- ❑ *Heat*. In excessive heat, webbing becomes brittle and has a shriveled brownish appearance. Fibers will break when flexed. Harnesses made of these materials should not be used at temperatures above 180 degrees Fahrenheit.
- ❑ *Chemical*. Changes in color usually appearing as a brownish smear or smudge. Transverse cracks appear when bent over a mandrel. Loss of elasticity.
- ❑ *Molten Metal or Flame*. Webbing strands fuse together. Hard shiny spots appear. Hard and brittle feel.
- ❑ *Paint and Solvents*. Paint that penetrates and dries restricts movement of fibers. Drying agents and solvents in some paints cause chemical damage.

4.2 Guardrail Systems

General

OSHA compliant guardrail systems for car tops, open hoistways or escalator wellways shall have a top rail 42 in. ±3 in. (1067 mm ±76 mm) high, with a mid-rail 21 in. (533 mm) high at centerline and toeboards. 3-1/2 in. (90 mm) high, with no greater than 8 ft (2.4 m) between uprights and shall be capable of sustaining a force equal to 200 lbf (890 N) at the toprail, 150 lbf (667 N) at the midrail, and 50 lbf (222 N) at the toeboard. When 200 lbf (890 N) is applied, the top rail shall not deflect lower than 39 in. (991 mm) (See Figures c, d and e)

(a) OSHA compliant removable guardrail systems with toeboards shall be installed at elevator hoistways or escalator wellways typically by the General Contractor, after either rough or finished floors are in place.

(b) Signs shall be installed warning against removal. It is also recommended that a sign indicate “Caution: Workers in Hoistway.”

(c) After hoistways are enclosed, and before permanent doors are installed, openings shall be protected by removable guardrail systems (including toeboards).

(d) If it is necessary to remove the guardrails, be sure to replace them before leaving the area.

(e) Wire-rope guardrail systems are not recommended for guarding hoistways. Where used, post spacing shall not be greater than 8 ft (2.4 m) and they shall not deflect to a height less than 39 in. above the walking/ working level when a force of 200 lbf (890 N) is applied. Warning flags shall be attached every 6 ft (1.8 m), toeboards shall be provided and they must be easily removable for access to the hoistway at the terminal landings.

(f) If guardrails are not properly maintained in place, notify your Superintendent/Manager and the General Contractor's Superintendent immediately.

(g) On new installation, modernization, or major repair jobs where the general public is present, solid barricades at least 8 ft (2.4 m) high shall be used to fully enclose the work areas, open hoistways and escalator wellways. They shall be properly secured to avoid unauthorized access.

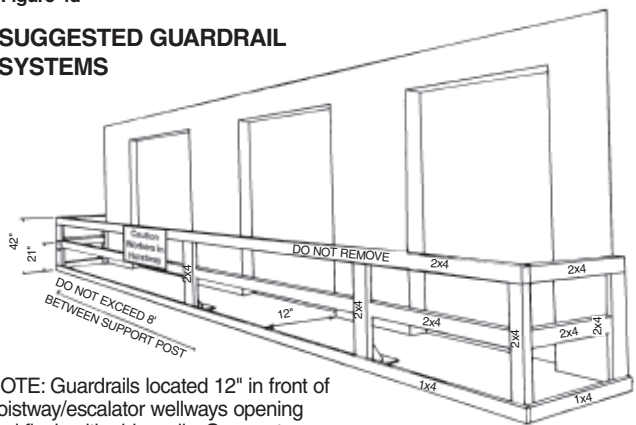
(h) When a guardrail is removed to perform a job, a personal fall-arrest system must be utilized when a fall hazard is present.

NOTE: The methods shown in Figures 4d and 4e are recommended as a means of providing maximum protection and flexibility during construction. Do not use during modernization or major repair jobs where the general public is present – use only solid barricades.

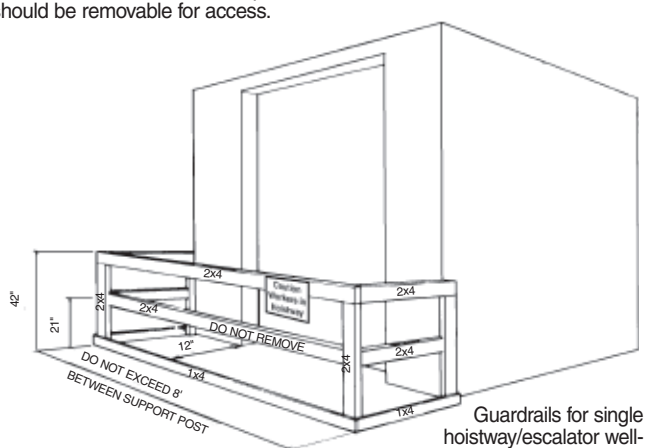
Figure 4c
Osha compliant cartop guardrail system

Figure 4d

SUGGESTED GUARDRAIL SYSTEMS



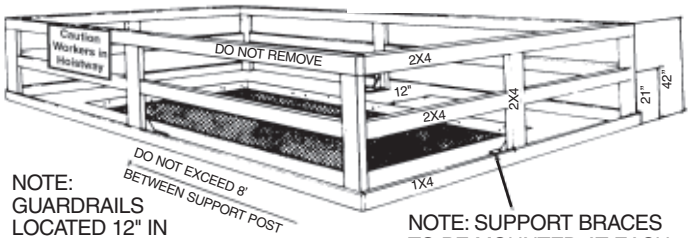
NOTE: Guardrails located 12" in front of hoistway/escalator wellways opening and flush with side walls. One part should be removable for access.



Guardrails for single hoistway/escalator wellways opening located 12" from opening

Figure 4e

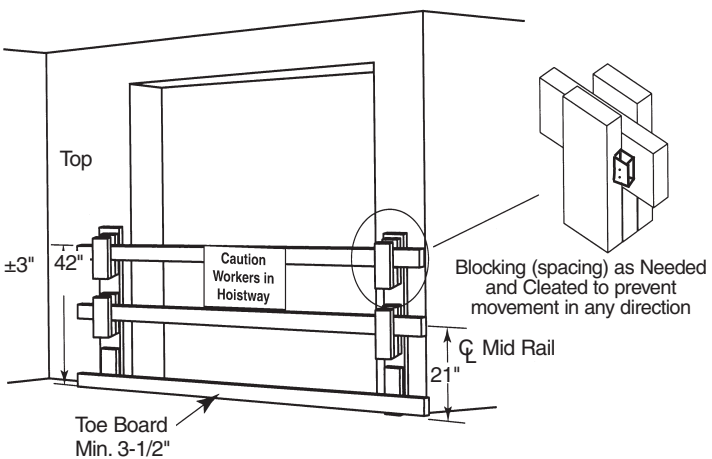
SUGGESTED GUARDRAIL SYSTEMS



NOTE: GUARDRAILS LOCATED 12" IN FRONT OF HOISTWAY/ ESCALATOR WELLWAY OPENING

NOTE: SUPPORT BRACES TO BE MOUNTED AT EACH SUPPORT POST

SHADED AREA ABOVE REPRESENTS CLEAR HOISTWAY/ESCALATOR WELLWAY OPENING



Removable Guardrails:
Space out from walls to permit Entrance Frame Installation.