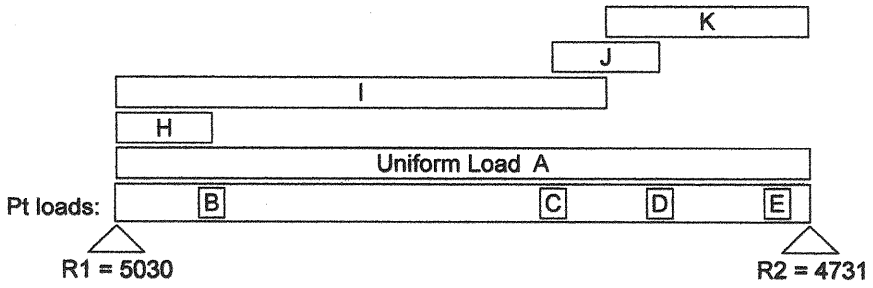
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	155.67	69.19	0.62	0.25
Critical	95.09	27.09	0.81	0.54
Status	OK	OK	OK	OK
Ratio	61%	39%	77%	47%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2400	240	1.8	650
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 70 Uniform TL: 177 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
500	B = 1025	2.25	125	H = 250	0	2.25
500	C = 1025	10.25	125	I = 175	0	11.5
188	D = 384	12.75	125	J = 250	10.25	12.75
188	E = 384	15.5	63	K = 125	11.5	16.25



SPAN = 16.25 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ great rm by dek drs

HDR # 34 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **6-3/4x 13-1/2 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 7.8 in² R2= 7.3 in² (1.5) DL Defl= 0.29 in Recom Camber= 0.43 in

Data

Beam Span	16.25 ft	Reaction 1 LL	2559 #	Reaction 2 LL	2285 #
Beam Wt per ft	22.14 #	Reaction 1 TL	5073 #	Reaction 2 TL	4774 #
Bm Wt Included	360 #	Maximum V	5073 #		
Max Moment	19195 '#	Max V (Reduced)	4371 #		
TL Max Defl	L / 240	TL Actual Defl	L / 407		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	205.03	91.13	0.48	0.19
Critical	97.30	27.32	0.81	0.54
Status	OK	OK	OK	OK
Ratio	47%	30%	59%	35%

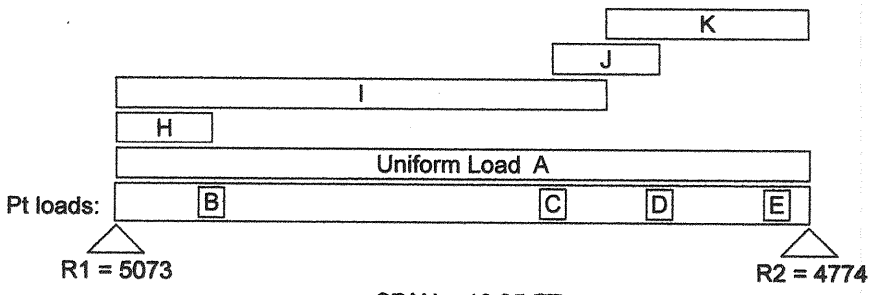
Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2367	240	1.8	650
Cv Volume	0.986			
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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 70 Uniform TL: 177 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
500	B = 1025	2.25	125	H = 250	0	2.25
500	C = 1025	10.25	125	I = 175	0	11.5
188	D = 384	12.75	125	J = 250	10.25	12.75
188	E = 384	15.5	63	K = 125	11.5	16.25



SPAN = 16.25 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ great rm by dek drs

HDR # 34 - alt # 2 — Prepared by: LA — Date: 1/28/20

Selection **5-1/4x 14 2.0E TJ Parallam W.S. PSL** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 8.1 in² R2= 7.6 in² (1.5) DL Defl= 0.27 in

Data

Beam Span	16.25 ft	Reaction 1 LL	2559 #	Reaction 2 LL	2285 #
Beam Wt per ft	22.97 #	Reaction 1 TL	5080 #	Reaction 2 TL	4781 #
Bm Wt Included	373 #	Maximum V	5080 #		
Max Moment	19222 '#	Max V (Reduced)	4351 #		
TL Max Defl	L / 240	TL Actual Defl	L / 431		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

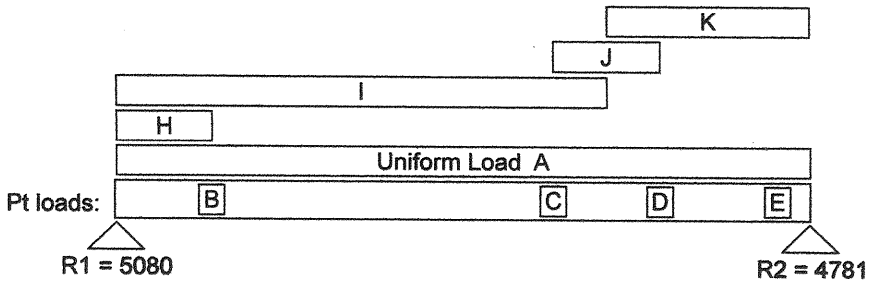
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	171.50	73.50	0.45	0.18
Critical	80.91	22.51	0.81	0.54
Status	OK	OK	OK	OK
Ratio	47%	31%	56%	33%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2851	290	2.2	625
CF Size Factor	0.983			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 70 Uniform TL: 177 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
500	B = 1025	2.25	125	H = 250	0	2.25
500	C = 1025	10.25	125	I = 175	0	11.5
188	D = 384	12.75	125	J = 250	10.25	12.75
188	E = 384	15.5	63	K = 125	11.5	16.25



SPAN = 16.25 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ great rm by dek drs

HDR # 34 - alt # 3 — Prepared by: LA — Date: 1/28/20

Selection 7x 14 2.0E TJ Parallam W.S. PSL — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 8.2 in² R2= 7.7 in² (1.5) DL Defl= 0.21 in

Data

Beam Span	16.25 ft	Reaction 1 LL	2559 #	Reaction 2 LL	2285 #
Beam Wt per ft	30.63 #	Reaction 1 TL	5142 #	Reaction 2 TL	4843 #
Bm Wt Included	498 #	Maximum V	5142 #		
Max Moment	19475 '#	Max V (Reduced)	4404 #		
TL Max Defl	L / 240	TL Actual Defl	L / 566		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

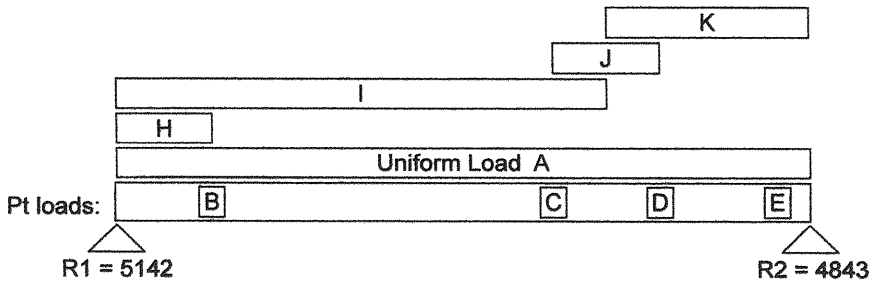
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	228.67	98.00	0.34	0.14
Critical	81.98	22.78	0.81	0.54
Status	OK	OK	OK	OK
Ratio	36%	23%	42%	25%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2851	290	2.2	625
CF Size Factor	0.983			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 70 Uniform TL: 177 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
500	B = 1025	2.25	125	H = 250	0	2.25
500	C = 1025	10.25	125	I = 175	0	11.5
188	D = 384	12.75	125	J = 250	10.25	12.75
188	E = 384	15.5	63	K = 125	11.5	16.25



SPAN = 16.25 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ great rm/dek drs/FP

FL FLR BM # 35 - alt # — Prepared by: LA — Date: 1/28/20

Selection **5-1/8x 18 GLB 24F-V4 DF/DF** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 12.7 in² R2= 19.2 in² (1.5) DL Defl= 0.27 in Recom Camber= 0.41 in

Data

Beam Span	15.5 ft	Reaction 1 LL	4507 #	Reaction 2 LL	6980 #
Beam Wt per ft	22.42 #	Reaction 1 TL	8253 #	Reaction 2 TL	12511 #
Bm Wt Included	347 #	Maximum V	12511 #		
Max Moment	40651 '#	Max V (Reduced)	9100 #		
TL Max Defl	L / 240	TL Actual Defl	L / 370		
LL Max Defl	L / 360	LL Actual Defl	L / 808		

Attributes

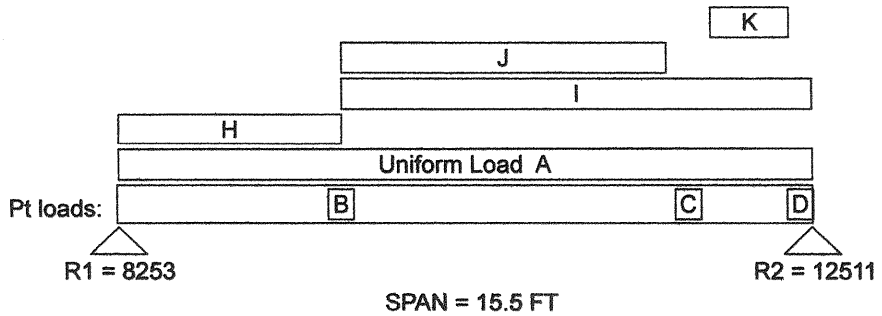
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	276.75	92.25	0.50	0.23
Critical	205.33	56.87	0.78	0.52
Status	OK	OK	OK	OK
Ratio	74%	62%	65%	45%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2376	240	1.8	650
Cv Volume	0.990			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 63 Uniform TL: 125 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
2559	B = 5142	5.0	50	H = 70	0	5.0
1031	C = 2063	12.75	404	I = 578	5.0	15.5
1116	D = 2232	15.25	125	J = 250	5.0	12.25
			232	K = 463	13.25	15.0



SPAN = 15.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm @ stairs/landing

FL FLR BM # 36 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 1.6 in² R2= 1.6 in² (1.5) DL Defl= 0.05 in

Data

Beam Span	8.0 ft	Reaction 1 LL	765 #	Reaction 2 LL	795 #
Beam Wt per ft	6.17 #	Reaction 1 TL	981 #	Reaction 2 TL	1018 #
Bm Wt Included	49 #	Maximum V	1018 #		
Max Moment	2574 '#	Max V (Reduced)	954 #		
TL Max Defl	L / 240	TL Actual Defl	L / 547		
LL Max Defl	L / 360	LL Actual Defl	L / 774		

Attributes

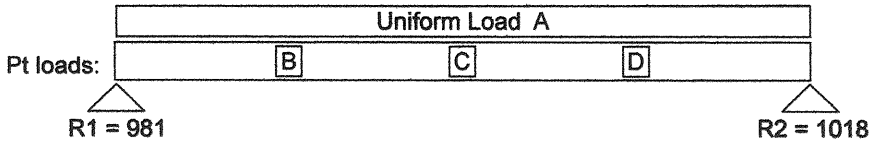
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.18	0.12
Critical	26.40	7.95	0.40	0.27
Status	OK	OK	OK	OK
Ratio	86%	31%	44%	47%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 80 Uniform TL: 100 = A

Point LL	Point TL	Distance
200	B = 250	2.0
460	C = 575	4.0
260	D = 325	6.0



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm @ stairs/landing

FL FLR BM # 36 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **1-3/4x 7-1/4 1.9E TJ Microllam LVL** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 1.3 in² R2= 1.3 in² (1.5) DL Defl= 0.08 in

Data

Beam Span	8.0 ft	Reaction 1 LL	765 #	Reaction 2 LL	795 #
Beam Wt per ft	3.26 #	Reaction 1 TL	969 #	Reaction 2 TL	1007 #
Bm Wt Included	26 #	Maximum V	1007 #		
Max Moment	2551 '#	Max V (Reduced)	944 #		
TL Max Defl	L / 240	TL Actual Defl	L / 347		
LL Max Defl	L / 360	LL Actual Defl	L / 484		

Attributes

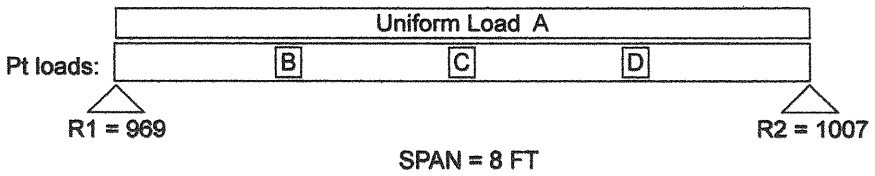
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	15.33	12.69	0.28	0.20
Critical	10.99	4.97	0.40	0.27
Status	OK	OK	OK	OK
Ratio	72%	39%	69%	74%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2600	285	2.0	750
Adjusted Values	2784	285	2.0	750
CF Size Factor	1.071			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 80 Uniform TL: 100 = A

Point LL	Point TL	Distance
200	B = 250	2.0
460	C = 575	4.0
260	D = 325	6.0



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ stairs/uppr landing

FL FLR BM # 37 - alt # — Prepared by: LA — Date: 1/28/20

Selection **3-1/8x 9 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 3.1 in² R2= 3.1 in² (1.5) DL Defl= 0.05 in Recom Camber= 0.08 in

Data

Beam Span	8.0 ft	Reaction 1 LL	1555 #	Reaction 2 LL	1465 #
Beam Wt per ft	6.83 #	Reaction 1 TL	2015 #	Reaction 2 TL	1990 #
Bm Wt Included	55 #	Maximum V	2015 #		
Max Moment	4505 '#	Max V (Reduced)	1728 #		
TL Max Defl	L / 240	TL Actual Defl	L / 584		
LL Max Defl	L / 360	LL Actual Defl	L / 866		

Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	42.19	28.13	0.16	0.11
Critical	22.52	10.80	0.40	0.27
Status	OK	OK	OK	OK
Ratio	53%	38%	41%	42%

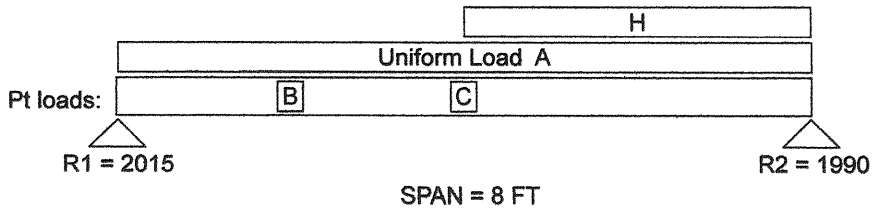
Values / *Adjustments*

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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 300 Uniform TL: 375 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
200	B = 250	2.0	5	H = 50	4.0	8.0
400	C = 500	4.0				



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ stairs/uppr landing

FL FLR BM # 37 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **1-3/4x 9-1/2 1.9E TJ Microllam LVL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 2.7 in² R2= 2.6 in² (1.5) DL Defl= 0.07 in

Data

Beam Span	8.0 ft	Reaction 1 LL	1555 #	Reaction 2 LL	1465 #
Beam Wt per ft	4.27 #	Reaction 1 TL	2005 #	Reaction 2 TL	1980 #
Bm Wt Included	34 #	Maximum V	2005 #		
Max Moment	4484 '#	Max V (Reduced)	1704 #		
TL Max Defl	L / 240	TL Actual Defl	L / 430		
LL Max Defl	L / 360	LL Actual Defl	L / 634		

Attributes

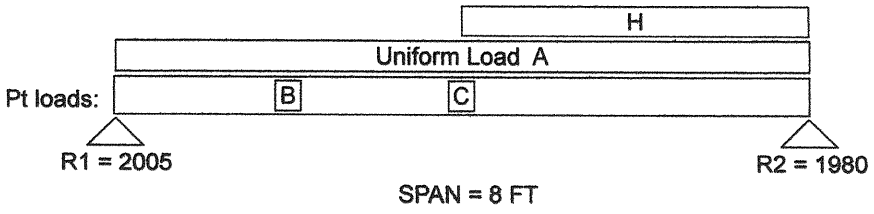
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	26.32	16.63	0.22	0.15
Critical	20.05	8.97	0.40	0.27
Status	OK	OK	OK	OK
Ratio	76%	54%	56%	57%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2600	285	2.0	750
Adjusted Values	2684	285	2.0	750
CF Size Factor	1.032			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 300 Uniform TL: 375 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
200	B = 250	2.0	5	H = 50	4.0	8.0
400	C = 500	4.0				



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ entry/uppr balcony

FL FLR BM # 40 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 8 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.7 in² R2= 0.7 in² (1.5) DL Defl= 0.04 in

Data

Beam Span	7.5 ft	Reaction 1 LL	221 #	Reaction 2 LL	221 #
Beam Wt per ft	6.17 #	Reaction 1 TL	462 #	Reaction 2 TL	462 #
Bm Wt Included	46 #	Maximum V	462 #		
Max Moment	866 '#	Max V (Reduced)	387 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

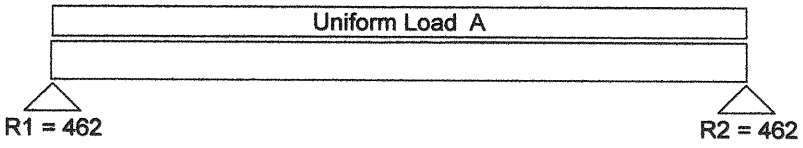
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.06	0.02
Critical	8.88	3.23	0.38	0.25
Status	OK	OK	OK	OK
Ratio	29%	13%	17%	9%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 59 Uniform TL: 117 = A



SPAN = 7.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ entry/flr abv hall

FL FLR BM # 41 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 1.2 in² R2= 1.2 in² (1.5) DL Defl= 0.01 in

Data

Beam Span	4.75 ft	Reaction 1 LL	451 #	Reaction 2 LL	451 #
Beam Wt per ft	6.17 #	Reaction 1 TL	739 #	Reaction 2 TL	739 #
Bm Wt Included	29 #	Maximum V	739 #		
Max Moment	878 '#	Max V (Reduced)	551 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

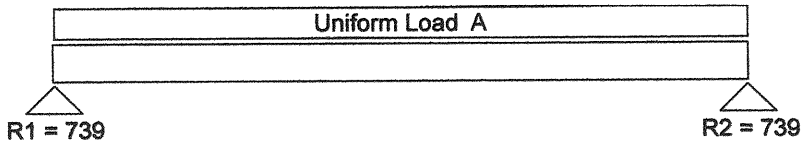
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.02	0.01
Critical	9.00	4.59	0.24	0.16
Status	OK	OK	OK	OK
Ratio	29%	18%	10%	8%

Values / *Adjustments*

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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 190 Uniform TL: 305 = A



SPAN = 4.75 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm@ entry/flr abv hall

FL FLR BM # 41 - alt # — Prepared by: LA — Date: 1/28/20

Selection 1-3/4x 9-1/4 1.55E TJ TimberStrand LSL — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.8 in² R2= 0.8 in² (1.5) DL Defl= 0.01 in

Data

Beam Span	4.75 ft	Reaction 1 LL	451 #	Reaction 2 LL	451 #
Beam Wt per ft	4.27 #	Reaction 1 TL	735 #	Reaction 2 TL	735 #
Bm Wt Included	20 #	Maximum V	735 #		
Max Moment	872 '#	Max V (Reduced)	496 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

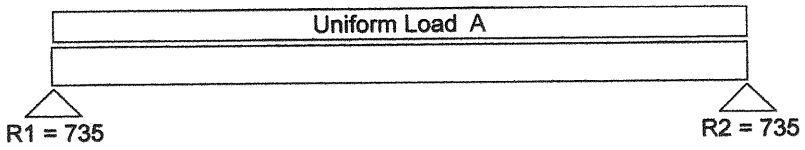
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	24.96	16.19	0.02	0.01
Critical	4.40	2.40	0.24	0.16
Status	OK	OK	OK	OK
Ratio	18%	15%	10%	7%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2325	310	1.6	900
Adjusted Values	2381	310	1.6	900
CF Size Factor	1.024			
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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 190 Uniform TL: 305 = A



SPAN = 4.75 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — bm/hdr @ entry/study opn'g

BM/HDR # 42 - alt # — Prepared by: LA — Date: 1/28/20

Selection 3-1/8x 9 GLB 24F-V4 DF/DF — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 5.6 in² R2= 4.7 in² (1.5) DL Defl= 0.12 in Recom Camber= 0.19 in

Data

Beam Span	6.5 ft	Reaction 1 LL	1602 #	Reaction 2 LL	1343 #
Beam Wt per ft	6.83 #	Reaction 1 TL	3614 #	Reaction 2 TL	3055 #
Bm Wt Included	44 #	Maximum V	3614 #		
Max Moment	7372 '#	Max V (Reduced)	3085 #		
TL Max Defl	L / 240	TL Actual Defl	L / 410		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

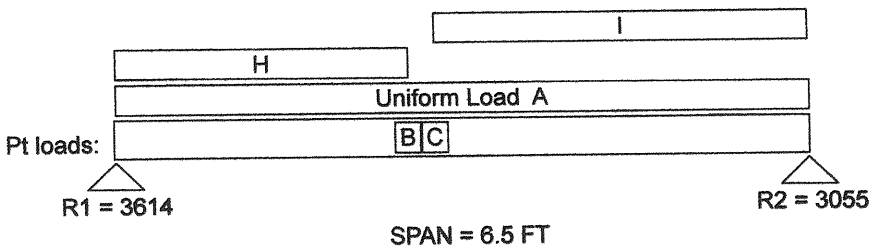
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	42.19	28.13	0.19	0.07
Critical	36.86	19.28	0.33	0.22
Status	OK	OK	OK	OK
Ratio	87%	69%	59%	30%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2400	240	1.8	650
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 145 Uniform TL: 360 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
474	B = 1224	2.75	169	H = 338	0	2.75
760	C = 1519	3.0	87	I = 175	3.0	6.5



SPAN = 6.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — bm/hdr @ entry/study opn'g

BM/HDR # 42 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **3-1/2x 9-1/4 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 5.8 in² R2= 4.9 in² (1.5) DL Defl= 0.08 in

Data

Beam Span	6.5 ft	Reaction 1 LL	1602 #	Reaction 2 LL	1343 #
Beam Wt per ft	10.12 #	Reaction 1 TL	3625 #	Reaction 2 TL	3066 #
Bm Wt Included	66 #	Maximum V	3625 #		
Max Moment	7389 '#	Max V (Reduced)	3079 #		
TL Max Defl	L / 240	TL Actual Defl	L / 608		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

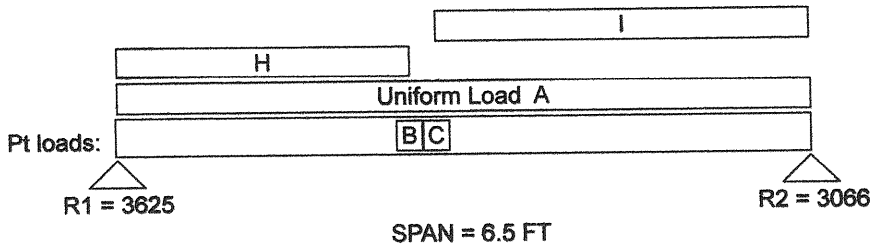
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.13	0.04
Critical	29.70	15.93	0.33	0.22
Status	OK	OK	OK	OK
Ratio	60%	49%	39%	21%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2985	290	2.2	625
CF Size Factor	1.029			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 145 Uniform TL: 360 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
474	B = 1224	2.75	169	H = 338	0	2.75
760	C = 1519	3.0	87	I = 175	3.0	6.5



SPAN = 6.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm above powder/closet

FL FLR BM # 43 - alt # — Prepared by: LA — Date: 1/28/20

Selection **5-1/4x 11-7/8 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 15.6 in² R2= 17.1 in² (1.5) DL Defl= 0.26 in

Data

Beam Span	11.0 ft	Reaction 1 LL	4735 #	Reaction 2 LL	5161 #
Beam Wt per ft	19.48 #	Reaction 1 TL	9758 #	Reaction 2 TL	10686 #
Bm Wt Included	214 #	Maximum V	10686 #		
Max Moment	22451 '#	Max V (Reduced)	10246 #		
TL Max Defl	L / 240	TL Actual Defl	L / 309		
LL Max Defl	L / 360	LL Actual Defl	L / 803		

Attributes

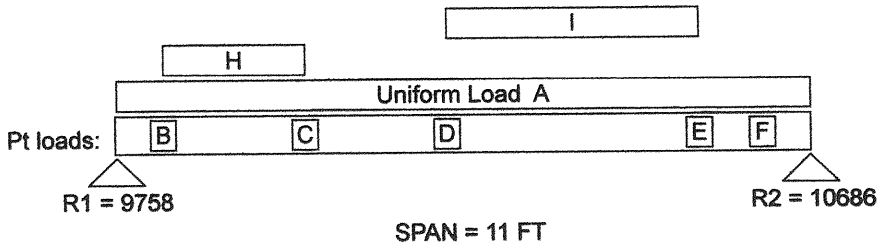
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	123.39	62.34	0.43	0.16
Critical	92.79	53.00	0.55	0.37
Status	OK	OK	OK	OK
Ratio	75%	85%	78%	45%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2903	290	2.2	625
CF Size Factor	1.001			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 130 Uniform TL: 290 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1972	B = 3944	0.75	344	H = 688	0.75	3.0
430	C = 868	3.0	344	I = 688	5.25	9.25
430	D = 868	5.25				
3259	E = 6509	9.25				
225	F = 550	10.25				



SPAN = 11 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm above powder/closet

FL FLR BM # 43 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **5-1/4x 14 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 15.6 in² R2= 17.1 in² (1.5) DL Defl= 0.16 in

Data

Beam Span	11.0 ft	Reaction 1 LL	4735 #	Reaction 2 LL	5161 #
Beam Wt per ft	22.97 #	Reaction 1 TL	9777 #	Reaction 2 TL	10705 #
Bm Wt Included	253 #	Maximum V	10705 #		
Max Moment	22504 '#	Max V (Reduced)	10143 #		
TL Max Defl	L / 240	TL Actual Defl	L / 505		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

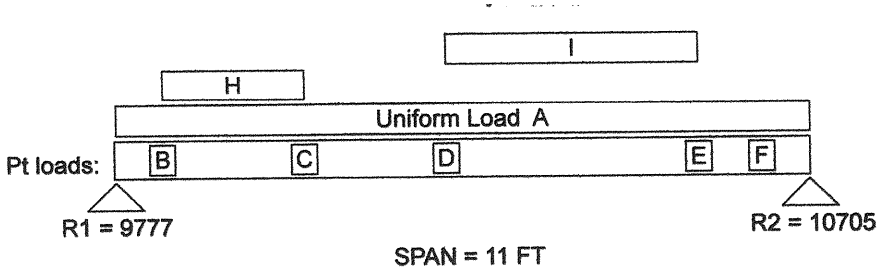
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	171.50	73.50	0.26	0.10
Critical	94.73	52.47	0.55	0.37
Status	OK	OK	OK	OK
Ratio	55%	71%	48%	27%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2851	290	2.2	625
CF Size Factor	0.983			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 130 Uniform TL: 290 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1972	B = 3944	0.75	344	H = 688	0.75	3.0
430	C = 868	3.0	344	I = 688	5.25	9.25
430	D = 868	5.25				
3259	E = 6509	9.25				
225	F = 550	10.25				



SPAN = 11 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm near elevator/mechan

FL FLR BM # 44 - alt # — Prepared by: LA — Date: 1/28/20

Selection: **5-1/4x 11-7/8 2.0E TJ Parallam W.S. PSL** — Lu = 0.0 Ft

Conditions: NDS 2015

Min Bearing Area R1= 15.7 in² R2= 2.9 in² (1.5) DL Defl= 0.08 in

Data

Beam Span	9.5 ft	Reaction 1 LL	4692 #	Reaction 2 LL	928 #
Beam Wt per ft	19.48 #	Reaction 1 TL	9801 #	Reaction 2 TL	1826 #
Bm Wt Included	185 #	Maximum V	9801 #		
Max Moment	12202 '#	Max V (Reduced)	9636 #		
TL Max Defl	L / 240	TL Actual Defl	L / 881		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

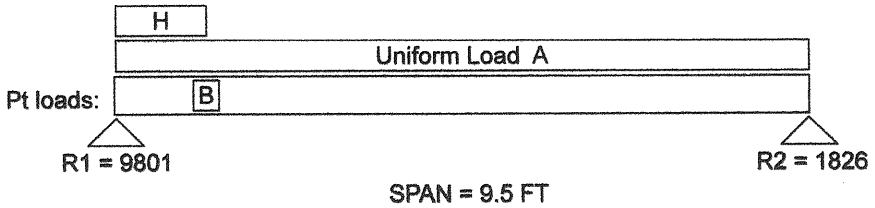
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	123.39	62.34	0.13	0.05
Critical	50.43	49.84	0.48	0.32
Status	OK	OK	OK	OK
Ratio	41%	80%	27%	16%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2903	290	2.2	625
CF Size Factor	1.001			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads — Uniform LL: 54 — Uniform TL: 67 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
5101	B = 10705	1.25	5	H = 80	0	1.25



SPAN = 9.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ elevator door w/point

HDR # 45 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 8 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 2.4 in² R2= 2.4 in² (1.5) DL Defl= 0.02 in

Data

Beam Span	3.5 ft	Reaction 1 LL	823 #	Reaction 2 LL	823 #
Beam Wt per ft	6.17 #	Reaction 1 TL	1501 #	Reaction 2 TL	1501 #
Bm Wt Included	22 #	Maximum V	1501 #		
Max Moment	2113 '#	Max V (Reduced)	1298 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

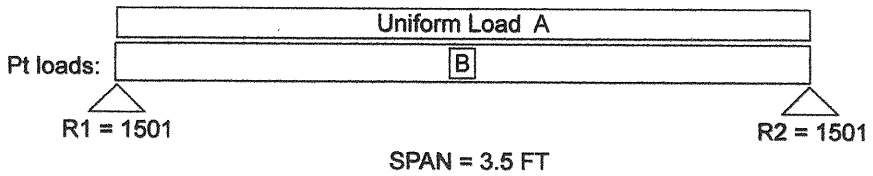
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.03	0.01
Critical	21.67	10.82	0.18	0.12
Status	OK	OK	OK	OK
Ratio	71%	43%	16%	10%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 205 Uniform TL: 330 = A

Point LL	Point TL	Distance
928	B = 1826	1.75



SPAN = 3.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ mechanical door w/point

HDR # 46 - alt # — Prepared by: LA — Date: 1/28/20

Selection **3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 11.5 in² R2= 7.2 in² (1.5) DL Defl= 0.01 in

Data

Beam Span	3.5 ft	Reaction 1 LL	3628 #	Reaction 2 LL	2336 #
Beam Wt per ft	12.99 #	Reaction 1 TL	7218 #	Reaction 2 TL	4478 #
Bm Wt Included	45 #	Maximum V	7218 #		
Max Moment	8606 '#	Max V (Reduced)	6730 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

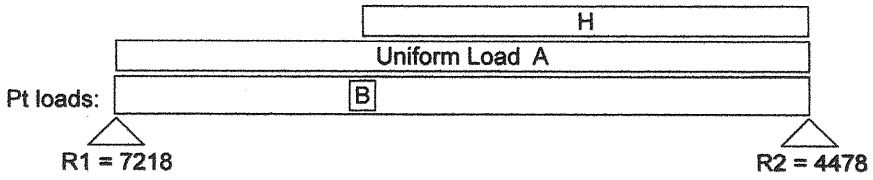
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	82.26	41.56	0.02	<0.01
Critical	35.57	34.81	0.18	0.12
Status	OK	OK	OK	OK
Ratio	43%	84%	10%	6%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2903	290	2.2	625
CF Size Factor	1.001			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 325 Uniform TL: 480 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
4692	B = 9801	1.25	60	H = 75	1.25	3.5



SPAN = 3.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — bm/hdr @ rec room/wine hall

BM/HDR # 47 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 10 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 3.0 in² R2= 3.0 in² (1.5) DL Defl= 0.02 in

Data

Beam Span	5.5 ft	Reaction 1 LL	1334 #	Reaction 2 LL	1334 #
Beam Wt per ft	7.87 #	Reaction 1 TL	1892 #	Reaction 2 TL	1892 #
Bm Wt Included	43 #	Maximum V	1892 #		
Max Moment	2601 '#	Max V (Reduced)	1361 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

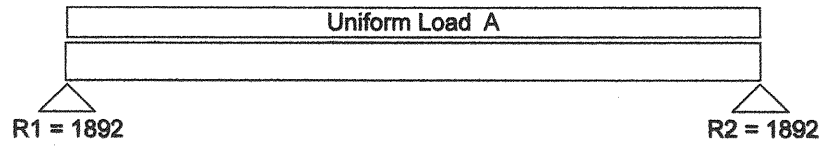
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.04	0.03
Critical	28.90	11.35	0.28	0.18
Status	OK	OK	OK	OK
Ratio	58%	35%	16%	15%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1080	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 485 Uniform TL: 680 = A



SPAN = 5.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — bm/hdr @ rec room/wine hall

BM/HDR # 47 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **3-1/2x 9-1/2 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 3.0 in² R2= 3.0 in² (1.5) DL Defl= 0.01 in

Data

Beam Span	5.5 ft	Reaction 1 LL	1334 #	Reaction 2 LL	1334 #
Beam Wt per ft	10.39 #	Reaction 1 TL	1899 #	Reaction 2 TL	1899 #
Bm Wt Included	57 #	Maximum V	1899 #		
Max Moment	2611 '#	Max V (Reduced)	1352 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

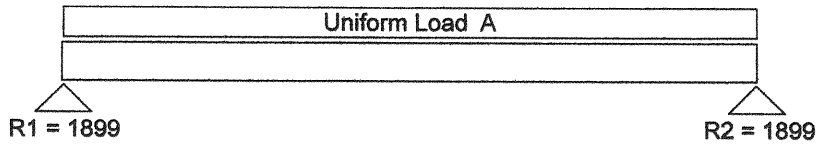
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	52.65	33.25	0.03	0.02
Critical	10.53	6.99	0.28	0.18
Status	OK	OK	OK	OK
Ratio	20%	21%	11%	10%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2976	290	2.2	625
CF Size Factor	1.026			
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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 485 Uniform TL: 680 = A



SPAN = 5.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — bm @ crawl below kitchen

BM # 48 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 10 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 2.9 in² R2= 3.4 in² (1.5) DL Defl= 0.07 in

Data

Beam Span	9.0 ft	Reaction 1 LL	1363 #	Reaction 2 LL	1413 #
Beam Wt per ft	7.87 #	Reaction 1 TL	1798 #	Reaction 2 TL	2098 #
Bm Wt Included	71 #	Maximum V	2098 #		
Max Moment	4221 '#	Max V (Reduced)	1687 #		
TL Max Defl	L / 240	TL Actual Defl	L / 561		
LL Max Defl	L / 360	LL Actual Defl	L / 882		

Attributes

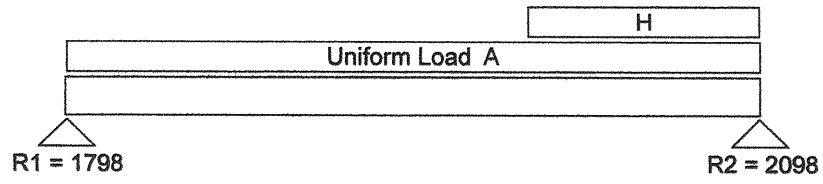
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.19	0.12
Critical	46.91	14.06	0.45	0.30
Status	OK	OK	OK	OK
Ratio	94%	43%	43%	41%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1080	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 300 Uniform TL: 375 = A

Par Unif LL	Par Unif TL	Start	End
25	H = 150	6.0	9.0



SPAN = 9 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — flr bm @ rec room

FLR BM # 49 - alt # — Prepared by: LA — Date: 1/28/20

Selection **5-1/8x 18 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 7.3 in² R2= 7.3 in² (1.5) DL Defl= 0.14 in Recom Camber= 0.20 in

Data

Beam Span	20.0 ft	Reaction 1 LL	3600 #	Reaction 2 LL	3600 #
Beam Wt per ft	22.42 #	Reaction 1 TL	4724 #	Reaction 2 TL	4724 #
Bm Wt Included	448 #	Maximum V	4724 #		
Max Moment	23621 '#	Max V (Reduced)	4016 #		
TL Max Defl	L / 240	TL Actual Defl	L / 566		
LL Max Defl	L / 360	LL Actual Defl	L / 832		

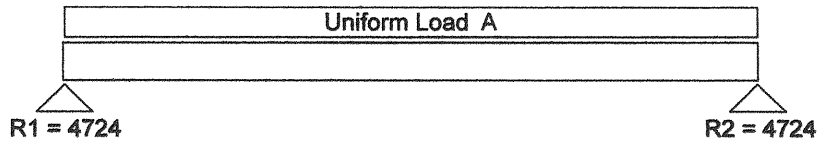
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	276.75	92.25	0.42	0.29
Critical	122.39	25.10	1.00	0.67
Status	OK	OK	OK	OK
Ratio	44%	27%	42%	43%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2316	240	1.8	650
Cv Volume	0.965			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 360 Uniform TL: 450 = A



SPAN = 20 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ rec room exterior doors

HDR # 50 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.5 in² R2= 0.5 in² (1.5) DL Defl= 0.01 in

Data

Beam Span	8.0 ft	Reaction 1 LL	216 #	Reaction 2 LL	216 #
Beam Wt per ft	6.17 #	Reaction 1 TL	293 #	Reaction 2 TL	293 #
Bm Wt Included	49 #	Maximum V	293 #		
Max Moment	585 '#	Max V (Reduced)	248 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

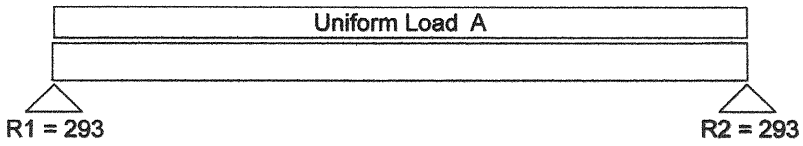
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.04	0.03
Critical	6.00	2.07	0.40	0.27
Status	OK	OK	OK	OK
Ratio	20%	8%	11%	10%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 54 Uniform TL: 67 = A



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ bedrm # 3 window

HDR # 51 - alt # — Prepared by: LA — Date: 1/28/20

Selection **4x 8 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.4 in² R2= 0.4 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	6.5 ft	Reaction 1 LL	176 #	Reaction 2 LL	176 #
Beam Wt per ft	6.17 #	Reaction 1 TL	238 #	Reaction 2 TL	238 #
Bm Wt Included	40 #	Maximum V	238 #		
Max Moment	386 '#	Max V (Reduced)	194 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

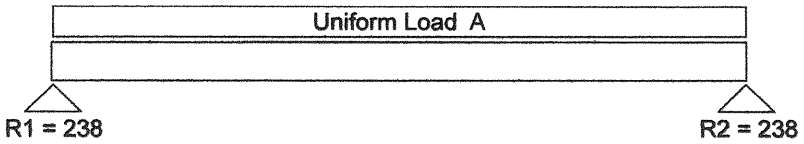
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.02	0.01
Critical	3.96	1.61	0.33	0.22
Status	OK	OK	OK	OK
Ratio	13%	6%	6%	6%

Values / *Adjustments*

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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 54 Uniform TL: 67 = A



SPAN = 6.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ bedrm # 3 interior door

HDR # 52 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 8 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 1.3 in² R2= 1.3 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	3.0 ft	Reaction 1 LL	645 #	Reaction 2 LL	645 #
Beam Wt per ft	6.17 #	Reaction 1 TL	816 #	Reaction 2 TL	816 #
Bm Wt Included	18 #	Maximum V	816 #		
Max Moment	612 '#	Max V (Reduced)	487 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

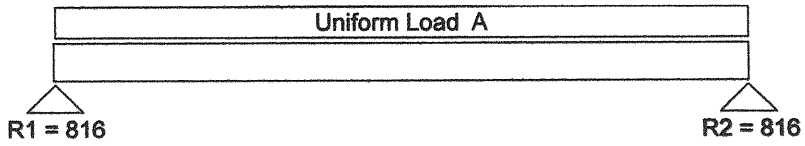
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.01	<0.01
Critical	6.28	4.06	0.15	0.10
Status	OK	OK	OK	OK
Ratio	20%	16%	4%	4%

Values / Adjustments

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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 430 Uniform TL: 538 = A



SPAN = 3 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — bm/hdr outside bedrm # 3

HDR # 52A - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 8 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 1.1 in² R2= 1.1 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	2.5 ft	Reaction 1 LL	538 #	Reaction 2 LL	538 #
Beam Wt per ft	6.17 #	Reaction 1 TL	680 #	Reaction 2 TL	680 #
Bm Wt Included	15 #	Maximum V	680 #		
Max Moment	425 '#	Max V (Reduced)	351 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

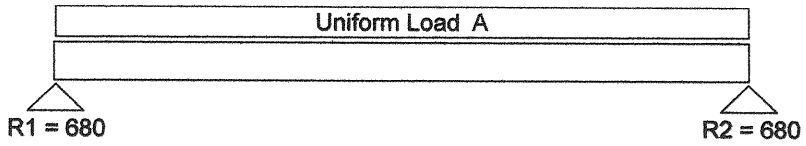
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.00	<0.01
Critical	4.36	2.93	0.13	0.08
Status	OK	OK	OK	OK
Ratio	14%	12%	2%	3%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 430 Uniform TL: 538 = A



SPAN = 2.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm outside bedroom # 3

FL FLR BM # 52B - alt # — Prepared by: LA — Date: 3/24/20

Selection **3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 3.7 in² R2= 3.7 in² (1.5) DL Defl= 0.03 in

Data

Beam Span	7.75 ft	Reaction 1 LL	1349 #	Reaction 2 LL	1349 #
Beam Wt per ft	12.99 #	Reaction 1 TL	2317 #	Reaction 2 TL	2317 #
Bm Wt Included	101 #	Maximum V	2317 #		
Max Moment	4490 '#	Max V (Reduced)	1725 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

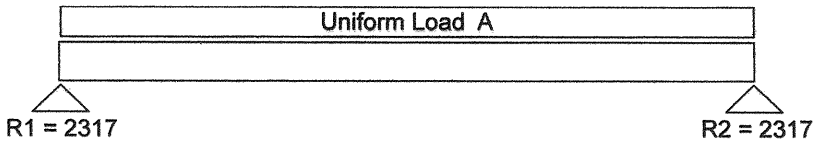
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	82.26	41.56	0.05	0.03
Critical	18.56	8.92	0.39	0.26
Status	OK	OK	OK	OK
Ratio	23%	21%	14%	10%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2903	290	2.2	625
CF Size Factor	1.001			
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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 348 Uniform TL: 585 = A



SPAN = 7.75 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm @ bedrm # 3 bath

FLR BM

HDR # 53 - alt # — Prepared by: LA — Date: 1/28/20

Selection **5-1/4x 14 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 19.9 in² R2= 5.4 in² (1.5) DL Defl= 0.03 in

Data

Beam Span	8.0 ft	Reaction 1 LL	7189 #	Reaction 2 LL	2218 #
Beam Wt per ft	22.97 #	Reaction 1 TL	12414 #	Reaction 2 TL	3372 #
Bm Wt Included	184 #	Maximum V	12414 #		
Max Moment	12472 '#	Max V (Reduced)	10521 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

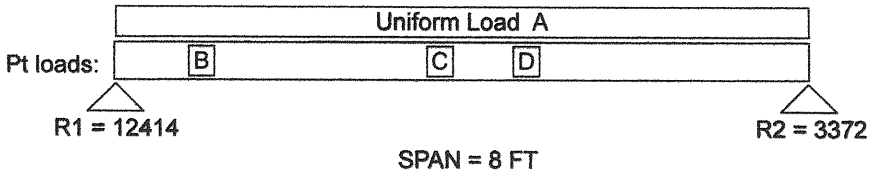
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	171.50	73.50	0.07	0.04
Critical	52.50	54.42	0.40	0.27
Status	OK	OK	OK	OK
Ratio	31%	74%	17%	14%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2851	290	2.2	625
CF Size Factor	0.983			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 54 Uniform TL: 67 = A

Point LL	Point TL	Distance
6980	B = 12511	1.0
440	C = 550	3.75
1555	D = 2005	4.75



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm @ bedrm # 3 bath

FLRBM / HDR # 53 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **7x 11-7/8 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 19.9 in² R2= 5.4 in² (1.5) DL Defl= 0.04 in

Data

Beam Span	8.0 ft	Reaction 1 LL	7189 #	Reaction 2 LL	2218 #
Beam Wt per ft	25.98 #	Reaction 1 TL	12426 #	Reaction 2 TL	3384 #
Bm Wt Included	208 #	Maximum V	12426 #		
Max Moment	12496 '#	Max V (Reduced)	12334 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

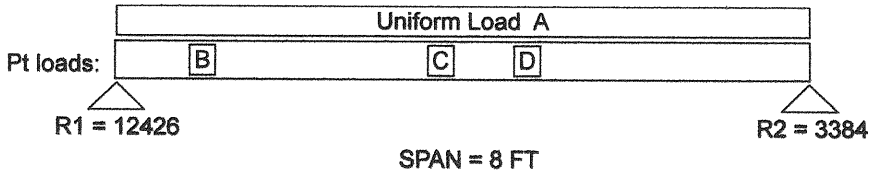
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	164.52	83.13	0.09	0.04
Critical	51.65	63.80	0.40	0.27
Status	OK	OK	OK	OK
Ratio	31%	77%	21%	17%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2903	290	2.2	625
CF Size Factor	1.001			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 54 Uniform TL: 67 = A

Point LL	Point TL	Distance
6980	B = 12511	1.0
440	C = 550	3.75
1555	D = 2005	4.75



SPAN = 8 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ rec room/stairs up

HDR # 54 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 8 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 2.0 in² R2= 2.0 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	4.25 ft	Reaction 1 LL	998 #	Reaction 2 LL	972 #
Beam Wt per ft	6.17 #	Reaction 1 TL	1261 #	Reaction 2 TL	1228 #
Bm Wt Included	26 #	Maximum V	1261 #		
Max Moment	1608 '#	Max V (Reduced)	985 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.03	0.02
Critical	16.49	8.21	0.21	0.14
Status	OK	OK	OK	OK
Ratio	54%	32%	14%	15%

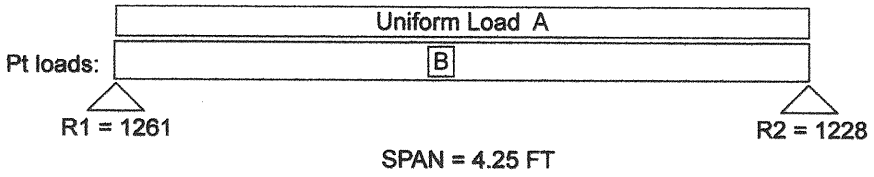
Values / Adjustments

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

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 360 Uniform TL: 450 = A

Point LL	Point TL	Distance
440	B = 550	2.0



SPAN = 4.25 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ bedroom # 4 door

HDR # 55 - alt # — Prepared by: LA — Date: 1/28/20

Selection 4x 8 DF-L #2 — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 1.5 in² R2= 1.5 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	3.0 ft	Reaction 1 LL	653 #	Reaction 2 LL	653 #
Beam Wt per ft	6.17 #	Reaction 1 TL	936 #	Reaction 2 TL	936 #
Bm Wt Included	18 #	Maximum V	936 #		
Max Moment	702 '#	Max V (Reduced)	559 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

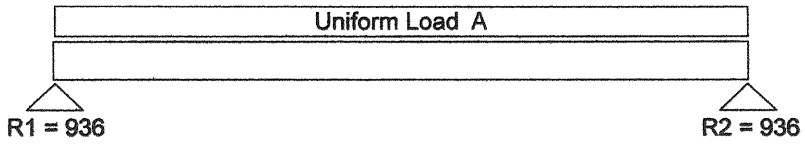
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.01	<0.01
Critical	7.20	4.66	0.15	0.10
Status	OK	OK	OK	OK
Ratio	23%	18%	5%	4%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 435 Uniform TL: 618 = A



SPAN = 3 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — fl flr bm @ lowr flr by mechan

FL FLR BM # 55A - alt # — Prepared by: LA — Date: 3/24/20

Selection **3-1/2x 11-7/8 1.55E TJ TimberStrand LSL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 0.7 in² R2= 1.1 in² (1.5) DL Defl= 0.03 in

Data

Beam Span	11.0 ft	Reaction 1 LL	400 #	Reaction 2 LL	646 #
Beam Wt per ft	10.97 #	Reaction 1 TL	596 #	Reaction 2 TL	997 #
Bm Wt Included	121 #	Maximum V	997 #		
Max Moment	2306 '#	Max V (Reduced)	920 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

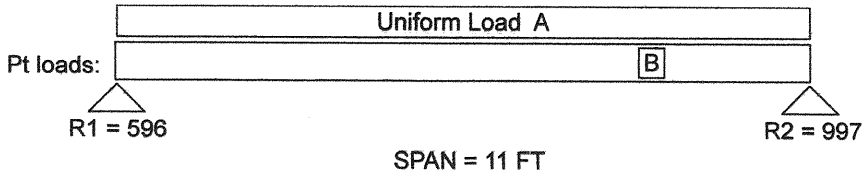
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	82.26	41.56	0.08	0.04
Critical	11.89	4.45	0.55	0.37
Status	OK	OK	OK	OK
Ratio	14%	11%	14%	11%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2325	310	1.6	900
Adjusted Values	2327	310	1.6	900
CF Size Factor	1.001			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 54 Uniform TL: 67 = A

Point LL	Point TL	Distance
451	B = 735	8.5



SPAN = 11 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ br # 4 closet doors

HDR # 55B - alt # — Prepared by: LA — Date: 3/24/20

Selection **4x 10 DF-L #2** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 3.5 in² R2= 4.1 in² (1.5) DL Defl= 0.07 in

Data

Beam Span	6.0 ft	Reaction 1 LL	458 #	Reaction 2 LL	692 #
Beam Wt per ft	7.87 #	Reaction 1 TL	2188 #	Reaction 2 TL	2535 #
Bm Wt Included	47 #	Maximum V	2535 #		
Max Moment	3479 '#	Max V (Reduced)	2005 #		
TL Max Defl	L / 240	TL Actual Defl	L / 838		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

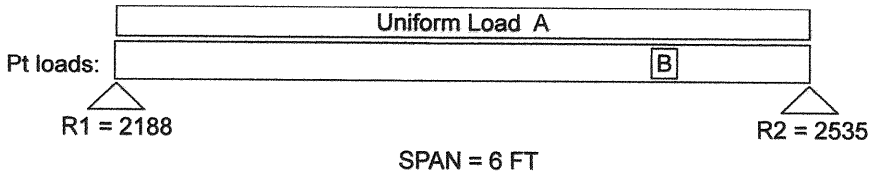
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.09	0.02
Critical	38.66	16.71	0.30	0.20
Status	OK	OK	OK	OK
Ratio	77%	52%	29%	8%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1080	180	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 125 Uniform TL: 680 = A

Point LL	Point TL	Distance
400	B = 596	4.75



SPAN = 6 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ bedroom # 4 window

HDR # 56 - alt # — Prepared by: LA — Date: 1/28/20

Selection **3-1/8x 9 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 4.9 in² R2= 3.3 in² (1.5) DL Defl= 0.05 in Recom Camber= 0.07 in

Data

Beam Span	5.5 ft	Reaction 1 LL	1715 #	Reaction 2 LL	1214 #
Beam Wt per ft	6.83 #	Reaction 1 TL	3161 #	Reaction 2 TL	2134 #
Bm Wt Included	38 #	Maximum V	3161 #		
Max Moment	4760 '#	Max V (Reduced)	2576 #		
TL Max Defl	L / 240	TL Actual Defl	L / 787		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

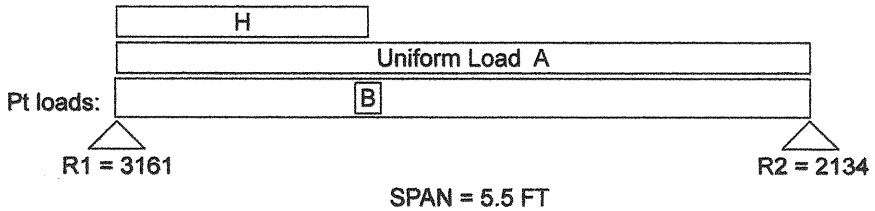
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	42.19	28.13	0.08	0.04
Critical	23.80	16.10	0.28	0.18
Status	OK	OK	OK	OK
Ratio	56%	57%	30%	20%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2400	240	1.8	650
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 280 Uniform TL: 435 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1051	B = 2189	2.0	169	H = 338	0	2.0



SPAN = 5.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — hdr @ bedroom # 4 window

HDR # 56 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **3-1/2x 9-1/4 2.0E TJ Parallam W.S. PSL** Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 5.1 in² R2= 3.4 in² (1.5) DL Defl= 0.03 in

Data

Beam Span	5.5 ft	Reaction 1 LL	1715 #	Reaction 2 LL	1214 #
Beam Wt per ft	10.12 #	Reaction 1 TL	3170 #	Reaction 2 TL	2143 #
Bm Wt Included	56 #	Maximum V	3170 #		
Max Moment	4772 '#	Max V (Reduced)	2567 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

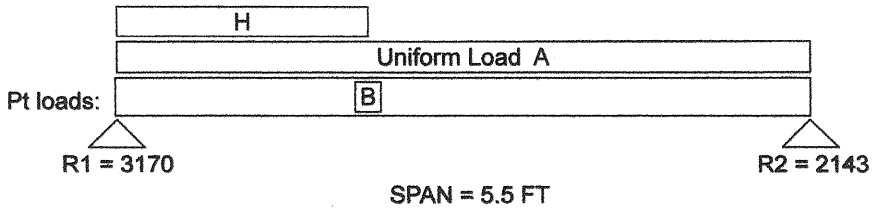
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.06	0.02
Critical	19.19	13.28	0.28	0.18
Status	OK	OK	OK	OK
Ratio	38%	41%	21%	14%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2985	290	2.2	625
CF Size Factor	1.029			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 280 Uniform TL: 435 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1051	B = 2189	2.0	169	H = 338	0	2.0



SPAN = 5.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — bm @ exterior by rec rom doors

BM # 57 - alt # — Prepared by: LA — Date: 1/28/20

Selection **6x 12 DF-L #1** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 4.8 in² R2= 5.5 in² (1.5) DL Defl= 0.09 in

Data

Beam Span	10.0 ft	Reaction 1 LL	1719 #	Reaction 2 LL	1959 #
Beam Wt per ft	15.37 #	Reaction 1 TL	2982 #	Reaction 2 TL	3453 #
Bm Wt Included	154 #	Maximum V	3453 #		
Max Moment	8897 '#	Max V (Reduced)	2816 #		
TL Max Defl	L / 240	TL Actual Defl	L / 715		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

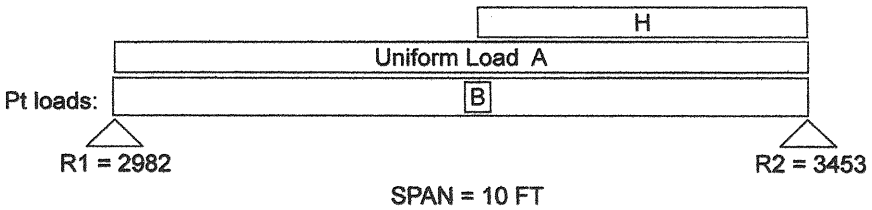
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	121.23	63.25	0.17	0.08
Critical	79.08	24.84	0.50	0.33
Status	OK	OK	OK	OK
Ratio	65%	39%	34%	24%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	1350	170	1.6	625
Adjusted Values	1350	170	1.6	625
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 285 Uniform TL: 475 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
410	B = 700	5.25	88	H = 175	5.25	10.0



SPAN = 10 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — bm @ exterior by rec rom doors

BM # 57 - alt # 1 — Prepared by: LA — Date: 1/28/20

Selection **5-1/4x 9-1/4 2.0E TJ Parallam W.S. PSL** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 4.8 in² R2= 5.5 in² (1.5) DL Defl= 0.13 in

Data

Beam Span	10.0 ft	Reaction 1 LL	1719 #	Reaction 2 LL	1959 #
Beam Wt per ft	15.18 #	Reaction 1 TL	2981 #	Reaction 2 TL	3452 #
Bm Wt Included	152 #	Maximum V	3452 #		
Max Moment	8894 '#	Max V (Reduced)	2939 #		
TL Max Defl	L / 240	TL Actual Defl	L / 489		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

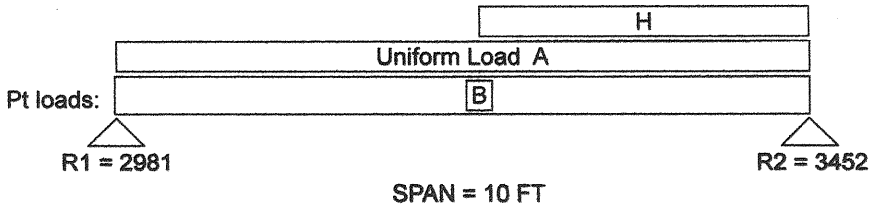
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	74.87	48.56	0.25	0.12
Critical	35.76	15.20	0.50	0.33
Status	OK	OK	OK	OK
Ratio	48%	31%	49%	35%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2985	290	2.2	625
CF Size Factor	1.029			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 285 Uniform TL: 475 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
410	B = 700	5.25	88	H = 175	5.25	10.0



SPAN = 10 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — bm @ exterior by bedrm #3 wdw

BM # 58 - alt # — Prepared by: LA — Date: 1/28/20

Selection 5-1/4x 14 2.0E TJ Parallam W.S. PSL — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 13.7 in² R2= 10.5 in² (1.5) DL Defl= 0.15 in

Data

Beam Span	11.0 ft	Reaction 1 LL	4806 #	Reaction 2 LL	3639 #
Beam Wt per ft	22.97 #	Reaction 1 TL	8580 #	Reaction 2 TL	6532 #
Bm Wt Included	253 #	Maximum V	8580 #		
Max Moment	31010 '#	Max V (Reduced)	7716 #		
TL Max Defl	L / 240	TL Actual Defl	L / 490		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

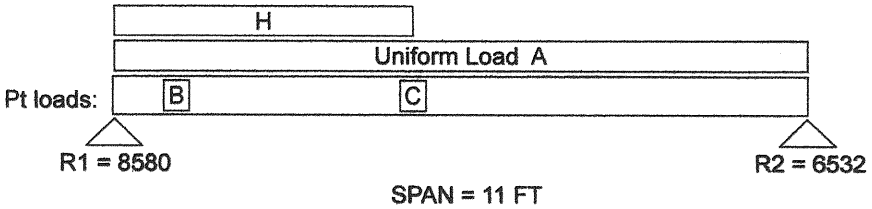
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	171.50	73.50	0.27	0.12
Critical	130.53	39.91	0.55	0.37
Status	OK	OK	OK	OK
Ratio	76%	54%	49%	33%

Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2851	290	2.2	625
CF Size Factor	0.983			
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
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 285 Uniform TL: 475 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
385	B = 550	1.0	88	H = 175	0	4.75
4507	C = 8253	4.75				



SPAN = 11 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — D BM @ exterior by bedroom # 3

DEK BM # 59 - alt # — Prepared by: LA — Date: 1/28/20

Selection **PT 2x 8 HF #2** — Lu = 0.0 Ft — Lu @OH = 0.0 Ft

Conditions NDS 2015, Overhang, Repetitive Use, Wet Use, Incised

Min Bearing Area R1= 1.1 in² R2= 1.6 in² (2.0) DL Defl= 0.09 in.

Data

Beam Span	9.0 ft	Reaction 1 LL	222 #	Reaction 2 LL	283 #
Beam Wt per ft	0 #	Reaction 1 TL	306 #	Reaction 2 TL	444 #
Bm Wt Included	0 #	Maximum V	324 #	Overhang Length	1.0 ft
Max Moment	667 '#	Max V (Reduced)	282 #	Total Beam Length	10.0 ft
TL Max Defl	L / 240	TL Actual Defl	L / 476	OH TL Actual Defl	L / 308
LL Max Defl	L / 360	LL Actual Defl	L / 805	OH LL Actual Defl	L / 495

Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	13.14	10.88	0.23	0.13	-0.08	-0.05
Critical	8.53	3.64	0.45	0.30	0.10	0.07
Status	OK	OK	OK	OK	OK	OK
Ratio	65%	33%	50%	45%	78%	73%

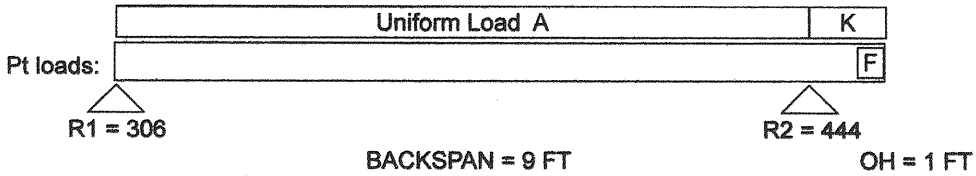
Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	850	150	1.3	405
Adjusted Values	938	116	1.1	271
CF Size Factor	1.200			
Cd Duration	1.00	1.00		
Cr Repetitive	1.15			
Ch Shear Stress		N/A		
Cm Wet+Ci Incised	0.80	0.776	0.855	0.67

Ci Stability	1.0000	Rb = 0.00	Le = 0.00 Ft
Ci Stability @ OH	1.0000	Rb = 0.00	Le = 0.00 Ft

Loads Uniform LL: 50 Uniform TL: 70 = A (Uniform Ld on Backspan)

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
5	F = 50 (OH)	1.0	50	K = 70 (OH)	0	1.0



Uniform and partial uniform loads are lbs per lineal ft. Overhanging load distances are from R2.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — dek bm @ exterior by rec room

DEK BM # 60 - alt # 1 — Prepared by: LA — Date: 3/24/20

Selection: **PT 6x 12 HF #2** — Lu = 0.0 Ft — Lu @OH = 0.0 Ft

Conditions: NDS 2015, Overhang, Wet Use, Incised

Min Bearing Area R1= 8.1 in² R2= 12.2 in² (2.0) DL Defl= 0.10 in.

Data

Beam Span	10.0 ft	Reaction 1 LL	1358 #	Reaction 2 LL	2038 #
Beam Wt per ft	15.37 #	Reaction 1 TL	2205 #	Reaction 2 TL	3307 #
Bm Wt Included	184 #	Maximum V	2389 #	Overhang Length	2.0 ft
Max Moment	5288 '#	Max V (Reduced)	1948 #	Total Beam Length	12.0 ft
TL Max Defl	L / 240	TL Actual Defl	L / 678	OH TL Actual Defl	L / 411
LL Max Defl	L / 360	LL Actual Defl	L / >1000	OH LL Actual Defl	L / 917

Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	121.23	63.25	0.18	0.08	-0.12	-0.05
Critical	117.52	26.10	0.50	0.33	0.20	0.13
Status	OK	OK	OK	OK	OK	OK
Ratio	97%	41%	35%	24%	58%	39%

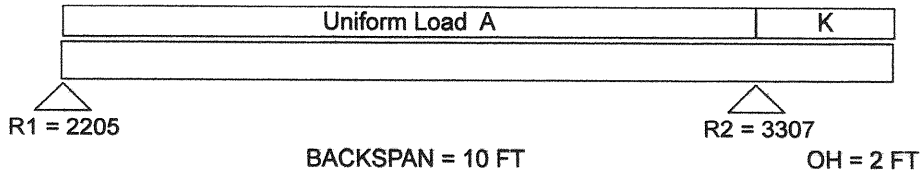
Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	675	140	1.1	405
Adjusted Values	540	112	1.0	271
CF Size Factor	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet+Ci Incised	0.80	0.80	0.95	0.67

CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft
CI Stability @ OH	1.0000	Rb = 0.00	Le = 0.00 Ft

Loads — Uniform LL: 283 — Uniform TL: 444 = A — (Uniform Ld on Backspan)

Par Unif LL	Par Unif TL	Start	End
283	K = 444 (OH)	0	2.0



Uniform and partial uniform loads are lbs per lineal ft. Overhanging load distances are from R2.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — dek bm @ exterior by rec room

DEK BM # 61 - alt # 1 — Prepared by: LA — Date: 3/24/20

Selection **PT 6x 12 HF #2** — Lu = 0.0 Ft

Conditions NDS 2015, Wet Use, Incised

Min Bearing Area R1= 8.0 in² R2= 8.0 in² (2.0) DL Defl= 0.09 in

Data

Beam Span	9.5 ft	Reaction 1 LL	1344 #	Reaction 2 LL	1344 #
Beam Wt per ft	15.37 #	Reaction 1 TL	2182 #	Reaction 2 TL	2182 #
Bm Wt Included	146 #	Maximum V	2182 #		
Max Moment	5182 '#	Max V (Reduced)	1742 #		
TL Max Defl	L / 240	TL Actual Defl	L / 714		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

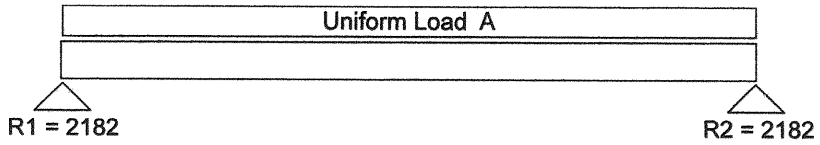
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	121.23	63.25	0.16	0.07
Critical	115.16	23.33	0.48	0.32
Status	OK	OK	OK	OK
Ratio	95%	37%	34%	22%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	675	140	1.1	405
Adjusted Values	540	112	1.0	271
CF Size Factor	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet+Ci Incised	0.80	0.80	0.95	0.67

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 283 Uniform TL: 444 = A



SPAN = 9.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 19-10.103

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — dek bm @ exterior by dining rm

DEK BM # 62 - alt # 1 — Prepared by: LA — Date: 3/24/20

Selection **PT 6x 12 HF #2** — Lu = 0.0 Ft

Conditions NDS 2015, Wet Use, Incised

Min Bearing Area R1= 8.0 in² R2= 8.0 in² (2.0) DL Defl= 0.09 in

Data

Beam Span	9.5 ft	Reaction 1 LL	1344 #	Reaction 2 LL	1344 #
Beam Wt per ft	15.37 #	Reaction 1 TL	2182 #	Reaction 2 TL	2182 #
Bm Wt Included	146 #	Maximum V	2182 #		
Max Moment	5182 '#	Max V (Reduced)	1742 #		
TL Max Defl	L / 240	TL Actual Defl	L / 714		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

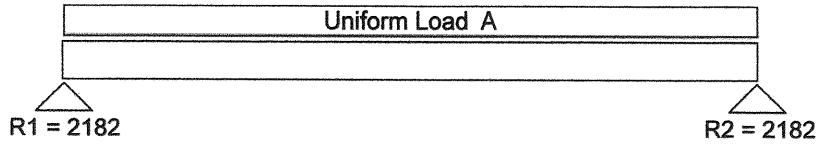
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	121.23	63.25	0.16	0.07
Critical	115.16	23.33	0.48	0.32
Status	OK	OK	OK	OK
Ratio	95%	37%	34%	22%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	675	140	1.1	405
Adjusted Values	540	112	1.0	271
CF Size Factor	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet+Ci Incised	0.80	0.80	0.95	0.67

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 283 Uniform TL: 444 = A



SPAN = 9.5 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — dek bm @ exterior by kitchen

DEK BM # 63 - alt # 1 — Prepared by: LA — Date: 3/24/20

Selection **PT 6x 12 HF #2** — Lu = 0.0 Ft — Lu @OH = 0.0 Ft

Conditions NDS 2015, Overhang, Wet Use, Incised

Min Bearing Area R1= 7.9 in² R2= 10.3 in² (2.0) DL Defl= 0.08 in.

Data

Beam Span	9.5 ft	Reaction 1 LL	1321 #	Reaction 2 LL	1721 #
Beam Wt per ft	15.37 #	Reaction 1 TL	2144 #	Reaction 2 TL	2794 #
Bm Wt Included	165 #	Maximum V	2220 #	Overhang Length	1.25 ft
Max Moment	5000 '#	Max V (Reduced)	1780 #	Total Beam Length	10.75 ft
TL Max Defl	L / 240	TL Actual Defl	L / 745	OH TL Actual Defl	L / 455
LL Max Defl	L / 360	LL Actual Defl	L / >1000	OH LL Actual Defl	L / < -1000

Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	121.23	63.25	0.15	0.07	-0.07	-0.03
Critical	111.11	23.83	0.48	0.32	0.13	0.08
Status	OK	OK	OK	OK	OK	OK
Ratio	92%	38%	32%	21%	53%	35%

Values / **Adjustments**

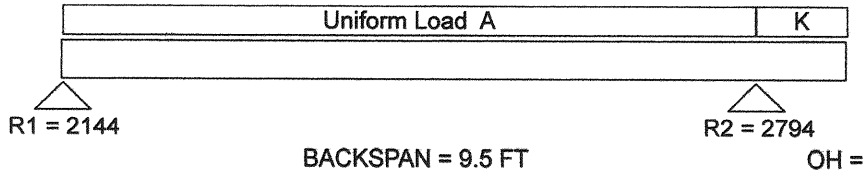
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	675	140	1.1	405
Adjusted Values	540	112	1.0	271
CF Size Factor	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet+Ci Incised	0.80	0.80	0.95	0.67

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Cl Stability @ OH 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 283 Uniform TL: 444 = A (Uniform Ld on Backspan)

Par Unif LL	Par Unif TL	Start	End
283	K = 444 (OH)	0	1.25



Uniform and partial uniform loads are lbs per lineal ft. Overhanging load distances are from R2.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — dek bm @ exterior by kitchen

DEK BM # 64 - alt # — Prepared by: LA — Date: 3/24/20

Selection **PT 6x 10 HF #2** — Lu = 0.0 Ft — Lu @OH = 0.0 Ft

Conditions NDS 2015, Overhang, Wet Use, Incised

Min Bearing Area R1= 6.8 in² R2= 9.5 in² (2.0) DL Defl= 0.05 in.

Data

Beam Span	7.5 ft	Reaction 1 LL	1276 #	Reaction 2 LL	1786 #
Beam Wt per ft	12.7 #	Reaction 1 TL	1833 #	Reaction 2 TL	2566 #
Bm Wt Included	111 #	Maximum V	1937 #	Overhang Length	1.25 ft
Max Moment	3339 '#	Max V (Reduced)	1540 #	Total Beam Length	8.75 ft
TL Max Defl	L / 240	TL Actual Defl	L / 851	OH TL Actual Defl	L / 516
LL Max Defl	L / 360	LL Actual Defl	L / >1000	OH LL Actual Defl	L / 963

Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	82.73	52.25	0.11	0.06	-0.06	-0.03
Critical	74.20	20.62	0.38	0.25	0.13	0.08
Status	OK	OK	OK	OK	OK	OK
Ratio	90%	39%	28%	23%	47%	37%

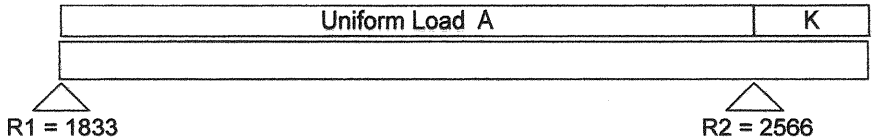
Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	675	140	1.1	405
Adjusted Values	540	112	1.0	271
CF Size Factor	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet+Ci Incised	0.80	0.80	0.95	0.67

CI Stability	1.0000	Rb = 0.00	Le = 0.00 Ft
CI Stability @ OH	1.0000	Rb = 0.00	Le = 0.00 Ft

Loads Uniform LL: 350 Uniform TL: 490 = A (Uniform Ld on Backspan)

Par Unif LL	Par Unif TL	Start	End
350	K = 490 (OH)	0	1.25



Uniform and partial uniform loads are lbs per lineal ft. Overhanging load distances are from R2.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — dek bm @ exterior by kitchen

DEK BM # 65 - alt # — Prepared by: LA — Date: 3/24/20

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

Conditions NDS 2015, Wet Use, Incised

Min Bearing Area R1= 6.5 in² R2= 6.5 in² (2.0) DL Defl= 0.04 in

Data

Beam Span	7.0 ft	Reaction 1 LL	1225 #	Reaction 2 LL	1225 #
Beam Wt per ft	12.7 #	Reaction 1 TL	1759 #	Reaction 2 TL	1759 #
Bm Wt Included	89 #	Maximum V	1759 #		
Max Moment	3079 '#	Max V (Reduced)	1361 #		
TL Max Defl	L / 240	TL Actual Defl	L / 976		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

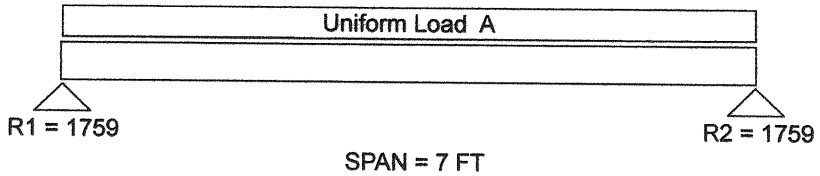
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	82.73	52.25	0.09	0.05
Critical	68.42	18.23	0.35	0.23
Status	OK	OK	OK	OK
Ratio	83%	35%	25%	20%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	675	140	1.1	405
Adjusted Values	540	112	1.0	271
CF Size Factor	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet+Ci Incised	0.80	0.80	0.95	0.67

CI Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 350 Uniform TL: 490 = A



SPAN = 7 FT

Uniform and partial uniform loads are lbs per lineal ft.

BeamChek v2018 licensed to: Anderson Architecture Reg # 8111-1829

Petrie Residence/M.I/main residence — dek bm @ exterior by dining

DEK BM # 66 - alt # — Prepared by: LA — Date: 3/24/20

Selection **PT 6x 10 HF #1** — Lu = 0.0 Ft

Conditions NDS 2015, Wet Use, Incised

Min Bearing Area R1= 7.9 in² R2= 7.9 in² (2.0) DL Defl= 0.07 in

Data

Beam Span	8.5 ft	Reaction 1 LL	1488 #	Reaction 2 LL	1488 #
Beam Wt per ft	12.7 #	Reaction 1 TL	2136 #	Reaction 2 TL	2136 #
Bm Wt Included	108 #	Maximum V	2136 #		
Max Moment	4540 '#	Max V (Reduced)	1738 #		
TL Max Defl	L / 240	TL Actual Defl	L / 644		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

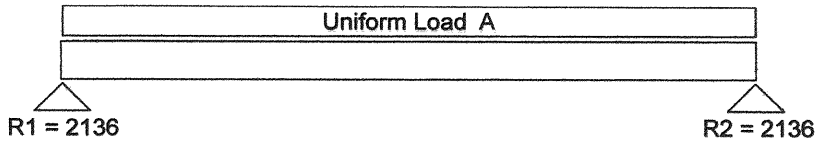
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	82.73	52.25	0.16	0.08
Critical	64.86	23.28	0.43	0.28
Status	OK	OK	OK	OK
Ratio	78%	45%	37%	30%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	1050	140	1.3	405
Adjusted Values	840	112	1.2	271
CF Size Factor	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet+Ci Incised	0.80	0.80	0.95	0.67

Cl Stability 1.0000 Rb = 0.00 Le = 0.00 Ft

Loads Uniform LL: 350 Uniform TL: 490 = A



SPAN = 8.5 FT

Uniform and partial uniform loads are lbs per lineal ft.