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

Petrie Residence/M.I. ADU — hdr @ bedroom window

HDR # 1 - 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= 0.08 in

Data

Beam Span	8.0 ft	Reaction 1 LL	400 #	Reaction 2 LL	400 #
Beam Wt per ft	6.17 #	Reaction 1 TL	825 #	Reaction 2 TL	825 #
Bm Wt Included	49 #	Maximum V	825 #		
Max Moment	1649 '#	Max V (Reduced)	700 #		
TL Max Defl	L / 240	TL Actual Defl	L / 716		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

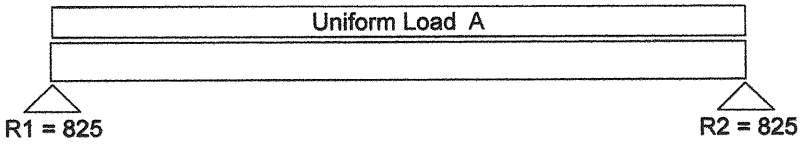
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.13	0.05
Critical	16.92	5.83	0.40	0.27
Status	OK	OK	OK	OK
Ratio	55%	23%	34%	19%

Values / *Adjustments*

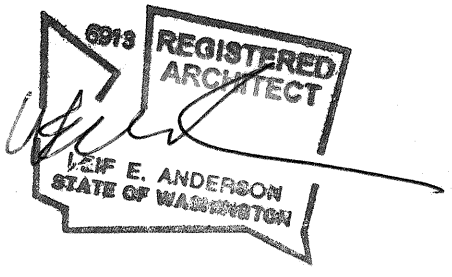
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	900	180	1.6	625
Adjusted Values	1170	180	1.6	625
CF Size Factor	1.300			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
Cl Stability	1.0000	Rb = 0.00	Le = 0.00 Ft	

Loads Uniform LL: 100 Uniform TL: 200 = 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. ADU — hdr @ bathroom window

HDR # 2 - 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	2.5 ft	Reaction 1 LL	156 #	Reaction 2 LL	156 #
Beam Wt per ft	6.17 #	Reaction 1 TL	320 #	Reaction 2 TL	320 #
Bm Wt Included	15 #	Maximum V	320 #		
Max Moment	200 '#	Max V (Reduced)	165 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

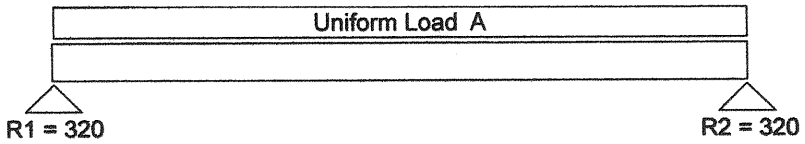
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.00	<0.01
Critical	2.05	1.38	0.13	0.08
Status	OK	OK	OK	OK
Ratio	7%	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: 125 Uniform TL: 250 = 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. ADU — hdr @ kitchen sink window

HDR # 3 - 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	3.5 ft	Reaction 1 LL	451 #	Reaction 2 LL	451 #
Beam Wt per ft	6.17 #	Reaction 1 TL	914 #	Reaction 2 TL	914 #
Bm Wt Included	22 #	Maximum V	914 #		
Max Moment	1513 '#	Max V (Reduced)	880 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

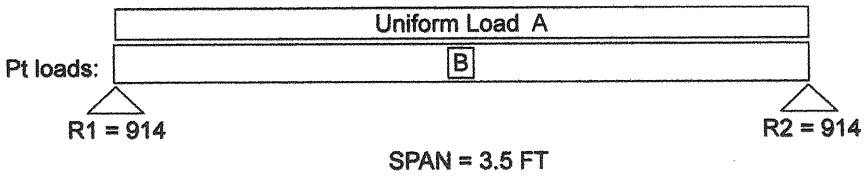
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.02	<0.01
Critical	15.52	7.33	0.18	0.12
Status	OK	OK	OK	OK
Ratio	51%	29%	11%	6%

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: 25 Uniform TL: 50 = A

Point LL	Point TL	Distance
815	B = 1631	1.75



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. ADU — hdr @ ADU entry door

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= 0.7 in² R2= 0.7 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	3.5 ft	Reaction 1 LL	219 #	Reaction 2 LL	219 #
Beam Wt per ft	6.17 #	Reaction 1 TL	448 #	Reaction 2 TL	448 #
Bm Wt Included	22 #	Maximum V	448 #		
Max Moment	392 '#	Max V (Reduced)	294 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

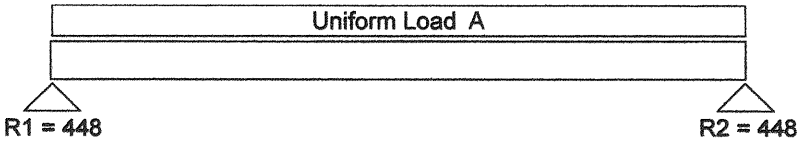
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.01	<0.01
Critical	4.02	2.45	0.18	0.12
Status	OK	OK	OK	OK
Ratio	13%	10%	3%	2%

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: 125 Uniform TL: 250 = A



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. ADU — hdr @ ADU living rm sl gls dr

HDR # 5 - 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= 2.8 in² R2= 4.9 in² (1.5) DL Defl= 0.14 in Recom Camber= 0.21 in

Data

Beam Span	8.0 ft	Reaction 1 LL	891 #	Reaction 2 LL	1584 #
Beam Wt per ft	6.83 #	Reaction 1 TL	1809 #	Reaction 2 TL	3196 #
Bm Wt Included	55 #	Maximum V	3196 #		
Max Moment	5467 '#	Max V (Reduced)	2741 #		
TL Max Defl	L / 240	TL Actual Defl	L / 425		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

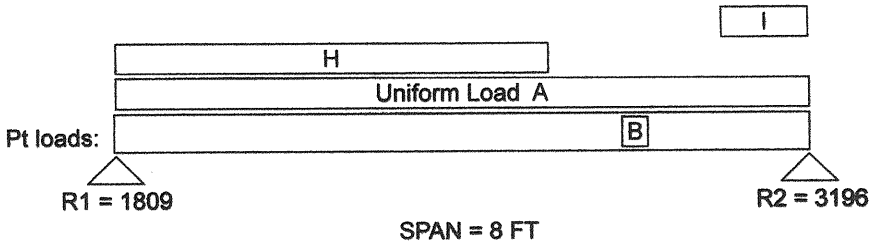
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	42.19	28.13	0.23	0.09
Critical	27.34	17.13	0.40	0.27
Status	OK	OK	OK	OK
Ratio	65%	61%	57%	33%

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: 25 Uniform TL: 50 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1375	B = 2750	6.0	125	H = 250	0	5.0
			275	I = 550	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. ADU — hdr @ ADU garage/man door

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= 1.6 in² R2= 1.6 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	3.5 ft	Reaction 1 LL	578 #	Reaction 2 LL	578 #
Beam Wt per ft	6.17 #	Reaction 1 TL	973 #	Reaction 2 TL	973 #
Bm Wt Included	22 #	Maximum V	973 #		
Max Moment	852 '#	Max V (Reduced)	637 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

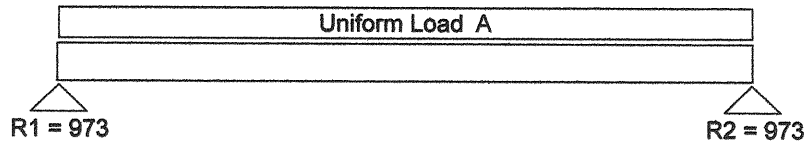
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	30.66	25.38	0.01	<0.01
Critical	8.73	5.31	0.18	0.12
Status	OK	OK	OK	OK
Ratio	28%	21%	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: 330 Uniform TL: 550 = A



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. ADU — fl flr bm @ grage/rear/east

FL FLR BM # 7 - alt # — Prepared by: LA — Date: 1/28/20

Selection **5-1/8x 12 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 6.1 in² R2= 8.0 in² (1.5) DL Defl= 0.24 in Recom Camber= 0.36 in

Data

Beam Span	12.0 ft	Reaction 1 LL	1857 #	Reaction 2 LL	2457 #
Beam Wt per ft	14.94 #	Reaction 1 TL	3979 #	Reaction 2 TL	5188 #
Bm Wt Included	179 #	Maximum V	5188 #		
Max Moment	16118 '#	Max V (Reduced)	4946 #		
TL Max Defl	L / 240	TL Actual Defl	L / 370		
LL Max Defl	L / 360	LL Actual Defl	L / 985		

Attributes

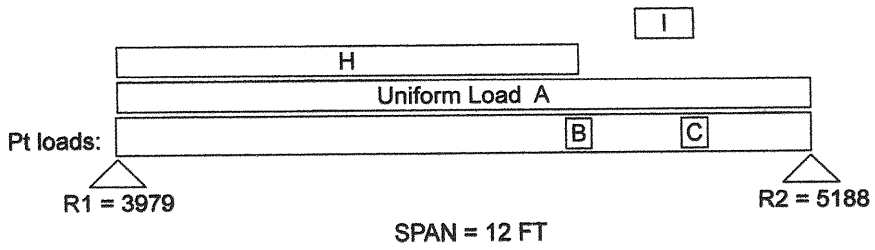
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	123.00	61.50	0.39	0.15
Critical	80.59	30.91	0.60	0.40
Status	OK	OK	OK	OK
Ratio	66%	50%	65%	37%

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
1375	B = 2750	8.0	125	H = 250	0	8.0
451	C = 914	10.0	300	I = 600	9.0	10.0



SPAN = 12 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. ADU — fl flr bm @ grage/rear/east

FL FLR BM # 7 - 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

Conditions NDS 2015

Min Bearing Area R1= 6.4 in² R2= 8.3 in² (1.5) DL Defl= 0.20 in

Data

Beam Span	12.0 ft	Reaction 1 LL	1857 #	Reaction 2 LL	2457 #
Beam Wt per ft	19.48 #	Reaction 1 TL	4006 #	Reaction 2 TL	5216 #
Bm Wt Included	234 #	Maximum V	5216 #		
Max Moment	16200 '#	Max V (Reduced)	4972 #		
TL Max Defl	L / 240	TL Actual Defl	L / 446		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

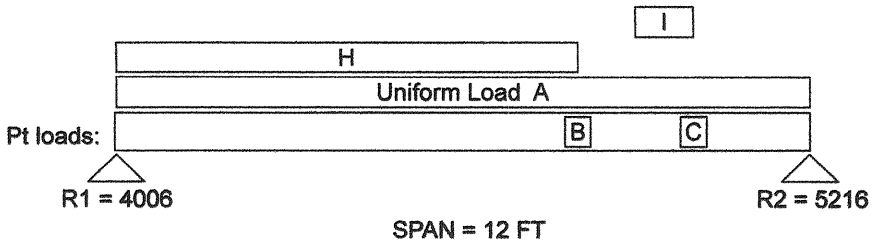
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	123.39	62.34	0.32	0.12
Critical	66.96	25.72	0.60	0.40
Status	OK	OK	OK	OK
Ratio	54%	41%	54%	30%

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
1375	B = 2750	8.0	125	H = 250	0	8.0
451	C = 914	10.0	300	I = 600	9.0	10.0



SPAN = 12 FT

Uniform and partial uniform loads are lbs per lineal ft.

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

Petrie Residence/M.I. ADU — fl flr bm@grage/rear/east/left

FL FLR BM # 8 - alt # — Prepared by: LA — Date: 1/28/20

Selection **5-1/8x 12 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 8.1 in² R2= 5.5 in² (1.5) DL Defl= 0.23 in Recom Camber= 0.34 in

Data

Beam Span	12.5 ft	Reaction 1 LL	2490 #	Reaction 2 LL	1636 #
Beam Wt per ft	14.94 #	Reaction 1 TL	5266 #	Reaction 2 TL	3548 #
Bm Wt Included	187 #	Maximum V	5266 #		
Max Moment	12800 '#	Max V (Reduced)	5024 #		
TL Max Defl	L / 240	TL Actual Defl	L / 414		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

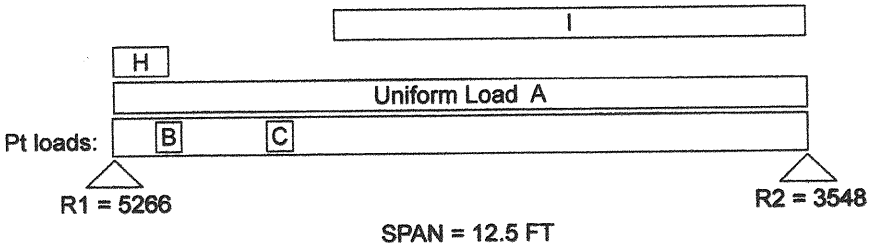
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	123.00	61.50	0.36	0.13
Critical	64.00	31.40	0.63	0.42
Status	OK	OK	OK	OK
Ratio	52%	51%	58%	32%

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
451	B = 914	1.0	250	H = 500	0	1.0
1125	C = 2250	3.0	125	I = 250	4.0	12.5



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. ADU — fl flr bm@grage/rear/east/left

FL FLR BM # 8 - 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

Conditions NDS 2015

Min Bearing Area R1= 8.5 in² R2= 5.7 in² (1.5) DL Defl= 0.19 in

Data

Beam Span	12.5 ft	Reaction 1 LL	2490 #	Reaction 2 LL	1636 #
Beam Wt per ft	19.48 #	Reaction 1 TL	5294 #	Reaction 2 TL	3576 #
Bm Wt Included	244 #	Maximum V	5294 #		
Max Moment	12889 '#	Max V (Reduced)	4555 #		
TL Max Defl	L / 240	TL Actual Defl	L / 498		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

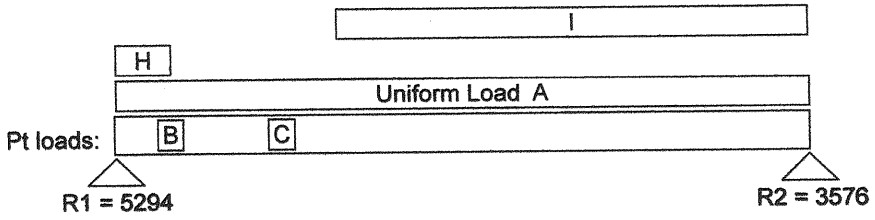
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	123.39	62.34	0.30	0.11
Critical	53.27	23.56	0.63	0.42
Status	OK	OK	OK	OK
Ratio	43%	38%	48%	27%

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
451	B = 914	1.0	250	H = 500	0	1.0
1125	C = 2250	3.0	125	I = 250	4.0	12.5



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. ADU — fl flr bm@grage/rear/east/w pt

FL FLR BM # 9R - alt # — Prepared by: LA — Date: 5/02/20

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= 4.5 in² R2= 7.6 in² (1.5) DL Defl= 0.11 in

Data

Beam Span	12.5 ft	Reaction 1 LL	1967 #	Reaction 2 LL	2648 #
Beam Wt per ft	19.48 #	Reaction 1 TL	2827 #	Reaction 2 TL	4728 #
Bm Wt Included	244 #	Maximum V	4728 #		
Max Moment	10835 '#	Max V (Reduced)	4659 #		
TL Max Defl	L / 240	TL Actual Defl	L / 615		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

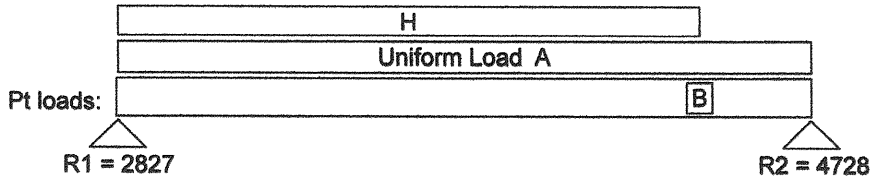
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	123.39	62.34	0.24	0.13
Critical	44.78	24.10	0.63	0.42
Status	OK	OK	OK	OK
Ratio	36%	39%	39%	31%

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: 40 Uniform TL: 50 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1595	B = 3536	10.5	240	H = 300	0	10.5



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. ADU — fl flr bm@grage/rear/east/w pt

FL FLR BM # 9A - 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= 0.9 in² R2= 1.4 in² (1.5) DL Defl= 0.03 in

Data

Beam Span	12.5 ft	Reaction 1 LL	365 #	Reaction 2 LL	483 #
Beam Wt per ft	12.99 #	Reaction 1 TL	571 #	Reaction 2 TL	875 #
Bm Wt Included	162 #	Maximum V	875 #		
Max Moment	2046 '#	Max V (Reduced)	795 #		
TL Max Defl	L / 240	TL Actual Defl	L / >1000		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

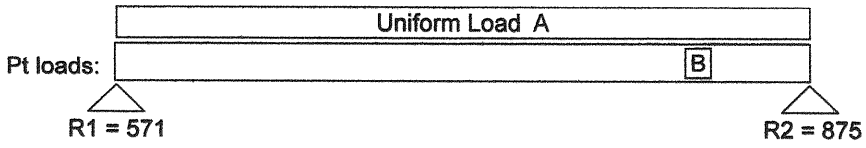
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	82.26	41.56	0.07	0.03
Critical	8.46	4.11	0.63	0.42
Status	OK	OK	OK	OK
Ratio	10%	10%	11%	8%

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
173	B = 446	10.5



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. ADU — fl flr bm@grage/rear/So/w pt

FL FLR BM # 9B - alt # — Prepared by: LA — Date: 5/02/20

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= 3.5 in² R2= 3.5 in² (1.5) DL Defl= 0.05 in

Data

Beam Span	12.0 ft	Reaction 1 LL	1680 #	Reaction 2 LL	1680 #
Beam Wt per ft	12.99 #	Reaction 1 TL	2178 #	Reaction 2 TL	2178 #
Bm Wt Included	156 #	Maximum V	2178 #		
Max Moment	6534 '#	Max V (Reduced)	1819 #		
TL Max Defl	L / 240	TL Actual Defl	L / 821		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

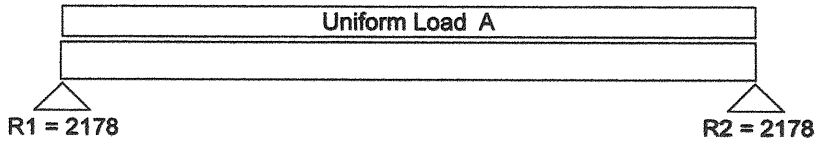
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	82.26	41.56	0.18	0.12
Critical	27.00	9.41	0.60	0.40
Status	OK	OK	OK	OK
Ratio	33%	23%	29%	30%

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: 280 Uniform TL: 350 = A



SPAN = 12 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. ADU — hdr @ garage/north window

HDR # 10 - alt # — Prepared by: LA — Date: 5/02/20

Selection **3-1/8x 10-1/2 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 2.4 in² R2= 8.3 in² (1.5) DL Defl= 0.10 in Recom Camber= 0.15 in

Data

Beam Span	8.0 ft	Reaction 1 LL	832 #	Reaction 2 LL	2982 #
Beam Wt per ft	7.97 #	Reaction 1 TL	1554 #	Reaction 2 TL	5409 #
Bm Wt Included	64 #	Maximum V	5409 #		
Max Moment	8002 '#	Max V (Reduced)	4567 #		
TL Max Defl	L / 240	TL Actual Defl	L / 549		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	57.42	32.81	0.17	0.08
Critical	40.01	28.54	0.40	0.27
Status	OK	OK	OK	OK
Ratio	70%	87%	44%	29%

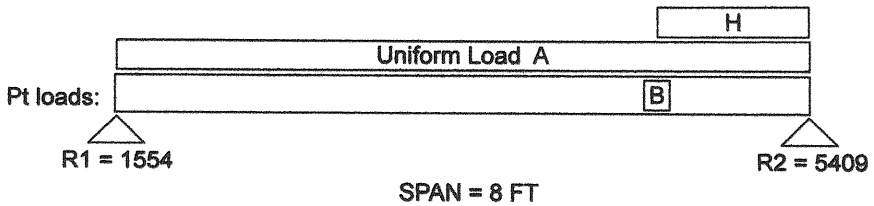
Values / *Adjustments*

	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: 40 Uniform TL: 80 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
2648	B = 4728	6.25	483	H = 875	6.25	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. ADU — hdr @ garage/north window

HDR # 10 - alt # 1 — Prepared by: LA — Date: 5/02/20

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= 2.5 in² R2= 8.7 in² (1.5) DL Defl= 0.10 in

Data

Beam Span	8.0 ft	Reaction 1 LL	832 #	Reaction 2 LL	2982 #
Beam Wt per ft	10.12 #	Reaction 1 TL	1562 #	Reaction 2 TL	5418 #
Bm Wt Included	81 #	Maximum V	5418 #		
Max Moment	8019 '#	Max V (Reduced)	4674 #		
TL Max Defl	L / 240	TL Actual Defl	L / 512		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

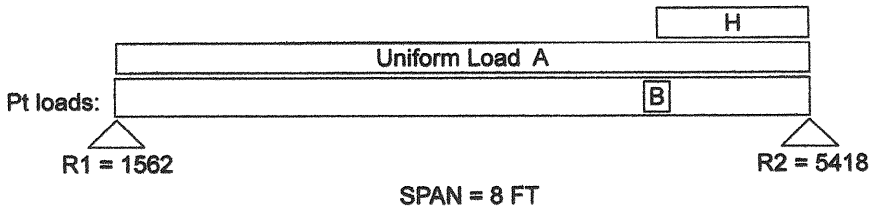
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.19	0.08
Critical	32.24	24.18	0.40	0.27
Status	OK	OK	OK	OK
Ratio	65%	75%	47%	31%

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: 40 Uniform TL: 80 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
2648	B = 4728	6.25	483	H = 875	6.25	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. ADU — fl flr bm @ N bedroom/cant

FL FLR BM # 11 - alt # — Prepared by: LA — Date: 1/28/20

Selection **1-3/4x 11-7/8 1.9E TJ Microllam LVL** — Lu = 0.0 Ft — Lu @OH = 0.0 Ft

Conditions NDS 2015, Overhang

Min Bearing Area R1= 1.7 in² R2= 2.1 in² (1.5) DL Defl= 0.03 in.

Data

Beam Span	4.0 ft	Reaction 1 LL	548 #	Reaction 2 LL	746 #
Beam Wt per ft	5.34 #	Reaction 1 TL	1280 #	Reaction 2 TL	1610 #
Bm Wt Included	43 #	Maximum V	1280 #	Overhang Length	4.0 ft
Max Moment	1523 '#	Max V (Reduced)	676 #	Total Beam Length	8.0 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	41.13	20.78	0.00	0.00	0.05	0.02
Critical	7.02	3.56	0.20	0.13	0.40	0.27
Status	OK	OK	OK	OK	OK	OK
Ratio	17%	17%	0%	0%	14%	8%

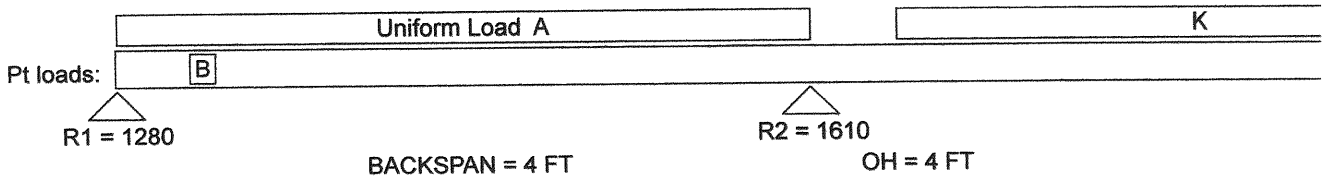
Values / **Adjustments**

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2600	285	2.0	750
Adjusted Values	2604	285	2.0	750
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: 74 — Uniform TL: 177 = A — (Uniform Ld on Backspan)

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
669	B = 1481	0.5	94	K = 188 (OH)	0.5	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. ADU — fl flr bm @ N bedrm w/wall abv

FL FLR BM # 11A - alt # — Prepared by: LA — Date: 5/02/20

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= 4.9 in² R2= 4.9 in² (1.5) DL Defl= 0.18 in

Data

Beam Span	12.0 ft	Reaction 1 LL	1422 #	Reaction 2 LL	1422 #
Beam Wt per ft	12.99 #	Reaction 1 TL	3090 #	Reaction 2 TL	3090 #
Bm Wt Included	156 #	Maximum V	3090 #		
Max Moment	9270 '#	Max V (Reduced)	2580 #		
TL Max Defl	L / 240	TL Actual Defl	L / 508		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

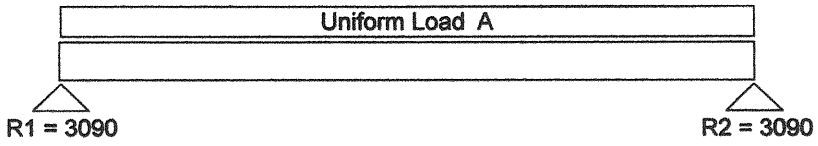
Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	82.26	41.56	0.28	0.10
Critical	38.31	13.35	0.60	0.40
Status	OK	OK	OK	OK
Ratio	47%	32%	47%	26%

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: 237 Uniform TL: 502 = A



SPAN = 12 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. ADU — fl flr bm @ N bedroom/cant/wdw

FL FLR BM # 12 - alt # — Prepared by: LA — Date: 1/28/20

Selection **1-3/4x 11-7/8 1.9E TJ Microllam LVL** Lu = 0.0 Ft Lu @OH = 0.0 Ft

Conditions NDS 2015, Overhang, Uplift @ R1

Min Bearing Area R1= -0.5 in² R2= 2.4 in² (1.5) DL Defl= 0.02 in.

Data

Beam Span	4.0 ft	Reaction 1 LL	-132 #	Reaction 2 LL	881 #
Beam Wt per ft	5.34 #	Reaction 1 TL	-377 #	Reaction 2 TL	1782 #
Bm Wt Included	32 #	Maximum V	1116 #	Overhang Length	2.0 ft
Max Moment	2087 '#	Max V (Reduced)	1044 #	Total Beam Length	6.0 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

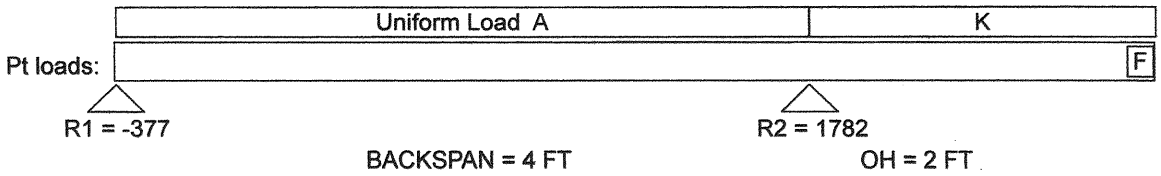
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	41.13	20.78	-0.01	0.00	0.04	0.01
Critical	9.62	5.50	0.20	0.13	0.20	0.13
Status	OK	OK	OK	OK	OK	OK
Ratio	23%	26%	4%	2%	18%	9%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2600	285	2.0	750
Adjusted Values	2604	285	2.0	750
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: 54 Uniform TL: 67 = A (Uniform Ld on Backspan)

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
425	F = 971 (OH)	2.0	54	K = 67 (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. ADU — fl flr bm @ living/wp dek cant NORTH

FL FLR BM # 13 - 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, Uplift @ R1

Min Bearing Area R1= -0.4 in² R2= 2.4 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	4.0 ft	Reaction 1 LL	-157 #	Reaction 2 LL	1017 #
Beam Wt per ft	12.99 #	Reaction 1 TL	-219 #	Reaction 2 TL	1485 #
Bm Wt Included	104 #	Maximum V	946 #	Overhang Length	4.0 ft
Max Moment	1516 '#	Max V (Reduced)	681 #	Total Beam Length	8.0 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

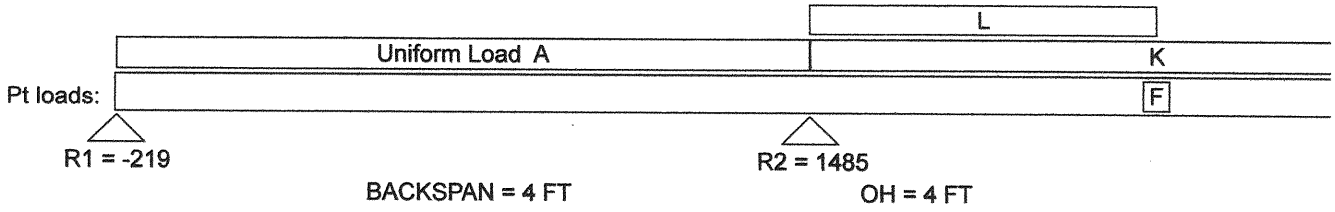
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	82.26	41.56	0.00	0.00	0.02	0.01
Critical	6.27	3.52	0.20	0.13	0.40	0.27
Status	OK	OK	OK	OK	OK	OK
Ratio	8%	8%	1%	1%	6%	5%

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: 54 Uniform TL: 67 = A (Uniform Ld on Backspan)

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
200	F = 250 (OH)	2.0	54	K = 67 (OH)	0	4.0
			114	L = 188 (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. ADU — fl flr bm @ living/wp dek cant ~~SOUTH~~

FL FLR BM # 14 - 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= 1.0 in² R2= 2.7 in² (1.5) DL Defl= <0.01 in.

Data

Beam Span	4.0 ft	Reaction 1 LL	288 #	Reaction 2 LL	728 #
Beam Wt per ft	12.99 #	Reaction 1 TL	594 #	Reaction 2 TL	1658 #
Bm Wt Included	104 #	Maximum V	1126 #	Overhang Length	4.0 ft
Max Moment	1064 '#	Max V (Reduced)	700 #	Total Beam Length	8.0 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	82.26	41.56	0.00	<0.01	0.01	0.00
Critical	4.40	3.62	0.20	0.13	0.40	0.27
Status	OK	OK	OK	OK	OK	OK
Ratio	5%	9%	0%	0%	3%	2%

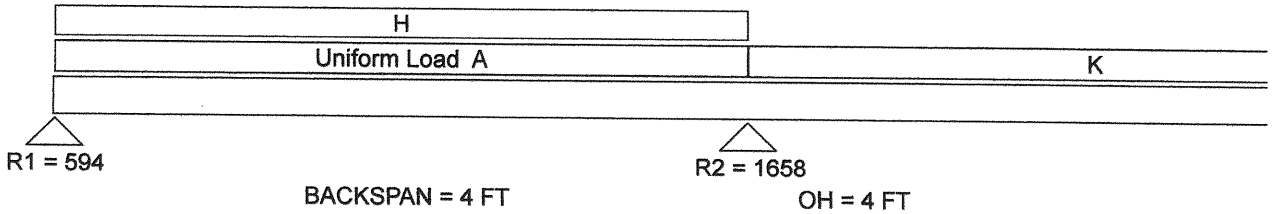
Values / *Adjustments*

	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: 54 Uniform TL: 67 = A (Uniform Ld on Backspan)

Par Unif LL	Par Unif TL	Start	End
145	H = 350	0	4.0
55	K = 120 (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. ADU — exps'd flr bm @ garage/center

EXP FL BM # 15R - alt # — Prepared by: LA — Date: 5/02/20

Selection 5-1/8x 22-1/2 GLB 24F-V4 DF/DF — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 7.5 in² R2= 25.9 in² (1.5) DL Defl= 0.21 in Recom Camber= 0.32 in

Data

Beam Span	20.0 ft	Reaction 1 LL	3175 #	Reaction 2 LL	9907 #
Beam Wt per ft	28.02 #	Reaction 1 TL	4856 #	Reaction 2 TL	16823 #
Bm Wt Included	560 #	Maximum V	16823 #		
Max Moment	51487 '#	Max V (Reduced)	15646 #		
TL Max Defl	L / 240	TL Actual Defl	L / 511		
LL Max Defl	L / 360	LL Actual Defl	L / 928		

Attributes

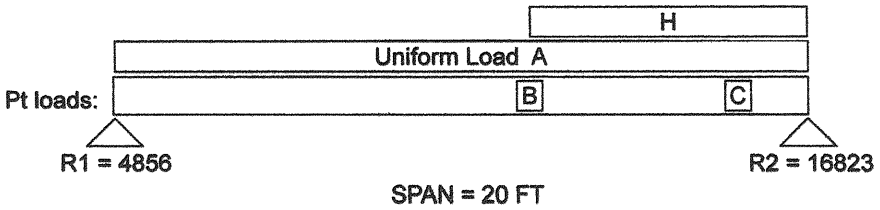
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	432.42	115.31	0.47	0.26
Critical	272.80	97.79	1.00	0.67
Status	OK	OK	OK	OK
Ratio	63%	85%	47%	39%

Values / Adjustments

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2265	240	1.8	650
Cv Volume	0.944			
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
3647	B = 5005	12.0	426	H = 533	12.0	20.0
4947	C = 10510	18.0				



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. ADU — hdr @ garage/south car door

HDR # 16R alt # — Prepared by: LA — Date: 5/02/20

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= 3.1 in² R2= 3.5 in² (1.5) DL Defl= 0.05 in

Data

Beam Span	9.5 ft	Reaction 1 LL	1531 #	Reaction 2 LL	1709 #
Beam Wt per ft	10.12 #	Reaction 1 TL	1961 #	Reaction 2 TL	2185 #
Bm Wt Included	96 #	Maximum V	2185 #		
Max Moment	4689 '#	Max V (Reduced)	1781 #		
TL Max Defl	L / 240	TL Actual Defl	L / 681		
LL Max Defl	L / 360	LL Actual Defl	L / 969		

Attributes

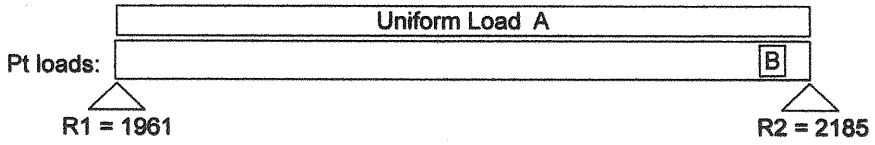
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.17	0.12
Critical	18.85	9.21	0.48	0.32
Status	OK	OK	OK	OK
Ratio	38%	28%	35%	37%

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: 320 Uniform TL: 400 = A

Point LL	Point TL	Distance
200	B = 250	9.0



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. ADU — hdr @ garage/north car door

HDR # 17R - alt # — Prepared by: LA — Date: 5/02/20

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= 3.5 in² R2= 3.5 in² (1.5) DL Defl= 0.05 in

Data

Beam Span	9.5 ft	Reaction 1 LL	1715 #	Reaction 2 LL	1725 #
Beam Wt per ft	10.12 #	Reaction 1 TL	2191 #	Reaction 2 TL	2205 #
Bm Wt Included	96 #	Maximum V	2205 #		
Max Moment	4845 '#	Max V (Reduced)	1882 #		
TL Max Defl	L / 240	TL Actual Defl	L / 651		
LL Max Defl	L / 360	LL Actual Defl	L / 924		

Attributes

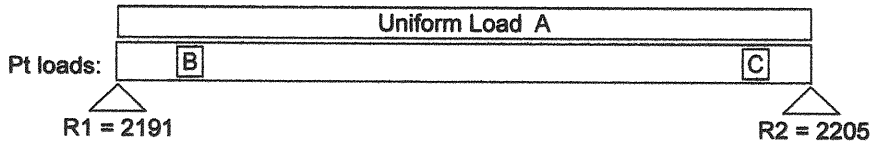
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	49.91	32.38	0.18	0.12
Critical	19.48	9.73	0.48	0.32
Status	OK	OK	OK	OK
Ratio	39%	30%	37%	39%

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: 320 Uniform TL: 400 = A

Point LL	Point TL	Distance
200	B = 250	1.0
200	C = 250	8.75



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. ADU — bm @ garage/cant wp dek/south

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

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

Conditions NDS 2015, Overhang

Min Bearing Area R1= 12.8 in² R2= 10.0 in² (1.5) DL Defl= 0.12 in.

Data

Beam Span	10.0 ft	Reaction 1 LL	4144 #	Reaction 2 LL	3179 #
Beam Wt per ft	15.37 #	Reaction 1 TL	8011 #	Reaction 2 TL	6236 #
Bm Wt Included	177 #	Maximum V	8011 #	Overhang Length	1.5 ft
Max Moment	11287 '#	Max V (Reduced)	6748 #	Total Beam Length	11.5 ft
TL Max Defl	L / 240	TL Actual Defl	L / 558	OH TL Actual Defl	L / 475
LL Max Defl	L / 360	LL Actual Defl	L / >1000	OH LL Actual Defl	L / < -1000

Attributes

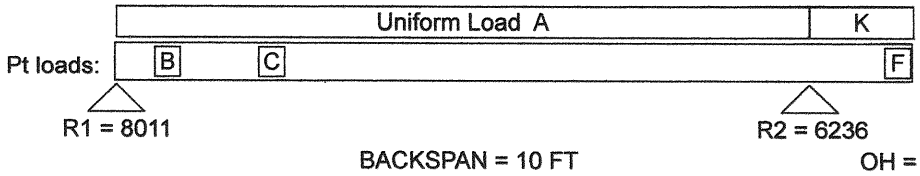
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	121.23	63.25	0.21	0.09	-0.08	-0.03
Critical	100.33	59.54	0.50	0.33	0.15	0.10
Status	OK	OK	OK	OK	OK	OK
Ratio	83%	94%	43%	28%	50%	35%

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

Loads — Uniform LL: 280 — Uniform TL: 490 = A — (Uniform Ld on Backspan)

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1791	B = 3581	0.75	280	K = 490 (OH)	0	1.5
1584	C = 3196	2.25				
728	F = 1658 (OH)	1.5				



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. ADU — bm @ garage/cant wp dek/south

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

Selection **5-1/8x 10-1/2 GLB 24F-V8 DF/DF** — Lu = 0.0 Ft — Lu @OH = 0.0 Ft

Conditions NDS 2015, Overhang

Min Bearing Area R1= 12.3 in² R2= 9.6 in² (1.5) DL Defl= 0.15 in.

Data

Beam Span	10.0 ft	Reaction 1 LL	4144 #	Reaction 2 LL	3179 #
Beam Wt per ft	13.08 #	Reaction 1 TL	7999 #	Reaction 2 TL	6221 #
Bm Wt Included	150 #	Maximum V	7999 #	Overhang Length	1.5 ft
Max Moment	11281 '#	Max V (Reduced)	7048 #	Total Beam Length	11.5 ft
TL Max Defl	L / 240	TL Actual Defl	L / 447	OH TL Actual Defl	L / 381
LL Max Defl	L / 360	LL Actual Defl	L / >1000	OH LL Actual Defl	L / 822

Attributes

	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	94.17	53.81	0.27	0.12	-0.09	-0.04
Critical	56.40	44.05	0.50	0.33	0.15	0.10
Status	OK	OK	OK	OK	OK	OK
Ratio	60%	82%	54%	35%	63%	44%

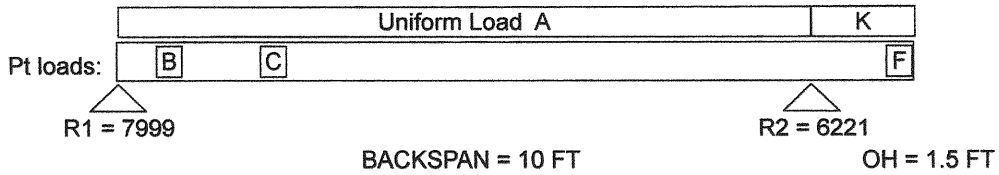
Values / *Adjustments*

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

Loads Uniform LL: 280 Uniform TL: 490 = A (Uniform Ld on Backspan)

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1791	B = 3581	0.75	280	K = 490 (OH)	0	1.5
1584	C = 3196	2.25				
728	F = 1658 (OH)	1.5				



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. ADU — bm @ garage/cant wp dek/south

FLR BM # 18 - alt # 2 — Prepared by: LA — Date: 1/28/20

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

Conditions NDS 2015, Overhang

Min Bearing Area R1= 12.8 in² R2= 10.0 in² (1.5) DL Defl= 0.10 in.

Data

Beam Span	10.0 ft	Reaction 1 LL	4144 #	Reaction 2 LL	3179 #
Beam Wt per ft	18.46 #	Reaction 1 TL	8026 #	Reaction 2 TL	6257 #
Bm Wt Included	212 #	Maximum V	8026 #	Overhang Length	1.5 ft
Max Moment	11295 '#	Max V (Reduced)	6833 #	Total Beam Length	11.5 ft
TL Max Defl	L / 240	TL Actual Defl	L / 683	OH TL Actual Defl	L / 581
LL Max Defl	L / 360	LL Actual Defl	L / >1000	OH LL Actual Defl	L / < -1000

Attributes

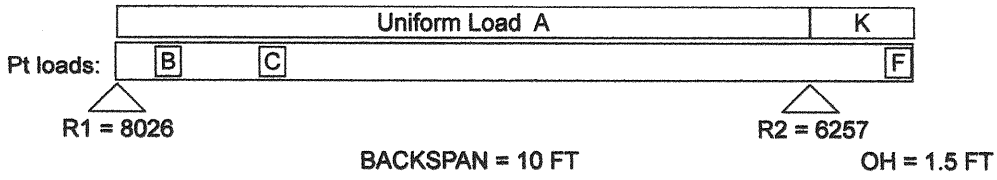
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	110.74	59.06	0.18	0.08	-0.06	-0.03
Critical	46.40	35.34	0.50	0.33	0.15	0.10
Status	OK	OK	OK	OK	OK	OK
Ratio	42%	60%	35%	23%	41%	28%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	2900	290	2.2	625
Adjusted Values	2921	290	2.2	625
CF Size Factor	1.007			
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: 280 — Uniform TL: 490 = A — (Uniform Ld on Backspan)

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
1791	B = 3581	0.75	280	K = 490 (OH)	0	1.5
1584	C = 3196	2.25				
728	F = 1658 (OH)	1.5				



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. ADU — bm @ garage/cant wp dek/north

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

Selection **5-1/4x 9-1/2 2.0E TJ Parallam W.S. PSL** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 3.7 in² R2= 3.8 in² (1.5) DL Defl= 0.10 in

Data

Beam Span	11.0 ft	Reaction 1 LL	1342 #	Reaction 2 LL	1360 #
Beam Wt per ft	15.59 #	Reaction 1 TL	2343 #	Reaction 2 TL	2393 #
Bm Wt Included	171 #	Maximum V	2393 #		
Max Moment	5607 '#	Max V (Reduced)	1973 #		
TL Max Defl	L / 240	TL Actual Defl	L / 706		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

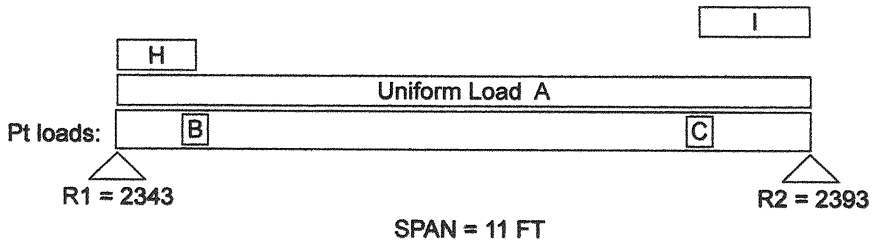
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	78.97	49.88	0.19	0.09
Critical	22.61	10.21	0.55	0.37
Status	OK	OK	OK	OK
Ratio	29%	20%	34%	24%

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: 182 Uniform TL: 315 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
200	B = 250	1.25	100	H = 200	0	1.25
200	C = 250	9.25	100	I = 200	9.25	11.0



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. ADU — bm @ garage/cant wp dek/north

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

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

Conditions NDS 2015

Min Bearing Area R1= 3.7 in² R2= 3.8 in² (1.5) DL Defl= 0.07 in

Data

Beam Span	11.0 ft	Reaction 1 LL	1342 #	Reaction 2 LL	1360 #
Beam Wt per ft	15.37 #	Reaction 1 TL	2342 #	Reaction 2 TL	2392 #
Bm Wt Included	169 #	Maximum V	2392 #		
Max Moment	5604 '#	Max V (Reduced)	1884 #		
TL Max Defl	L / 240	TL Actual Defl	L / 955		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

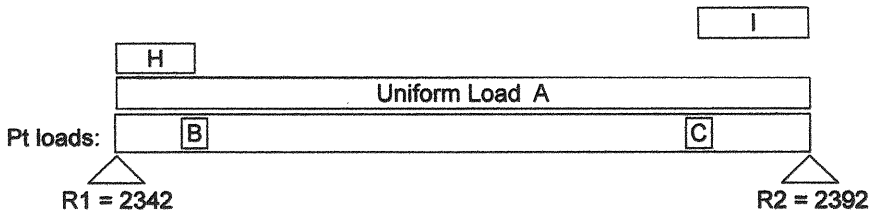
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	121.23	63.25	0.14	0.06
Critical	49.81	16.62	0.55	0.37
Status	OK	OK	OK	OK
Ratio	41%	26%	25%	18%

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: 182 Uniform TL: 315 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
200	B = 250	1.25	100	H = 200	0	1.25
200	C = 250	9.25	100	I = 200	9.25	11.0



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. ADU — bm @ garage/cant wp dek/north

FLR BM # 19 - alt # 2 — Prepared by: LA — Date: 1/28/20

Selection **5-1/8x 10-1/2 GLB 24F-V4 DF/DF** — Lu = 0.0 Ft

Conditions NDS 2015

Min Bearing Area R1= 3.6 in² R2= 3.7 in² (1.5) DL Defl= 0.09 in Recom Camber= 0.14 in

Data

Beam Span	11.0 ft	Reaction 1 LL	1342 #	Reaction 2 LL	1360 #
Beam Wt per ft	13.08 #	Reaction 1 TL	2329 #	Reaction 2 TL	2379 #
Bm Wt Included	144 #	Maximum V	2379 #		
Max Moment	5569 '#	Max V (Reduced)	1917 #		
TL Max Defl	L / 240	TL Actual Defl	L / 768		
LL Max Defl	L / 360	LL Actual Defl	L / >1000		

Attributes

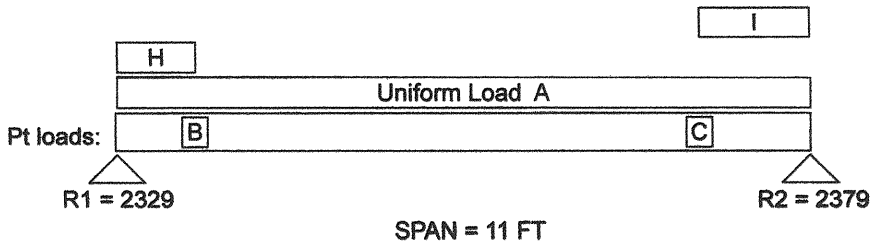
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl
Actual	94.17	53.81	0.17	0.08
Critical	27.85	11.98	0.55	0.37
Status	OK	OK	OK	OK
Ratio	30%	22%	31%	22%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc_l (psi)
Reference Values	2400	240	1.8	650
Adjusted Values	2400	240	1.8	650
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: 182 Uniform TL: 315 = A

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
200	B = 250	1.25	100	H = 200	0	1.25
200	C = 250	9.25	100	I = 200	9.25	11.0



SPAN = 11 FT

Uniform and partial uniform loads are lbs per lineal ft.

Job No. AA 20-2.101

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

Petrie Residence/M.I. ADU — deck joists @ living room deck

DJ # 20 - alt # — Prepared by: LA Date: 3/21/20

Selection **2x 12 HF #2 @ 16 in oc** Lu = 0.0 Ft Lu @OH = 0.0 Ft

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

Min Bearing Area R1= -0.2 in² R2= 3.2 in² (2.0) DL Defl= 0.09 in.

Data

Beam Span	4.0 ft	Reaction 1 LL	-7 #	Reaction 2 LL	440 #
Beam Wt per ft	0 #	Reaction 1 TL	-67 #	Reaction 2 TL	880 #
Bm Wt Included	0 #	Maximum V	440 #	Overhang Length	4.0 ft
Max Moment	1013 '#	Max V (Reduced)	352 #	Total Beam Length	8.0 ft
TL Max Defl	L / 240	TL Actual Defl	L / < -1000	OH TL Actual Defl	L / 753
LL Max Defl	L / 360	LL Actual Defl	L / < -1000	OH LL Actual Defl	L / >1000

Attributes

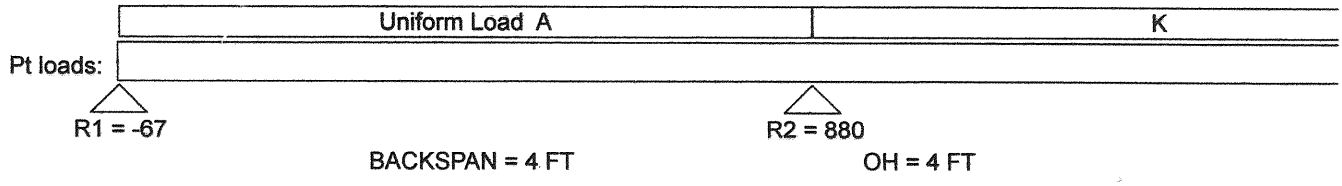
	Section (in³)	Shear (in²)	TL Defl (in)	LL Defl	OH TL Defl	OH LL Defl
Actual	31.64	16.88	-0.01	0.00	0.13	0.04
Critical	12.44	3.63	0.20	0.13	0.40	0.27
Status	OK	OK	OK	OK	OK	OK
Ratio	39%	22%	5%	2%	32%	13%

Values / *Adjustments*

	Fb (psi)	Fv (psi)	E (psi x mil)	Fc⊥ (psi)
Reference Values	850	150	1.3	405
Adjusted Values	978	146	1.2	271
CF Size Factor	1.000			
Cd Duration	1.00	1.00		
Cr Repetitive	1.15			
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: 53 Uniform TL: 93 = A (Uniform Ld on Backspan)

Point LL	Point TL	Distance	Par Unif LL	Par Unif TL	Start	End
7	F = 67 (OH)	4.0	53	K = 93 (OH)	0	4.0



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