

4 1/4 x 12 Flooring

PROPERTIES ⁹												DEFLECTION LIMIT ⁸							
NOMINAL GAGE	DESIGN THICKNESS	PLANK WIDTH	PLANK AREA	I_{xx}	d_b	d_i	S_{xt}	Z_{xt}	WEIGHT OF PLANK	MATERIAL SPECIFICATIONS	GRADE (f_y)	ASD HS20		ASD HS25		LRFD HL93			
	in.	in.	in ²	in ⁴	in.	in.	in ³	in ³				psf	ksi	SPAN	SPAN/ Δ	SPAN	SPAN/ Δ	SPAN	SPAN/ Δ
															in.		in.		in.
9.0	0.1495	14.25	3.013	9.1137	2.108	2.292	3.976 4.323	4.661 5.074	8.63	ASTM A 1011-SS	50	51.00	826	44.00	842	43.00	804		
7.0	0.1793	14.25	3.6114	10.9236	2.123	2.307	4.735 5.145	5.587 6.082	10.35	ASTM A 1011-SS	50	58.00	836	50.00	810	47.50	801		
5.0	0.2092	14.25	4.211	12.738	2.138	2.322	5.486 5.958	6.514 7.091	12.07	ASTM A 1011-SS	50	66.00	817	55.00	839	53.25	806		
3.0	0.2391	14.25	4.810	14.552	2.153	2.337	6.227 6.759	7.441 8.100	13.78	ASTM A 1018-HSLAS	50	71.50	809	59.50	824	58.50	813		

3 x 9 Flooring

PROPERTIES ⁹												DEFLECTION LIMIT ⁸							
NOMINAL GAGE	DESIGN THICKNESS	PLANK WIDTH	PLANK AREA	I_{xx}	d_b	d_i	S_{xt}	Z_{xt}	WEIGHT OF PLANK	MATERIAL SPECIFICATIONS	GRADE (f_y)	ASD HS20		ASD HS25		LRFD HL93			
	in.	in.	in ²	in ⁴	in.	in.	in ³	in ³				psf	ksi	SPAN	SPAN/ Δ	SPAN	SPAN/ Δ	SPAN	SPAN/ Δ
																in.		in.	
7.0	0.1793	20.125	4.973	7.550	1.584	1.595	4.734 4.767	5.605 5.724	10.09	ASTM A 1011-SS	50	39.00	833	36.00	839	36.00	820		
5.0	0.2092	20.125	5.804	8.783	1.596	1.613	5.445 5.503	6.513 6.690	11.78	ASTM A 1011-SS	50	42.00	808	38.50	800	37.50	829		
3.0	0.2391	20.125	6.633	9.986	1.609	1.630	6.126 6.206	7.397 7.644	13.46	ASTM A 1018-HSLAS	50	44.00	826	40.00	810	39.00	815		

Assumptions for Span Table Calculations:

- beam flange width = 9 in.
- roadway width = 24 ft.
- crown = 3/16" per ft.
- asphalt density = 140 pcf

Notes:

- 1 Strength and deflection limits report the maximum center to center dimension based on various wearing surface thickness above the corrugations
- 2 Effective Span for ASD defined as per AASHTO 3.25.1.2.
- 3 ASD/HS20 curves use a wheel load of 12k as per notes from AASHTO Figure 3.7.7.A.
- 4 ASD/HS25 curves use a wheel load of 15k proportioned from AASHTO Figure 3.7.7.A.
- 5 LRFD/HL93 curves use a wheel load of 16k per AASHTO LRFD 3.6.1.2.5 and distribution per 9.8.5.2
- 6 Analysis assumes a pinned end-span support condition at each end
- 7 The LRFD span limits are based on a continuous beam analysis using load positioning to produce a maximum load effect
- 8 The deflection limits are based on meeting AASHTO's optional criteria of L/800. These values are calculated using an asphalt thickness of 1.5 in above the plank corrugations. Like the strength charts show, a higher deflection limit can be expected for thicker asphalt amounts.
- 9 Plank dimensions and property calculations can be downloaded at www.usbridge.com
- 10 Detailed proof-of-method for these span limits can be downloaded at www.usbridge.com