

Fire Engineering®

Article and photos by Gregory Havel

May 31, 2016



The Occupational Safety and Health Act was passed by Congress and signed into law in 1970. The first of the Occupational Safety and Health Administration (OSHA) standards and regulations were published a year later. OSHA's regulations on fall protection were published in 1979.

These regulations, after several revisions, require fall protection for workers in most cases six feet or more above the lower level, whether during construction or for permanent in the structure (see OSHA's 26 CFR 1926.501(b)). Guardrails (*Photo 1, previous page*) are a common way to meet these requirements.

From OSHA's 29 CFR 1926.502(b) *Guardrail systems*:

1926.502(b) Guardrail systems and their use shall comply with the following provisions:

1926.502(b)(1) Top edge height of top rails, or equivalent guardrail system members, shall be 42 inches (1.1 m) plus or minus 3 inches (8 cm) above the walking/working level. When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria of this paragraph.

1926.502(b)(2) Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working surface when there is no wall or parapet wall at least 21 inches (53 cm) high.

1926.502(b)(2)(i) Midrails, when used, shall be installed at a height midway between the top edge of the guardrail system and the walking/working level....

1926.502(b)(2)(iv) Other structural members (such as additional midrails and architectural panels) shall be installed such that there are no openings in the guardrail system that are more than 19 inches (.5 m) wide.

1926.502(b)(3) Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied within 2 inches (5.1 cm) of the top edge, in any outward or downward direction, at any point along the top edge.

1926.502(b)(4) When the 200 pound (890 N) test load specified in paragraph (b)(3) of this section is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 39 inches (1.0 m) above the walking/working level....

1926.502(b)(5) Midrails... shall be capable of withstanding, without failure, a force of at least 150 pounds (666 N) applied in any downward or outward direction at any point along the midrail...

1926.502(b)(6) Guardrail systems shall be so surfaced as to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.

1926.502(b)(7) The ends of all top rails and midrails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard.



Despite the decades that the OSHA regulations have been in place, there are still spaces in buildings with fall protection that was installed before OSHA, or in disregard of OSHA's regulations. These spaces (Photo 2) may require access for heating, ventilating, air conditioning, electrical, or plumbing system maintenance. Access may also be required by emergency services personnel if there is a fire, or if a maintenance person develops a medical problem.



In this case, the emergency services workers may have to depend on the reach of hose streams, and forcible entry to ventilate the space. For overhaul after the fire is extinguished, or for patient removal, fall protection equipment as worn by the construction worker in Photo 3 may be required. Removal of the patient from the space may also require technical rescue techniques.

The presence of these spaces, their occupancy, and the fall protection equipment for emergency responders must be part of our pre-incident plans; and may require training in its use, as well as practice in technical rescue.

To review the Occupational Safety and Health Administration (OSHA) regulations and standards on fall protection for construction, visit www.osha.gov; click on “Laws and Regulations”; click on “OSHA Law and Regulations”; click on “Construction”; and scroll down to, and click on, 1926.500.

Gregory Havel is a member of the Town of Burlington (WI) Fire Department; retired deputy chief and training officer; and a 35-year veteran of the fire service. He is a Wisconsin-certified fire instructor II, fire officer II, and fire inspector; an adjunct instructor in fire service programs at Gateway Technical College; and safety director for Scherrer Construction Co., Inc. Havel has a bachelor's degree from St. Norbert College; has more than 35 years of experience in facilities management and building construction; and presents classes at FDIC.