

WAC 296-307-28060 What materials must be used for guardrails and toeboards? (1) A guardrail used to guard power transmission parts must be 42 inches tall, with a midrail between the top rail and the floor.

(2) Posts must be 8 feet apart or less. They must be permanent and substantial, smooth, and free from protruding nails, bolts, and splinters. If made of pipe, the post must be at least 1-1/4 inches inside diameter. If posts are made of metal shapes or bars, the section must be as strong as posts made of 1-1/2 by 1-1/2 by 3/16-inch angle iron. If posts are made of wood, the posts must be at least 2 by 4 inches. The upper rail must be 2 by 4 inches, or two 1 by 4 inch strips, one at the top and one at the side of the posts. The midrail must be at least 1 by 4 inches.

(3) The rails (metal shapes, metal bars, or wood), should be on the side of the posts that gives the best protection and support. Where panels are fitted with expanded metal or wire mesh (as noted in Table 1) the middle rails may be omitted. Where guard is exposed to contact with moving equipment, additional strength may be necessary.

(4) Toeboards must be at least 4 inches tall, of wood, metal, or metal grill of a maximum 1-inch mesh. Toeboards at flywheel pits should be placed as close to edge of the pit as possible.

Table P-1

TABLE OF STANDARD MATERIALS AND DIMENSIONS

Material	Clearance from moving part at all points (inches)	Largest mesh or opening allowable (inches)	Minimum gauge (U.S. Standard) or thickness (inches)	Minimum height of guard from floor or platform level (feet)
<i>Woven wire</i>	Under 2	3/8	No. 16	7
	2-4	1/2	No. 16	7
	Under 4	1/2	No. 16	7
	4-15	2	No. 12	7
<i>Expanded metal</i>	Under 4	1/2	No. 18	7
	4-15	2	No. 13	7
<i>Perforated metal</i>	Under 4	1/2	No. 20	7
	4-15	2	No. 14	7
<i>Sheet metal</i>	Under 4		No. 22	7
	4-15		No. 22	7
<i>Wood or metal strip crossed</i>	Under 4	3/8	Wood 3/4	7
	4-15	2	Metal No. 16 Wood 3/4 Metal No. 16	7
<i>Wood or metal strip not crossed</i>	Under 4	1/2 width	Wood 3/4	7
	4-15	1 width	Metal No. 16 Wood 3/4 Metal No. 16	7
<i>Standard rail</i>	Min. 15 Max. 20			

Table P-2

HORIZONTAL OVERHEAD BELTS, ROPES, AND CHAINS
7 FEET OR MORE ABOVE FLOOR OR PLATFORM

	Width 0"-14" inclusive	Material
MEMBERS		
Framework	1 1/2" x 1 1/2" x 1/4"	Angle iron
Filler (belt guards)	1 1/2" x 3/16"	Flat iron

	Width 0"-14" inclusive	Material
Filler and vertical side member	No. 20 A.W.G.	Solid sheet metal
Filler supports	2" x 5/16" flat iron	Flat and angle
Guard supports	2" x 5/16"	Flat iron
FASTENINGS		
Filler supports to framework	(2) 3/16"	Rivets
Filler flats to supports (belt guards)	(1) 5/16"	Flush rivets
Filler to frame and supports (chain guards)	3/16"	Rivets spaced
Guard supports to framework	(2) 3/6"	Rivets or bolts
Guard and supports to overheard ceiling	1/4" x 3 1/2" lag screws or 1/2" bolts	Lag screws or bolts
DETAILS-SPACING, ETC.		
Width of guards	One-quarter wider than belt, rope, or chain drive	
Spacing between filler supports	20" center to center	
Spacing between filler flats (belt guards)	2" apart	
Spacing between guard supports	36" center to center	
OTHER BELT GUARD FILLING PERMITTED		
Sheet metal fastened as in chain guards	No. 20 A.W.G.	Solid or perforated
Woven Wire, 2" mesh	No. 12 A.W.G.	
CLEARANCE FROM OUTSIDE OF BELT, ROPE, OR CHAIN DRIVE TO GUARD		
Distance center to center of shafts	Up to 15' inclusive	Over 40'
Clearance from belt, or chain to guard	16"	120"
	Width over 14" to 24" inclusive	Material
MEMBERS		
Framework	2" x 2" x 5/16"	Angle iron
Filler (belt guards)	2" x 3/16"	Flat iron
Filler and vertical side member	No. 18 A.W.G.	Solid sheet metal
Filler supports	2" x 3/8" flat iron	Flat and angle
Guard supports	2" x 3/8"	Flat iron
FASTENINGS		
Filler supports to framework	(2) 3/6"	Rivets
Filler flats to supports (belt guards)	(1) 5/16"	Flush rivets
Filler to frame and supports (chain guards)	8" centers on sides and 4" centers on bottom	
Guard supports to framework	(2) 7/16"	Rivets or bolts
Guard and supports to overheard ceiling	5/8" x 4" lag screws or 5/8" bolts	Lag screws or bolts
DETAILS-SPACING, ETC.		
Width of guards		
Spacing between filler supports	16" C. to C	
Spacing between filler flats (belt guards)	2 1/2" apart	
Spacing between guard supports	36" C. to C	
OTHER BELT GUARD FILLING PERMITTED		
Sheet metal fastened as in chain guards	No. 18 A.W.G.	Solid or perforated
Woven wire, 2" mesh	No. 10 A.W.G.	
CLEARANCE FROM OUTSIDE OF BELT, ROPE, OR CHAIN DRIVE TO GUARD		
Distance center to center of shafts	Over 15' to 25'	Over 40' inclusive

	Width 0"-14" inclusive	Material
Clearance from belt/chain to guard	10"	20"
	Width over 24"	Material
MEMBERS		
Framework	3" x 3" x 3/8"	Angle iron
Filler (belt guards)	2" x 5/16"	Flat iron
Filler and vertical side member	No. A.W.G.	Solid sheet metal
Filler supports	2 1/2" x 2 1/2" x 1/4" angle	Flat and angle
Guard supports	2 1/2" x 3/8"	Flat iron
FASTENINGS		
Filler supports to framework	(3) 1/2"	Rivets
Filler flats to supports (belt guards)	(2) 3/8"	Flush rivets
Filler to frame and supports (chain guards)		
Guard supports to frame work	(2) 5/8"	Rivets or bolts
Guard and supports to overhead ceiling	3/4" x 6" lag screws or 3/4" bolt	Lag screws or bolts
DETAILS-SPACING, ETC.		
Width of guards		
Spacing between filler supports		16" C. to C.
Spacing between filler flats (belt guards)		4" apart
Spacing between guard supports		36" C. to C.
OTHER BELT GUARD FILLING PERMITTED		
Sheet metal fastened as in chain guards	No. 18 A.W.G.	Solid or perforated
Woven wire, 2" mesh	No. 8 A.W.G.	
CLEARANCE FROM OUTSIDE OF BELT, ROPE, OR CHAIN DRIVE TO GUARD		
Distance center to center of shafts	Over 25' to 40' inclusive	Over 40'
Clearance from belt, or chain to guard	15"	20"

[Statutory Authority: RCW 49.17.040. WSR 98-24-096, § 296-307-28060, filed 12/1/98, effective 3/1/99. WSR 97-09-013, recodified as § 296-307-28060, filed 4/7/97, effective 4/7/97. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. WSR 96-22-048, § 296-306A-28060, filed 10/31/96, effective 12/1/96.]