

**Design Table for Glued Laminated Timber Arches  
for Vertical and Wind Loads**

Values shown are for preliminary design only. A simplified loading system was used for the preliminary design of the arches in these tables. For final design, the designer should use the loads and method of loading required by the applicable building code.

			Span = 30 ft					Span = 35 ft					Span = 40 ft				
Loading	Roof Pitch	Wall Height ft	Width	Base	L.T.	U.T.	Crown	Width	Base	L.T.	U.T.	Crown	Width	Base	L.T.	U.T.	Crown
			in. (b)	in. (d)	in.	in.	in.	in.	in. (b)	in. (d)	in.	in.	in.	in.	in. (b)	in. (d)	in.
Vertical Dead Load = 240 plf	10/12	8	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>2</sub>	11	7 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>2</sub>	12	10 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>4</sub>	13	12 <sup>3</sup> / <sub>4</sub>
		10	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	10	13 <sup>1</sup> / <sub>4</sub>	8	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	10 <sup>3</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>4</sub>	11 <sup>3</sup> / <sub>4</sub>
		12	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	13 <sup>3</sup> / <sub>4</sub>	13 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12	14 <sup>3</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12 <sup>3</sup> / <sub>4</sub>	15 <sup>3</sup> / <sub>4</sub>	9 <sup>3</sup> / <sub>4</sub>
Horizontal Wind Load = 320 plf	12/12	8	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>2</sub>	12	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>4</sub>	14 <sup>3</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>2</sub>
		10	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9 <sup>3</sup> / <sub>4</sub>	13 <sup>3</sup> / <sub>4</sub>	9	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>2</sub>	15	10 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	11	16 <sup>1</sup> / <sub>4</sub>	13 <sup>3</sup> / <sub>4</sub>
		12	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	11 <sup>3</sup> / <sub>4</sub>	15 <sup>1</sup> / <sub>4</sub>	15 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>2</sub>	16 <sup>1</sup> / <sub>2</sub>	9	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	13 <sup>1</sup> / <sub>4</sub>	17 <sup>1</sup> / <sub>2</sub>	11 <sup>3</sup> / <sub>4</sub>
Horizontal Wind Load = 320 plf	14/12	8	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>4</sub>	13 <sup>3</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9	15	13 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	16 <sup>1</sup> / <sub>4</sub>	16 <sup>1</sup> / <sub>4</sub>
		10	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	15 <sup>1</sup> / <sub>4</sub>	8 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	16 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>2</sub>	18	15 <sup>3</sup> / <sub>4</sub>
		12	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	13 <sup>1</sup> / <sub>4</sub>	17	17	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	14	18	8 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>2</sub>	19 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>4</sub>
Vertical Dead Load = 320 plf	10/12	8	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>2</sub>	10 <sup>3</sup> / <sub>4</sub>	9	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9	13	13
		10	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	10	12	7 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	10 <sup>3</sup> / <sub>4</sub>	13	10 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	14	13 <sup>1</sup> / <sub>2</sub>
		12	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12	13 <sup>3</sup> / <sub>4</sub>	13 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12 <sup>3</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	13 <sup>3</sup> / <sub>4</sub>	15 <sup>1</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>2</sub>
Horizontal Wind Load = 320 plf	12/12	8	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9	13 <sup>1</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	14 <sup>3</sup> / <sub>4</sub>	14 <sup>3</sup> / <sub>4</sub>
		10	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>2</sub>	13 <sup>1</sup> / <sub>2</sub>	9	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	14 <sup>3</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12	15 <sup>3</sup> / <sub>4</sub>	15 <sup>1</sup> / <sub>4</sub>
		12	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>2</sub>	15	9	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	13 <sup>1</sup> / <sub>4</sub>	16	10 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>4</sub>	17 <sup>1</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>4</sub>
Horizontal Wind Load = 320 plf	14/12	8	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>2</sub>	12	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>4</sub>	14 <sup>3</sup> / <sub>4</sub>	14 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	10	16 <sup>1</sup> / <sub>2</sub>	16 <sup>1</sup> / <sub>2</sub>
		10	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	10 <sup>3</sup> / <sub>4</sub>	15	10 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	11 <sup>3</sup> / <sub>4</sub>	16 <sup>1</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>2</sub>	17 <sup>1</sup> / <sub>2</sub>	17 <sup>1</sup> / <sub>4</sub>
		12	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12 <sup>3</sup> / <sub>4</sub>	16 <sup>1</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	13 <sup>3</sup> / <sub>4</sub>	17 <sup>3</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	14 <sup>3</sup> / <sub>4</sub>	19 <sup>1</sup> / <sub>4</sub>	16 <sup>1</sup> / <sub>2</sub>
Vertical Dead Load = 480 plf	10/12	8	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9	10 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9 <sup>3</sup> / <sub>4</sub>	12	12	5 <sup>5</sup> / <sub>8</sub>	8	10 <sup>1</sup> / <sub>2</sub>	13 <sup>1</sup> / <sub>2</sub>	13 <sup>1</sup> / <sub>2</sub>
		10	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>4</sub>	14	14
		12	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	13 <sup>1</sup> / <sub>2</sub>	12 <sup>3</sup> / <sub>4</sub>	8 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	14 <sup>3</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	16	14 <sup>3</sup> / <sub>4</sub>	14 <sup>3</sup> / <sub>4</sub>
Horizontal Wind Load = 480 plf	12/12	8	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>4</sub>	12	12	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>2</sub>	13 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	11	15 <sup>1</sup> / <sub>4</sub>	15 <sup>1</sup> / <sub>4</sub>
		10	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	11 <sup>3</sup> / <sub>4</sub>	13 <sup>3</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12 <sup>3</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	13 <sup>3</sup> / <sub>4</sub>	15 <sup>3</sup> / <sub>4</sub>	15 <sup>3</sup> / <sub>4</sub>
		12	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	13 <sup>3</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>2</sub>	10	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	15	15 <sup>1</sup> / <sub>2</sub>	14	5 <sup>5</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	16 <sup>1</sup> / <sub>4</sub>	16 <sup>3</sup> / <sub>4</sub>	16 <sup>3</sup> / <sub>4</sub>
Horizontal Wind Load = 320 plf	14/12	8	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9 <sup>3</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>2</sub>	15	15	5 <sup>5</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>4</sub>	17	17
		10	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12	14 <sup>3</sup> / <sub>4</sub>	13	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	13	16	16	5 <sup>5</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	14	17 <sup>3</sup> / <sub>4</sub>	17 <sup>3</sup> / <sub>4</sub>
		12	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>4</sub>	16	11 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	15 <sup>1</sup> / <sub>2</sub>	17 <sup>1</sup> / <sub>2</sub>	15 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	16 <sup>1</sup> / <sub>2</sub>	18 <sup>3</sup> / <sub>4</sub>	18 <sup>3</sup> / <sub>4</sub>

**L.T. = Lower Tangent, U.T. = Upper Tangent  
See Table Specifications**

**Design Table for Glued Laminated Timber Arches  
for Vertical and Wind Loads (continued)**

Values shown are for preliminary design only. A simplified loading system was used for the preliminary design of the arches in these tables. For final design, the designer should use the loads and method of loading required by the applicable building code.

			Span = 50 ft					
Loading	Roof Pitch	Wall Height ft	Width in. (b)	Base in. (d)	L.T. in.	U.T. in.	Crown in.	
Vertical Dead Load = 240 plf	10/12	8	5 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>4</sub>	15 <sup>1</sup> / <sub>2</sub>	15 <sup>1</sup> / <sub>2</sub>	
		10	5 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12	16 <sup>1</sup> / <sub>4</sub>	16 <sup>1</sup> / <sub>4</sub>	
		12	5 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>4</sub>	17 <sup>1</sup> / <sub>2</sub>	16	
	Horizontal Wind Load = 320 plf	12/12	8	5 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	9 <sup>3</sup> / <sub>4</sub>	17 <sup>1</sup> / <sub>2</sub>	17 <sup>1</sup> / <sub>2</sub>
			10	5 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>2</sub>	18 <sup>1</sup> / <sub>2</sub>	18 <sup>1</sup> / <sub>2</sub>
			12	5 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	14 <sup>3</sup> / <sub>4</sub>	20	18 <sup>1</sup> / <sub>4</sub>
Vertical Dead Load = 320 plf	10/12	8	5 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>4</sub>	19 <sup>1</sup> / <sub>2</sub>	19 <sup>1</sup> / <sub>2</sub>	
		10	5 <sup>1</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>4</sub>	20 <sup>1</sup> / <sub>2</sub>	20 <sup>1</sup> / <sub>2</sub>	
		12	5 <sup>1</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>4</sub>	16	22	20 <sup>3</sup> / <sub>4</sub>	
	Horizontal Wind Load = 320 plf	12/12	8	5 <sup>1</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>2</sub>	17 <sup>3</sup> / <sub>4</sub>	17 <sup>3</sup> / <sub>4</sub>
			10	5 <sup>1</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>2</sub>	18 <sup>3</sup> / <sub>4</sub>	18 <sup>3</sup> / <sub>4</sub>
			12	5 <sup>1</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	16	19 <sup>1</sup> / <sub>2</sub>	19 <sup>1</sup> / <sub>2</sub>
Vertical Dead Load = 480 plf	10/12	8	5 <sup>1</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>2</sub>	19 <sup>3</sup> / <sub>4</sub>	19 <sup>3</sup> / <sub>4</sub>	
		10	5 <sup>1</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>4</sub>	13 <sup>3</sup> / <sub>4</sub>	20 <sup>3</sup> / <sub>4</sub>	20 <sup>3</sup> / <sub>4</sub>	
		12	5 <sup>1</sup> / <sub>8</sub>	8	16 <sup>1</sup> / <sub>2</sub>	21 <sup>1</sup> / <sub>4</sub>	21 <sup>3</sup> / <sub>4</sub>	
	Horizontal Wind Load = 320 plf	12/12	8	5 <sup>1</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>4</sub>	16 <sup>1</sup> / <sub>2</sub>	16 <sup>1</sup> / <sub>2</sub>
			10	5 <sup>1</sup> / <sub>8</sub>	10	15 <sup>1</sup> / <sub>4</sub>	17	17
			12	5 <sup>1</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>4</sub>	18	17 <sup>1</sup> / <sub>2</sub>	17 <sup>1</sup> / <sub>2</sub>
Vertical Dead Load = 320 plf	10/12	8	5 <sup>1</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>4</sub>	11 <sup>3</sup> / <sub>4</sub>	18 <sup>1</sup> / <sub>2</sub>	18 <sup>1</sup> / <sub>2</sub>	
		10	5 <sup>1</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>4</sub>	15 <sup>1</sup> / <sub>2</sub>	19	19	
		12	5 <sup>1</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	18 <sup>1</sup> / <sub>4</sub>	19 <sup>3</sup> / <sub>4</sub>	19 <sup>3</sup> / <sub>4</sub>	
	Horizontal Wind Load = 320 plf	12/12	8	5 <sup>1</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	12	20 <sup>1</sup> / <sub>2</sub>	20 <sup>1</sup> / <sub>2</sub>
			10	5 <sup>1</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	15 <sup>1</sup> / <sub>2</sub>	21 <sup>1</sup> / <sub>4</sub>	21 <sup>1</sup> / <sub>4</sub>
			12	5 <sup>1</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	18 <sup>1</sup> / <sub>2</sub>	22 <sup>1</sup> / <sub>4</sub>	22 <sup>1</sup> / <sub>4</sub>

**L.T. = Lower Tangent, U.T. = Upper Tangent  
See Table Specifications**

## Table Specifications

1. **Preliminary Design Only.** Sizes are for arches manufactured with Douglas Fir -- Larch lumber using a 9'-4" haunch radius and based on the following design criteria:
  - a. Bending design value,  $F_b = 2400$  psi
  - b. Shear design value,  $F_v = 165$  psi
  - c. Compression parallel to grain,  $F_c = 1500$  psi
  - d. Modulus of elasticity,  $E = 1,600,000$  psi
  - e. Tabular design values are increased by 15% for two-month duration for snow or live loads and 33% for wind or earthquake loads.

Design values for other softwood species can be found in *AITC 117 – Design*.

2. Vertical arch legs are laterally supported.
3. Vertical dead and live loads are uniformly distributed on the horizontal projection of arch.
4. Horizontal wind loads are uniformly distributed on the entire vertical projection of arch.
5. Many building codes require special loadings for arches, such as:
  - a. Full unbalanced live loads.
  - b. Simultaneous application of dead, live and wind loads.
  - c. Different components of wind loads to be applied to windward wall, windward slope, leeward wall and leeward slope, depending on arch geometry.

Unique loading requirements, different arch geometries or special deflection controls must be checked by a competent designer. Thrust load must also be considered at the base of arch.

6. Many arch configurations other than those tabulated can be utilized. Additional information on arch design is available from AITC laminators, the *Timber Construction Manual*, and *AITC Technical Note No. 23*.

**While these specifications have been prepared in accordance with recognized engineering principles and are based on the most accurate technical data available, they should not be used without competent professional examination and verification of their accuracy, suitability and applicability by a licensed design professional. Any user of this information assumes all risks and liability arising from such use.**