



Red-I™ Joists



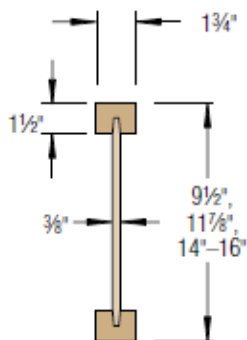
**Including Red-I45™, Red-I65™, Red-I90™,
and Red-I90H™ Joists**





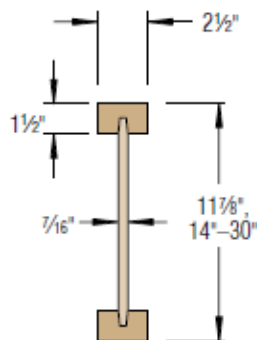
This guide covers four series of joists: Red-I45™, Red-I65™, Red-I90™, and Red-I90H™. These joists are primarily intended for commercial applications such as retail stores, office buildings, schools, restaurants, multi-family, hotels, warehouses, and nursing homes. They are typically designed, manufactured, and sold by RedBuilt™ for each specific job. Contact your RedBuilt™ representative for more information.

Red-I™ joists are normally produced without camber. However, camber is available at 2,250' radius as a special order for I45, I65, I90 and I90H series joists. Camber is not recommended for floors, or for multiple-span or cantilever applications.



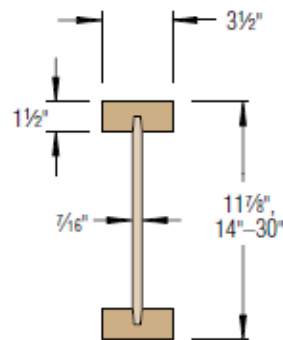
Red-I45™

Top and bottom flanges of 1 1/2" x 1 3/4" RedLam™ LVL with 3/8" OSB web.



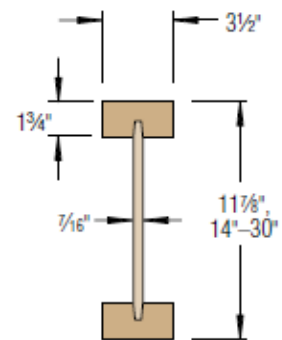
Red-I65™

Top and bottom flanges of 1 1/2" x 2 1/2" RedLam™ LVL with 7/16" OSB web.



Red-I90™

Top and bottom flanges of 1 1/2" x 3 1/2" RedLam™ LVL with 7/16" OSB web.



Red-I90H™

Top and bottom flanges of 1 3/4" x 3 1/2" RedLam™ LVL with 7/16" OSB web.

Joist depths from 14" to 30" are available in 2" increments.

Red-I™ Joists are intended for dry-use,



Joist Depth (in)	Basic Properties						Factored Reaction Resistance ⁽³⁾⁽⁴⁾								
	Joist Weight (lb/ft)	Factored Resistance		EI (10 ⁶ in ² -lb)	EI ⁽²⁾ Red-I™ Joist with Nailed Floor Sheathing (10 ⁶ in ² -lb)	EI ⁽²⁾ Red-I™ Joist with Glue-Nailed Floor Sheathing (10 ⁶ in ² -lb)	End Reaction (lb)				Intermediate Reaction (lb)				
							Bearing Length				Bearing Length				
		Moment ⁽¹⁾ (ft-lb)					Vertical Shear (lb)	1¾"		3½"		3½"		5¼"	
								Web Stiffeners		Web Stiffeners		Web Stiffeners		Web Stiffeners	
		No	Yes				No	Yes	No	Yes	No	Yes			
Red-I45™ Joist															
9.5	2.2	6015	1770	185	221	250	1600	NA	1770	NA	3205	NA	4065	NA	
11.875	2.5	7789	2240	319	375	420	1600	1720	2240	2240	3205	3650	4065	4510	
14	2.8	9260	2700	474	553	615	1600	1720	2355	2700	3205	3650	4065	4510	
16	3.0	10625	3110	653	756	839	1600	1720	2355	2800	3205	3650	4065	4510	
16V	3.0	10625	2685	653	756	839	1600	1720	2355	2685	3205	3650	4065	4510	
Red-I65™ Joist															
11.875	3.3	11229	3041	450	512	561	2040	2560	2750	3040	4350	4865	5325	5845	
14	3.6	13354	3355	666	752	821	2040	2690	2750	3355	4350	5210	5325	6190	
16	3.9	15319	3680	913	1025	1116	2040	2690	2750	3680	4350	5385	5325	6360	
18	4.2	17266	4000	1205	1348	1462	2040	2690	2750	3955	4350	5555	5325	6535	
20	4.4	19195	4325	1545	1722	1864	NA	2690	NA	4130	NA	5730	NA	6705	
22	4.7	21105	4634	1934	2149	2322	NA	2690	NA	4300	NA	5900	NA	6880	
24	5.0	23001	4830	2374	2632	2838	NA	2690	NA	4475	NA	5960	NA	7050	
26	5.3	24885	4575	2868	3172	3416	NA	2690	NA	4575	NA	7225 ⁽⁵⁾	NA	8200 ⁽⁶⁾	
28	5.5	26755	4575	3417	3772	4056	NA	2690	NA	4575	NA	7395 ⁽⁵⁾	NA	8375 ⁽⁶⁾	
30	5.8	28614	4575	4025	4434	4762	NA	2690	NA	4575	NA	7570 ⁽⁵⁾	NA	8550 ⁽⁶⁾	
Red-I90™ Joist															
11.875	4.2	15979	3041	621	687	741	2040	2500	2750	3040	5105	5565	5990	6445	
14	4.5	19011	3355	913	1005	1079	2040	2730	2750	3355	5105	5790	5990	6675	
16	4.7	21813	3680	1246	1366	1462	2040	2960	2750	3665	5105	6020	5990	6905	
18	5.0	24583	4000	1635	1786	1908	2040	2960	2750	3665	5105	6020	5990	6905	
20	5.3	27334	4325	2085	2272	2422	NA	3185	NA	3895	NA	6250	NA	7135	
22	5.6	30059	4634	2597	2824	3006	NA	3415	NA	4125	NA	7625	NA	8515	
24	5.8	32766	4830	3172	3442	3659	NA	3415	NA	4125	NA	8080	NA	8965	
26	6.1	35451	4575	3814	4132	4387	NA	3645	NA	4350	NA	9150 ⁽⁵⁾	NA	9150 ⁽⁶⁾	
28	6.4	38114	4575	4525	4895	5191	NA	3765	NA	4575	NA	9150 ⁽⁵⁾	NA	9150 ⁽⁶⁾	
30	6.6	40769	4575	5306	5732	6073	NA	3765	NA	4575	NA	9150 ⁽⁵⁾	NA	9150 ⁽⁶⁾	
Red-I90H™ Joist															
11.875	4.6	18229	3041	687	755	810	2040	2500	2750	3041	5105	5565	5990	6445	
14	4.9	21777	3355	1015	1109	1185	2040	2730	2750	3355	5105	5790	5990	6675	
16	5.2	25055	3680	1389	1512	1610	2040	2960	2750	3665	5105	6020	5990	6905	
18	5.4	28293	4000	1827	1982	2106	2040	2960	2750	3665	5105	6020	5990	6905	
20	5.7	31505	4325	2331	2522	2676	NA	3185	NA	3895	NA	6250	NA	7135	
22	6.0	34691	4634	2904	3136	3321	NA	3415	NA	4125	NA	7625	NA	8515	
24	6.3	37848	4830	3549	3825	4046	NA	3415	NA	4125	NA	8080	NA	8965	
26	6.5	40990	4575	4266	4590	4850	NA	3645	NA	4350	NA	9150 ⁽⁵⁾	NA	9150 ⁽⁶⁾	
28	6.8	44106	4575	5059	5436	5737	NA	3765	NA	4575	NA	9150 ⁽⁵⁾	NA	9150 ⁽⁶⁾	
30	7.1	47204	4575	5930	6363	6710	NA	3765	NA	4575	NA	9150 ⁽⁵⁾	NA	9150 ⁽⁶⁾	

The stated design properties are for standard term duration of load. Adjustments to the allowable factored resistances shall be in accordance with the applicable code.

- (1) Do not increase joist moment resistance by a repetitive member system factor.
- (2) For deflection calculation only. Assumes 24" joist spacing with a 24 o.c. span-rated panel (23/32" or 3/4" nominal thickness).
- (3) Interpolation between bearing lengths is permitted for factored reaction resistance.
- (4) Reaction capacity has been determined based on RedBuilt™ products. Allowable bearing on supporting members shall be checked.
- (5) 5¼" bearing length is required at intermediate reactions.
- (6) 7" bearing length is required at intermediate reactions.



40 psf Live / 25 psf Dead Load (3/4" OSB)

Depth	Series	Simple Span			
		Spacing			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9.5"	Red-I45™	16'-6"	15'-7"	15'-1"	14'-3"
11.875"	Red-I45™	18'-9"	17'-6"	16'-10"	16'-2"
	Red-I65™	20'-3"	18'-9"	17'-10"	17'-2"
	Red-I90™	21'-8"	20'-0"	19'-1"	18'-0"
	Red-I90H™	22'-2"	20'-6"	19'-6"	18'-5"
14"	Red-I45™	20'-10"	19'-4"	18'-6"	17'-7"
	Red-I65™	22'-6"	20'-10"	19'-10"	18'-10"
	Red-I90™	24'-2"	22'-3"	21'-2"	20'-0"
	Red-I90H™	24'-9"	22'-10"	21'-8"	20'-6"
16"	Red-I45™	22'-9"	21'-1"	20'-2"	19'-1"
	Red-I65™	24'-7"	22'-9"	21'-8"	20'-6"
	Red-I90™	26'-4"	24'-3"	23'-1"	21'-10"
	Red-I90H™	27'-0"	24'-10"	23'-8"	22'-4"
18"	Red-I65™	26'-6"	24'-6"	23'-4"	22'-1"
	Red-I90™	28'-4"	26'-2"	24'-11"	23'-6"
	Red-I90H™	29'-1"	26'-10"	25'-6"	24'-1"
20"	Red-I65™	28'-5"	26'-3"	25'-0"	23'-8"
	Red-I90™	30'-4"	28'-0"	26'-7"	25'-2"
	Red-I90H™	31'-2"	28'-9"	27'-3"	25'-9"
22"	Red-I65™	30'-3"	27'-11"	26'-7"	25'-2"
	Red-I90™	32'-5"	29'-9"	28'-4"	26'-8"
	Red-I90H™	33'-7"	30'-6"	29'-0"	27'-4"
24"	Red-I65™	32'-0"	29'-7"	28'-2"	26'-7"
	Red-I90™	34'-11"	31'-6"	29'-11"	28'-3"
	Red-I90H™	36'-2"	32'-5"	30'-8"	28'-11"

Spans shown represent clear distance between supports.

Table values are based on:

- Limit States Design per CAN/CSA-O86-19.
- Uniform loads.
- Deflection limits of L/480 for live load and L/240 for total load.
- Composite stiffness assuming glue-nailed 24 oc span-rated OSB sheathing (23/32" or 3/4" nominal thickness).
- Minimum bearing length of 2½" inches.
- Web stiffeners for all depths 20" and greater.
- Vibration control per CCMC Vibration Criteria, assuming no direct-applied ceiling, no concrete topping, no blocking, strapping or bridging.
- Long-term deflection under dead load has not been considered.

For other conditions, contact your RedBuilt™ representative. Visit www.RedBuilt.com to find your local representative.



40 psf Live / 25 psf Dead Load (7/8" OSB)

Depth	Series	Simple Span			
		Spacing			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9.5"	Red-I45™	17'-4"	16'-4"	15'-6"	14'-5"
11.875"	Red-I45™	19'-10"	18'-5"	17'-8"	16'-11"
	Red-I65™	21'-4"	19'-10"	18'-11"	17'-10"
	Red-I90™	22'-11"	21'-2"	20'-2"	19'-0"
	Red-I90H™	23'-5"	21'-8"	20'-7"	19'-5"
14"	Red-I45™	22'-1"	20'-6"	19'-6"	18'-5"
	Red-I65™	23'-9"	22'-1"	21'-0"	19'-10"
	Red-I90™	25'-5"	23'-7"	22'-5"	21'-1"
	Red-I90H™	26'-1"	24'-1"	22'-11"	21'-7"
16"	Red-I45™	24'-1"	22'-4"	21'-4"	20'-1"
	Red-I65™	25'-11"	24'-0"	22'-10"	21'-7"
	Red-I90™	27'-9"	25'-8"	24'-5"	22'-11"
	Red-I90H™	28'-5"	26'-3"	24'-11"	23'-6"
18"	Red-I65™	27'-11"	25'-11"	24'-8"	23'-3"
	Red-I90™	29'-11"	27'-8"	26'-3"	24'-9"
	Red-I90H™	30'-8"	28'-4"	26'-11"	25'-3"
20"	Red-I65™	29'-11"	27'-9"	26'-5"	24'-10"
	Red-I90™	32'-0"	29'-7"	28'-1"	26'-5"
	Red-I90H™	33'-1"	30'-4"	28'-9"	27'-1"
22"	Red-I65™	31'-10"	29'-6"	28'-1"	26'-5"
	Red-I90™	34'-8"	31'-5"	29'-10"	28'-1"
	Red-I90H™	35'-11"	32'-4"	30'-7"	28'-9"
24"	Red-I65™	34'-3"	31'-3"	29'-8"	28'-0"
	Red-I90™	37'-4"	33'-8"	31'-7"	29'-8"
	Red-I90H™	38'-8"	34'-10"	32'-6"	30'-5"

Spans shown represent clear distance between supports.

Table values are based on:

- Limit States Design per CAN/CSA-O86-19.
- Uniform loads.
- Deflection limits of L/480 for live load and L/240 for total load.
- Composite stiffness assuming glue-nailed 32 oc span-rated OSB sheathing (7/8" or 1" nominal thickness).
- Minimum bearing length of 2½" inches.
- Web stiffeners for all depths 20" and greater.
- Vibration control per CCMC Vibration Criteria, assuming no direct-applied ceiling, no concrete topping, no blocking, strapping or bridging.
- Long-term deflection under dead load has not been considered.

For other conditions, contact your RedBuilt™ representative. Visit www.RedBuilt.com to find your local representative.



50 psf Live / 20 psf Partition / 25 psf Dead Load (3/4" OSB)

Depth	Series	Simple Span			
		Spacing			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9.5"	Red-I45™	16'-4"	15'-0"	14'-1"	12'-6"
11.875"	Red-I45™	18'-9"	17'-6"	16'-10"	14'-0"
	Red-I65™	20'-3"	18'-9"	17'-10"	17'-2"
	Red-I90™	21'-8"	20'-0"	19'-1"	17'-7"
	Red-I90H™	22'-2"	20'-6"	19'-6"	17'-7"
14"	Red-I45™	20'-10"	19'-4"	18'-1"	14'-5"
	Red-I65™	22'-6"	20'-10"	19'-10"	17'-7"
	Red-I90™	24'-2"	22'-3"	21'-2"	17'-7"
	Red-I90H™	24'-9"	22'-10"	21'-8"	17'-7"
16"	Red-I45™	22'-9"	21'-1"	18'-1"	14'-5"
	Red-I65™	24'-7"	22'-9"	21'-8"	17'-7"
	Red-I90™	26'-4"	24'-3"	22'-1"	17'-7"
	Red-I90H™	27'-0"	24'-10"	22'-1"	17'-7"
18"	Red-I65™	26'-6"	24'-6"	22'-1"	17'-7"
	Red-I90™	28'-4"	26'-2"	22'-1"	17'-7"
	Red-I90H™	29'-1"	26'-7"	22'-1"	17'-7"
20"	Red-I65™	28'-5"	26'-3"	25'-0"	23'-8"
	Red-I90™	30'-4"	28'-0"	26'-7"	25'-2"
	Red-I90H™	31'-2"	28'-9"	27'-3"	25'-9"
22"	Red-I65™	30'-3"	27'-11"	26'-7"	25'-2"
	Red-I90™	32'-5"	29'-9"	28'-4"	26'-8"
	Red-I90H™	33'-7"	30'-6"	29'-0"	27'-4"
24"	Red-I65™	32'-0"	29'-7"	28'-2"	26'-0"
	Red-I90™	34'-11"	31'-6"	29'-11"	28'-1"
	Red-I90H™	36'-2"	32'-5"	30'-8"	28'-1"

Spans shown represent clear distance between supports.

Table values are based on:

- Limit States Design per CAN/CSA-O86-19.
- Uniform loads.
- Deflection limits of L/480 for live load and L/240 for total load.
- Composite stiffness assuming glue-nailed 24 oc span-rated OSB sheathing (23/32" or 3/4" nominal thickness).
- Minimum bearing length of 2½" inches.
- Web stiffeners for all depths 20" and greater.
- Vibration control per CCMC Vibration Criteria, assuming no direct-applied ceiling, no concrete topping, no blocking, strapping or bridging.
- Long-term deflection under dead load has not been considered.

For other conditions, contact your RedBuilt™ representative. Visit www.RedBuilt.com to find your local representative.



50 psf Live / 20 psf Partition / 25 psf Dead Load (7/8" OSB)

Depth	Series	Simple Span Spacing			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9.5"	Red-I45™	16'-7"	15'-2"	14'-4"	12'-6"
11.875"	Red-I45™	19'-10"	18'-1"	17'-0"	14'-0"
	Red-I65™	21'-4"	19'-10"	18'-11"	17'-7"
	Red-I90™	22'-11"	21'-2"	20'-2"	17'-7"
	Red-I90H™	23'-5"	21'-8"	20'-7"	17'-7"
14"	Red-I45™	22'-1"	20'-4"	18'-1"	14'-5"
	Red-I65™	23'-9"	22'-1"	21'-0"	17'-7"
	Red-I90™	25'-5"	23'-7"	22'-1"	17'-7"
	Red-I90H™	26'-1"	24'-1"	22'-1"	17'-7"
16"	Red-I45™	24'-1"	21'-9"	18'-1"	14'-5"
	Red-I65™	25'-11"	24'-0"	22'-1"	17'-7"
	Red-I90™	27'-9"	25'-8"	22'-1"	17'-7"
	Red-I90H™	28'-5"	26'-3"	22'-1"	17'-7"
18"	Red-I65™	27'-11"	25'-11"	22'-1"	17'-7"
	Red-I90™	29'-11"	26'-7"	22'-1"	17'-7"
	Red-I90H™	30'-8"	26'-7"	22'-1"	17'-7"
20"	Red-I65™	29'-11"	27'-9"	26'-5"	24'-0"
	Red-I90™	32'-0"	29'-7"	28'-1"	26'-4"
	Red-I90H™	33'-1"	30'-4"	28'-9"	26'-4"
22"	Red-I65™	31'-10"	29'-6"	28'-1"	25'-2"
	Red-I90™	34'-8"	31'-5"	29'-10"	28'-1"
	Red-I90H™	35'-11"	32'-4"	30'-7"	28'-1"
24"	Red-I65™	34'-3"	31'-3"	29'-5"	26'-0"
	Red-I90™	37'-4"	33'-8"	31'-7"	28'-1"
	Red-I90H™	38'-8"	34'-10"	32'-6"	28'-1"

Spans shown represent clear distance between supports.

Table values are based on:

- Limit States Design per CAN/CSA-O86-19.
- Uniform loads.
- Deflection limits of L/480 for live load and L/240 for total load.
- Composite stiffness assuming glue-nailed 32 oc span-rated OSB sheathing (7/8" or 1" nominal thickness).
- Minimum bearing length of 2½" inches.
- Web stiffeners for all depths 20" and greater.
- Vibration control per CCMC Vibration Criteria, assuming no direct-applied ceiling, no concrete topping, no blocking, strapping or bridging.
- Long-term deflection under dead load has not been considered.

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100 psf Live / 25 psf Dead Load (3/4" OSB)

Depth	Series	Simple Span			
		Spacing			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9.5"	Red-I45™	12'-8"	11'-6"	10'-10"	9'-0"
11.875"	Red-I45™	15'-2"	13'-9"	12'-8"	10'-1"
	Red-I65™	16'-10"	15'-3"	14'-4"	12'-8"
	Red-I90™	18'-6"	16'-9"	15'-8"	12'-8"
	Red-I90H™	19'-1"	17'-3"	15'-11"	12'-8"
14"	Red-I45™	17'-4"	15'-8"	13'-0"	10'-4"
	Red-I65™	19'-2"	17'-5"	15'-11"	12'-8"
	Red-I90™	21'-1"	19'-1"	15'-11"	12'-8"
	Red-I90H™	21'-9"	19'-2"	15'-11"	12'-8"
16"	Red-I45™	19'-3"	15'-8"	13'-0"	10'-4"
	Red-I65™	21'-4"	19'-2"	15'-11"	12'-8"
	Red-I90™	23'-4"	19'-2"	15'-11"	12'-8"
	Red-I90H™	24'-2"	19'-2"	15'-11"	12'-8"
18"	Red-I65™	23'-5"	19'-2"	15'-11"	12'-8"
	Red-I90™	25'-6"	19'-2"	15'-11"	12'-8"
	Red-I90H™	25'-6"	19'-2"	15'-11"	12'-8"
20"	Red-I65™	25'-6"	23'-2"	21'-9"	17'-11"
	Red-I90™	27'-9"	25'-2"	23'-7"	19'-0"
	Red-I90H™	28'-9"	26'-0"	23'-9"	19'-0"
22"	Red-I65™	27'-5"	24'-11"	22'-11"	18'-4"
	Red-I90™	29'-11"	27'-2"	25'-4"	20'-3"
	Red-I90H™	30'-11"	28'-0"	25'-4"	20'-3"
24"	Red-I65™	29'-5"	26'-8"	23'-5"	18'-8"
	Red-I90™	32'-0"	29'-0"	25'-4"	20'-3"
	Red-I90H™	33'-1"	30'-0"	25'-4"	20'-3"

Spans shown represent clear distance between supports.

Table values are based on:

- Limit States Design per CAN/CSA-O86-19.
- Uniform loads.
- Deflection limits of L/480 for live load and L/240 for total load.
- Composite stiffness assuming glue-nailed 24 oc span-rated OSB sheathing (23/32" or 3/4" nominal thickness).
- Minimum bearing length of 2½" inches.
- Web stiffeners for all depths 20" and greater.
- Vibration control per CCMC Vibration Criteria, assuming no direct-applied ceiling, no concrete topping, no blocking, strapping or bridging.
- Long-term deflection under dead load has not been considered.

For other conditions, contact your RedBuilt™ representative. Visit www.RedBuilt.com to find your local representative.



100 psf Live / 25 psf Dead Load (7/8" OSB)

Depth	Series	Simple Span			
		Spacing			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9.5"	Red-I45™	12'-10"	11'-8"	11'-0"	9'-0"
11.875"	Red-I45™	15'-4"	14'-0"	12'-8"	10'-1"
	Red-I65™	17'-0"	15'-6"	14'-7"	12'-8"
	Red-I90™	18'-8"	16'-11"	15'-11"	12'-8"
	Red-I90H™	19'-2"	17'-5"	15'-11"	12'-8"
14"	Red-I45™	17'-6"	15'-8"	13'-0"	10'-4"
	Red-I65™	19'-5"	17'-8"	15'-11"	12'-8"
	Red-I90™	21'-3"	19'-2"	15'-11"	12'-8"
	Red-I90H™	21'-11"	19'-2"	15'-11"	12'-8"
16"	Red-I45™	19'-6"	15'-8"	13'-0"	10'-4"
	Red-I65™	21'-7"	19'-2"	15'-11"	12'-8"
	Red-I90™	23'-7"	19'-2"	15'-11"	12'-8"
	Red-I90H™	24'-4"	19'-2"	15'-11"	12'-8"
18"	Red-I65™	23'-8"	19'-2"	15'-11"	12'-8"
	Red-I90™	25'-6"	19'-2"	15'-11"	12'-8"
	Red-I90H™	25'-6"	19'-2"	15'-11"	12'-8"
20"	Red-I65™	25'-8"	23'-4"	21'-11"	17'-11"
	Red-I90™	28'-0"	25'-5"	23'-9"	19'-0"
	Red-I90H™	28'-11"	26'-3"	23'-9"	19'-0"
22"	Red-I65™	27'-8"	25'-2"	22'-11"	18'-4"
	Red-I90™	30'-2"	27'-4"	25'-4"	20'-3"
	Red-I90H™	31'-2"	28'-3"	25'-4"	20'-3"
24"	Red-I65™	29'-8"	27'-0"	23'-5"	18'-8"
	Red-I90™	32'-3"	29'-3"	25'-4"	20'-3"
	Red-I90H™	33'-4"	30'-3"	25'-4"	20'-3"

Spans shown represent clear distance between supports.

Table values are based on:

- Limit States Design per CAN/CSA-O86-19.
- Uniform loads.
- Deflection limits of L/480 for live load and L/240 for total load.
- Composite stiffness assuming glue-nailed 32 oc span-rated OSB sheathing (7/8" or 1" nominal thickness).
- Minimum bearing length of 2½" inches.
- Web stiffeners for all depths 20" and greater.
- Vibration control per CCMC Vibration Criteria, assuming no direct-applied ceiling, no concrete topping, no blocking, strapping or bridging.
- Long-term deflection under dead load has not been considered.

For other conditions, contact your RedBuilt™ representative. Visit www.RedBuilt.com to find your local representative.



Red-I45™

Depth	9.5"			11.875"			14"			16"		
Span	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance
	L/240	L/180		L/240	L/180		L/240	L/180		L/240	L/180	
10'-0"	*	*	319	*	*	356	*	*	365	*	*	365
11'-0"	*	*	290	*	*	325	*	*	333	*	*	333
12'-0"	188	*	267	*	*	298	*	*	306	*	*	306
13'-0"	152	*	246	*	*	275	*	*	282	*	*	282
14'-0"	124	165	229	*	*	256	*	*	262	*	*	262
15'-0"	102	136	202	171	*	239	*	*	245	*	*	245
16'-0"	86	114	178	143	*	224	*	*	230	*	*	230
17'-0"	72	96	158	121	161	205	*	*	217	*	*	217
18'-0"	61	82	141	103	138	183	150	*	205	*	*	205
19'-0"	53	70	127	88	118	164	129	*	194	*	*	194
20'-0"	45	60	114	77	102	149	112	*	177	*	*	184
21'-0"	40	53	104	66	89	135	97	*	160	132	*	176
22'-0"	34	46	95	58	78	123	86	114	146	116	*	168
23'-0"	30	40	87	51	69	112	75	101	134	103	*	153
24'-0"				46	61	103	67	89	123	91	*	141
25'-0"				40	54	95	60	79	114	81	*	130
26'-0"				36	48	88	53	71	105	73	*	121
27'-0"				32	43	82	48	64	97	65	87	112
28'-0"							43	58	90	59	78	104
29'-0"							39	52	84	53	71	97
30'-0"							35	47	79	48	64	90

- **Values shown are maximum capacities based on the following assumptions:**
 - Limit States Design per CAN/CSA-O86-19.
 - Simple span, uniformly loaded conditions, with provisions for positive drainage (1/4 :12 slope minimum).
 - Minimum bearing length of 2½".
 - No composite stiffness assumed.
 - For roof slopes greater than 2:12, consideration must be given to the increased dead load and deflection caused by actual slope length.
- **Span** indicates distance from inside face to inside face of bearing.
- Straight-line interpolations may be made between spans.
- Where deflection-limited load is not shown (*), total load controls.
- To size a joist, check the unfactored live and total loads in the deflection columns and the factored total load in the resistance column.
- To check deflection with a limit of L/360, divide the L/180 value by two.
- For span or loading conditions not covered by these tables, such as multiple spans or concentrated loads, contact a RedBuilt™ representative. Visit www.RedBuilt.com to find your local representative.



Red-I65™

Depth	11.875"			14"			16"			18"			20"		
Span	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance
	L/240	L/180		L/240	L/180		L/240	L/180		L/240	L/180		L/240	L/180	
12'-0"	*	*	373	*	*	373	*	*	373	*	*	373	*	*	526
14'-0"	*	*	320	*	*	320	*	*	320	*	*	320	*	*	452
16'-0"	197	*	281	*	*	281	*	*	281	*	*	281	*	*	395
18'-0"	143	190	250	*	*	250	*	*	250	*	*	250	*	*	352
20'-0"	106	142	214	154	*	225	*	*	225	*	*	225	*	*	317
22'-0"	82	108	177	119	158	205	160	*	205	*	*	205	*	*	288
24'-0"	64	85	149	93	123	177	125	*	188	*	*	188	*	*	255
26'-0"	51	67	127	74	99	151	100	133	173	130	*	173	164	*	217
28'-0"	41	54	110	60	79	131	81	108	150	106	*	161	134	*	188
30'-0"	34	45	96	49	65	114	66	88	131	87	116	147	110	*	164
32'-0"				40	54	100	56	74	115	73	97	130	92	*	144
34'-0"				34	45	89	47	62	102	61	81	115	77	*	127
36'-0"							39	53	91	51	69	103	66	88	114
38'-0"							34	45	82	44	59	92	56	75	102
40'-0"										38	51	83	49	64	93

Depth	22"			24"			26"			28"			30"		
Span	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance
	L/240	L/180		L/240	L/180		L/240	L/180		L/240	L/180		L/240	L/180	
18'-0"	*	*	352	*	*	360	*	*	368	*	*	372	*	*	372
20'-0"	*	*	317	*	*	324	*	*	331	*	*	335	*	*	335
22'-0"	*	*	288	*	*	295	*	*	301	*	*	305	*	*	305
24'-0"	*	*	255	*	*	271	*	*	277	*	*	280	*	*	280
26'-0"	164	*	217	*	*	239	*	*	256	*	*	258	*	*	258
28'-0"	134	*	188	*	*	206	*	*	225	*	*	241	*	*	241
30'-0"	110	*	164	136	*	180	*	*	196	*	*	212	*	*	224
32'-0"	92	*	144	114	*	158	*	*	173	*	*	187	*	*	201
34'-0"	77	*	127	96	*	140	116	*	153	*	*	166	*	*	178
36'-0"	66	88	114	82	*	125	99	*	136	*	*	148	*	*	159
38'-0"	56	75	102	70	*	112	85	*	123	102	*	133	*	*	143
40'-0"	49	64	93	60	80	101	73	*	111	88	*	120	*	*	129
42'-0"	42	56	84	52	70	93	64	*	101	77	*	109	90	*	117
44'-0"	37	49	77	46	61	84	56	*	92	67	*	99	79	*	107
46'-0"	32	43	70	40	53	77	49	65	84	59	*	90	70	*	97

• **Values shown are maximum capacities based on the following assumptions:**

- Limit States Design per CAN/CSA-O86-19.
- Simple span, uniformly loaded conditions, with provisions for positive drainage (¼ :12 slope minimum).
- Minimum bearing length of 2½".
- Web stiffeners for all depths 20" and greater.
- No composite stiffness assumed.
- For roof slopes greater than 2:12, consideration must be given to the increased dead load and deflection caused by actual slope length.

- **Span** indicates distance from inside face to inside face of bearing.
- Straight-line interpolations may be made between spans.
- Where deflection-limited load is not shown (*), total load controls.



- To size a joist, check the unfactored live and total loads in the deflection columns and the factored total load in the resistance column.
- To check deflection with a limit of L/360, divide the L/180 value by two.
- For span or loading conditions not covered by these tables, such as multiple spans or concentrated loads, contact a RedBuilt™ representative. Visit www.RedBuilt.com to find your local representative.

www.RedBuilt.com

Roof Resistance Tables (PLF)

Red-I90™

Depth	11.875"			14"			16"			18"			20"		
Span	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance
	L/240	L/180		L/240	L/180		L/240	L/180		L/240	L/180		L/240	L/180	
14'-0"	*	*	320	*	*	320	*	*	320	*	*	320	*	*	477
16'-0"	*	*	281	*	*	281	*	*	281	*	*	281	*	*	418
18'-0"	190	*	250	*	*	250	*	*	250	*	*	250	*	*	372
20'-0"	143	*	225	*	*	225	*	*	225	*	*	225	*	*	336
22'-0"	110	146	205	157	*	205	*	*	205	*	*	205	*	*	305
24'-0"	86	114	188	123	*	188	*	*	188	*	*	188	*	*	280
26'-0"	69	91	173	99	132	173	133	*	173	*	*	173	*	*	258
28'-0"	56	74	156	80	107	161	108	*	161	*	*	161	175	*	241
30'-0"	45	60	136	66	88	151	89	119	151	115	*	151	145	*	225
32'-0"	38	50	120	55	73	141	74	99	141	96	*	141	121	162	205
34'-0"	32	42	106	46	62	127	62	83	133	81	*	133	102	136	182
36'-0"				39	52	113	53	71	125	69	92	125	87	116	162
38'-0"				34	45	101	45	60	116	59	79	119	75	99	146
40'-0"							39	52	105	51	68	113	64	86	132
42'-0"							34	45	95	44	59	108	56	75	119

Depth	22"			24"			26"			28"			30"		
Span	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance
	L/240	L/180		L/240	L/180		L/240	L/180		L/240	L/180		L/360	L/600	
22'-0"	*	*	325	*	*	325	*	*	345	*	*	360	*	*	360
24'-0"	*	*	299	*	*	299	*	*	317	*	*	330	*	*	330
26'-0"	*	*	275	*	*	275	*	*	293	*	*	305	*	*	305
28'-0"	*	*	256	*	*	256	*	*	272	*	*	283	*	*	283
30'-0"	178	*	239	*	*	239	*	*	254	*	*	264	*	*	264
32'-0"	149	*	224	*	*	224	*	*	238	*	*	248	*	*	248
34'-0"	126	*	200	152	*	211	*	*	224	*	*	234	*	*	234
36'-0"	107	143	178	130	*	195	154	*	210	*	*	221	*	*	221
38'-0"	92	123	160	111	*	175	133	*	189	156	*	204	*	*	209
40'-0"	79	106	145	97	*	158	115	*	171	135	*	184	*	*	196
42'-0"	69	93	132	84	112	143	100	*	155	118	*	167	137	*	178
44'-0"	60	81	120	73	98	130	88	*	141	103	*	152	120	*	162
46'-0"	53	71	110	64	86	119	77	103	130	91	*	139	106	*	149
48'-0"	47	63	101	57	76	110	69	91	119	81	*	127	94	*	136
50'-0"	42	56	93	51	68	101	61	81	110	72	*	118	84	*	126

- **Values shown are maximum capacities based on the following assumptions:**
 - Limit States Design per CAN/CSA-O86-19.
 - Simple span, uniformly loaded conditions, with provisions for positive drainage (¼ :12 slope minimum).
 - Minimum bearing length of 2½".
 - Web stiffeners for all depths 20" and greater.
 - No composite stiffness assumed.
 - For roof slopes greater than 2:12, consideration must be given to the increased dead load and deflection caused by actual slope length.
- **Span** indicates distance from inside face to inside face of bearing.



- Straight-line interpolations may be made between spans.
- Where deflection-limited load is not shown (*), total load controls.
- To size a joist, check the unfactored live and total loads in the deflection columns and the factored total load in the resistance column.
- To check deflection with a limit of L/360, divide the L/180 value by two.
- For span or loading conditions not covered by these tables, such as multiple spans or concentrated loads, contact a RedBuilt™ representative. Visit www.RedBuilt.com to find your local representative.

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Roof Resistance Tables (PLF)

Red-I90H™

Depth	11.875"			14"			16"			18"			20"		
Span	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance
	L/240	L/180		L/240	L/180		L/240	L/180		L/240	L/180		L/240	L/180	
14'-0"	*	*	320	*	*	320	*	*	320	*	*	320	*	*	477
16'-0"	*	*	281	*	*	281	*	*	281	*	*	281	*	*	418
18'-0"	*	*	250	*	*	250	*	*	250	*	*	250	*	*	372
20'-0"	156	*	225	*	*	225	*	*	225	*	*	225	*	*	336
22'-0"	120	160	205	*	*	205	*	*	205	*	*	205	*	*	305
24'-0"	94	125	188	136	*	188	*	*	188	*	*	188	*	*	280
26'-0"	75	100	173	109	*	173	*	*	173	*	*	173	*	*	258
28'-0"	61	82	161	88	118	161	119	*	161	*	*	161	*	*	241
30'-0"	50	66	151	73	97	151	98	*	151	*	*	151	160	*	225
32'-0"	42	56	137	60	81	141	82	109	141	106	*	141	134	*	210
34'-0"	35	47	121	51	68	133	69	92	133	90	*	133	113	151	198
36'-0"	29	40	108	43	58	125	58	78	125	76	*	125	97	128	187
38'-0"				37	49	116	50	67	119	65	87	119	83	110	168
40'-0"				32	42	105	43	58	113	56	75	113	71	95	151
42'-0"							38	50	108	49	65	108	62	83	138

Depth	22"			24"			26"			28"			30"		
Span	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance	Unfactored Deflection		Factored Total Resistance
	L/240	L/180		L/240	L/180		L/240	L/180		L/240	L/180		L/240	L/180	
22'-0"	*	*	325	*	*	325	*	*	345	*	*	360	*	*	360
24'-0"	*	*	299	*	*	299	*	*	317	*	*	330	*	*	330
26'-0"	*	*	275	*	*	275	*	*	293	*	*	305	*	*	305
28'-0"	*	*	256	*	*	256	*	*	272	*	*	283	*	*	283
30'-0"	*	*	239	*	*	239	*	*	254	*	*	264	*	*	264
32'-0"	164	*	224	*	*	224	*	*	238	*	*	248	*	*	248
34'-0"	139	*	211	168	*	211	*	*	224	*	*	234	*	*	234
36'-0"	119	158	199	143	*	199	*	*	212	*	*	221	*	*	221
38'-0"	102	136	185	123	*	189	147	*	201	*	*	209	*	*	209
40'-0"	88	118	167	107	143	180	127	*	190	149	*	199	*	*	199
42'-0"	77	102	151	93	124	165	111	*	179	130	*	189	*	*	189
44'-0"	67	90	138	82	109	151	97	130	163	114	*	175	133	*	181
46'-0"	59	79	127	72	96	138	86	114	149	101	*	161	117	*	172
48'-0"	52	70	116	64	85	127	76	101	137	90	*	148	104	*	158
50'-0"	47	62	107	56	75	117	68	90	127	79	106	136	93	*	146

- **Values shown are maximum capacities based on the following assumptions:**
 - Limit States Design per CAN/CSA-O86-19.
 - Simple span, uniformly loaded conditions, with provisions for positive drainage (¼ :12 slope minimum).
 - Minimum bearing length of 2½".
 - Web stiffeners for all depths 20" and greater.
 - No composite stiffness assumed.



Red-I™ Joists



— For roof slopes greater than 2:12, consideration must be given to the increased dead load and deflection caused by actual slope length.

- **Span** indicates distance from inside face to inside face of bearing.
- Straight-line interpolations may be made between spans.
- Where deflection-limited load is not shown (*), total load controls.
- To size a joist, check the unfactored live and total loads in the deflection columns and the factored total load in the resistance column.
- To check deflection with a limit of $L/360$, divide the $L/180$ value by two.
- For span or loading conditions not covered by these tables, such as multiple spans or concentrated loads, contact a RedBuilt™ representative. Visit www.RedBuilt.com to find your local representative.



SERVICE AND SUPPORT YOU CAN COUNT ON.

RedBuilt™ is committed to creating superior structural solutions. How? By offering efficient structural building products supported by the broadest range of services available.

RedBuilt™ representatives and experienced technical staff are poised to help with technical information, installation questions, or code compliance.

At RedBuilt™, our goal is to help you build solid and durable structures by providing high-quality commercial building products and unparalleled technical and field support. A limited warranty for our products is in effect for the expected life of your structure.

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RedBuilt warrants that its products will be free from manufacturing errors or defects in workmanship and material. In addition, provided the product is correctly installed and used, the company warrants the adequacy of its design for the normal and expected life of the building.



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