



# Federal Register

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## **Part II**

# **Department of Labor**

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**Occupational Safety and Health  
Administration**

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**29 CFR Part 1910  
Walking-Working Surfaces and Personal  
Protective Equipment (Fall Protection  
Systems); Proposed Rule**

**DEPARTMENT OF LABOR****Occupational Safety and Health Administration****29 CFR Part 1910**

[Docket No. OSHA-2007-0072]

RIN 1218-AB80

**Walking-Working Surfaces and Personal Protective Equipment (Fall Protection Systems)**

**AGENCY:** Occupational Safety and Health Administration (OSHA), Department of Labor.

**ACTION:** Notice of proposed rule.

**SUMMARY:** OSHA proposes to revise the walking-working surfaces standards and the personal protective equipment standards in our regulations. The proposal is estimated to reduce the number of fall-related employee deaths and injuries by updating the rule to include new technology (including personal fall protection systems) and industry methods. OSHA believes that the proper use of personal fall protection systems can protect employees from injury and death due to falls to different elevations. The proposal reorganizes the rule in a clearer, more logical manner and provides greater compliance flexibility. The proposed rule is written in plain-language to make it easier to understand, thereby facilitating compliance. Additionally, the proposal increases consistency between construction, maritime, and general industry standards, and eliminates duplication.

**DATES:** Submit comments (including comments on the information-collection (paperwork) determination described under the section titled **SUPPLEMENTARY INFORMATION** of this document), hearing requests, and other information by August 23, 2010. All submissions must bear a postmark or provide other evidence of the submission date. (See the following section titled **ADDRESSES** for methods you can use in making submissions.)

**ADDRESSES:** Comments and hearing requests may be submitted as follows:

*Electronic:* Comments may be submitted electronically to <http://www.regulations.gov>, which is the Federal eRulemaking Portal. Follow the instructions online for submitting comments.

*Facsimile:* OSHA allows facsimile transmission of comments and hearing requests that are 10 pages or fewer in length (including attachments). Send

these documents to the OSHA Docket Office at (202) 693-1648; hard copies of these documents are not required. Instead of transmitting facsimile copies of attachments that supplement these documents (e.g., studies, journal articles), commenters may submit these attachments, in triplicate hard copy, to the OSHA Docket Office, Technical Data Center, Room N-2625, OSHA, U.S. Department of Labor, 200 Constitution Ave., NW., Washington, DC 20210. These attachments must clearly identify the sender's name, date, subject, and Docket ID (i.e., OSHA-2007-0072) so that the Agency can attach them to the appropriate document.

*Regular mail, express delivery, hand (courier) delivery, and messenger service:* Submit three copies of comments and any additional material (e.g., studies, journal articles) to the OSHA Docket Office, Docket ID OSHA-2007-0072 or RIN No. 1218-AB80, Technical Data Center, Room N-2625, OSHA, Department of Labor, 200 Constitution Ave., NW., Washington, DC 20210; telephone: (202) 693-2350. (OSHA's TTY number is (877) 889-5627.) Please contact the OSHA Docket Office for information about security procedures concerning delivery of materials by express delivery, hand delivery, and messenger service. The hours of operation for the OSHA Docket Office are 8:15 a.m. to 4:45 p.m., e.t.

*Instructions.* All submissions must include the Agency name and the OSHA Docket ID (i.e., OSHA-2007-0072). Comments and other material, including any personal information, are placed in the public docket without revision, and will be available online at <http://www.regulations.gov>. Therefore, the Agency cautions commenters about submitting statements they do not want made available to the public, or submitting comments that contain personal information (either about themselves or others) such as Social Security numbers, birth dates, and medical data.

*Docket.* To read or download comments or other material in the docket, go to <http://www.regulations.gov> or to the OSHA Docket Office at the address above. Documents in the docket are listed in the <http://www.regulations.gov> index; however, some information (e.g., copyrighted material) is not publicly available to read or download through this Web site. All submissions, including copyrighted material, are available for inspection and copying at the OSHA Docket Office. Contact the OSHA Docket Office for assistance in locating docket submissions.

**FOR FURTHER INFORMATION CONTACT:**

*General information and press inquiries.* Contact Ms. Jennifer Ashley, Director, Office of Communications, OSHA, U.S. Department of Labor, Room N-3647, 200 Constitution Avenue, NW., Washington, DC 20210; telephone (202) 693-1999 or fax (202) 693-1634.

*Technical inquiries.* Contact Ms. Virginia Fitzner, Directorate of Standards and Guidance, Room N-3609, OSHA, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210; telephone (202) 693-2052 or fax (202) 693-1663.

*Copies of this Federal Register notice.* Available from the OSHA Office of Publications, Room N-3101, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210; telephone (202) 693-1888.

*Electronic copies of this notice.* Go to OSHA's Web site (<http://www.osha.gov>), and select "Federal Register," "Date of Publication," and then "2010."

*Additional information for submitting documents.* See section XI ("Public Participation") of this notice.

**SUPPLEMENTARY INFORMATION:**

*Replacement of previously proposed rule.* This proposed revision of subparts D and I replaces the proposed rules originally published in the **Federal Register** (55 FR 47660) on April 10, 1990, and republished in the **Federal Register** on May 2, 2003 (69 FR 23528).

*References and exhibits.* In this **Federal Register** notice, OSHA references a number of supporting materials. References to these materials are given as "Ex." followed by the number of the document (e.g., Ex. 23). The referenced materials are posted in Docket Nos. OSHA-2007-0072, OSHA-S041-2006-0666 (formerly Docket No. S-041), OSHA-S029-2006-0662 (formerly Docket No. S-029), and OSHA-S057-2006-0680 (formerly Docket No. S-057) all of which are available at <http://www.regulations.gov>. The documents are also available at the OSHA Docket Office (see **ADDRESSES** section). For further information about accessing exhibits referenced in this **Federal Register** notice, see the "Public Participation" section of this document.

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## I. Background

The majority of employees in general industry workplaces walk or work on level surfaces, such as floors, where slips, trips, and falls are common occurrences. These occurrences, however, are not likely to result in major injuries or fatalities. On the other hand, there are many employees who work on ladders, scaffolds, towers, outdoor advertising signs, and similar surfaces where slips, trips, or falls are likely to result in serious injury or death.

The existing OSHA general industry standards recognize the use of guardrails and physical barriers as the primary methods for employee protection against falls. However, those standards do not directly recognize that personal fall protection systems can also provide effective means for employee protection. OSHA believes that the proposed rules will give employers the necessary flexibility to decide which fall protection method or system works best for the work operation being performed, while ensuring employees receive a level of protection that is effective and necessary. OSHA believes many of these slips, trips, and falls can be prevented and has devoted many years to assembling and analyzing information aimed at the elimination and prevention of hazards that cause these incidents. The Agency used that information to form the basis for this proposed rule.

*History of the earlier rulemaking effort.* OSHA's efforts to address slips, trips, and falls began with its initial standards. Those standards, which address a variety of walking-working surface hazards, were part of the initial package of standards promulgated by OSHA in 1971 under section 6(a) of the Occupational Safety and Health Act of 1970 (the Act) (29 U.S.C. 651 *et seq.*). Since that time, a number of interested parties suggested changes to the standard. In particular, the suggested changes addressed updating the existing standard to reflect the current national consensus standards.

*Subpart D.* Efforts to revise the initial standards in subpart D have been ongoing for many years. In September 1973, OSHA published a proposed revision of subpart D in the **Federal Register** (38 FR 24300).

In April 1976, OSHA withdrew the 1973 proposal (41 FR 17227) because it was outdated. In the same year, to

obtain public input on revising subpart D, OSHA conducted several informal public meetings around the country. After reviewing the information gathered from the public, OSHA determined that a more thorough, scientific and technical research effort was needed to develop objective information upon which an effective revision to the subpart D standard could be based.

From 1976 through the 1980s, OSHA accumulated a wide variety of technical information. This included recommendations for fall prevention, ladders, scaffolds, slip-resistance, and handrails from the University of Michigan; studies concerning guardrails, slip-resistance, scaffolds, and fall prevention from the National Bureau of Standards (now the National Institute of Standards and Technology); analysis of various walking-working surfaces from Texas Tech University; accident and injury data from the Bureau of Labor Statistics; and various national consensus standards from the American National Standards Institute, American Society of Testing and Materials, and the American Society of Mechanical Engineers. This technical information provided the basis for a new proposal that was published in 1990; that proposal was not finalized due to other regulatory activities that took precedent.

*Subpart I.* Many of the Personal Protective Equipment (PPE) standards in subpart I, like subpart D, were also adopted by OSHA under section 6(a) of the Act. Existing subpart I contains general requirements for personal protective equipment, as well as specific performance and use requirements for certain types of personal protective equipment, including eye and face protection, respiratory protection, head protection, foot protection, protective clothing, hand protection, and electrical protective devices. Existing subpart I does not, however, contain any specific requirements addressing the performance or use of PPE used for *fall* protection; hence the need for this proposal.

OSHA first proposed to revise subpart I to address fall protection PPE in 1990 in combination with a proposal to revise subpart D. As noted above, the 1990 rule was not finalized. On April 6, 1994, OSHA updated other portions of the PPE standard (59 FR 16334) by adding new requirements for employers to conduct hazard assessments; to select the proper PPE; to remove defective or damaged PPE from service; and to provide training in the proper use, care, and disposal of PPE. Those provisions, however, only applied to PPE used for

face and eye, head, foot, and hand protection. In this rulemaking, OSHA proposes to require the hazard assessments to address PPE used for fall protection as well.

*The combined proposals for subparts D and I.* On April 10, 1990, OSHA proposed to revise both subparts D and I (55 FR 13360 and 55 FR 13423, respectively). The proposals were intended to remove ambiguities and redundancies in the existing standards, simplify and consolidate existing provisions, and use performance language instead of specifications where possible. Additionally, OSHA proposed adding new requirements to subpart I, Personal Protective Equipment, to set performance and use criteria for fall protection equipment. The two subparts were interdependent with respect to personal fall protection systems; that is, the duty requirements for personal fall protection systems were in subpart D and the criteria for the systems were in subpart I. OSHA received comments and held a public hearing on the proposals.

On May 2, 2003, OSHA reopened the rulemaking record and republished the 1990 proposal (68 FR 23528) to refresh the record due to the length of time that had elapsed since 1990. Based upon comments and information received in that reopening, and because of technological advances, particularly within the fall protection industry, OSHA determined the best course of action was to issue a new proposal for subparts D and I.

*Today's proposed rule.* Today's proposed rule replaces the 1990 proposals (55 FR 13360). OSHA proposes to revise subpart D to accomplish the following:

- (1) Reflect current industry practices and national consensus standards;
- (2) Harmonize provisions, when possible, with other OSHA provisions (e.g., the construction standards in 29 CFR part 1926 and the Shipyard Employment Standards in 29 CFR part 1915); and
- (3) Use performance-oriented language when possible, rather than specification-oriented language.

In subpart I, OSHA proposes to add new specific performance and use requirements for personal *fall* protection equipment. Existing subpart I contains general requirements for all types of personal protective equipment, as well as specific performance and use requirements for other types of personal protective equipment, but it does not specifically contain criteria for fall protection PPE.

To be effective, fall protection systems must be both strong enough to provide

the necessary fall protection and capable of absorbing fall impact so that the forces imposed on employees when stopping falls do not result in injury or death. The ability of the human body to tolerate the arresting force imposed on it by a fall protection system has been addressed directly in general industry only by § 1910.66, Powered Platforms for Building Maintenance. Throughout this proposed rule, OSHA will make reference to the general industry powered platform standard; the construction industry standard for fall protection; and the shipyard employment standards for personal fall protection systems. Experience gained by the Agency in enforcing those rules provides additional guidance in the development of this proposed rule. OSHA's objective is to make consistent all of its requirements for the use of personal fall protection systems. The listed fall protection standards contain requirements that are identical to, or essentially the same as, those proposed in this document.

The proposed rule for subpart I, to be codified at § 1910.140 (Fall protection), would apply whenever another standard requires or allows the use of fall protection PPE. In these situations, the system used must comply with the requirements of § 1910.140. For example, subparts D, F, and R of the general industry standards (part 1910) each contain a requirement (a duty) to use fall protection. Where an employer uses a *personal* fall protection system to meet the duty, that system would have to meet the criteria and performance requirements proposed in this rule. Many of the requirements proposed here for personal fall arrest systems are already in effect when employees are working on platforms regulated by OSHA's general industry standard in subpart F—Powered Platforms for Building Maintenance (§ 1910.66). Appendix C of § 1910.66 sets out mandatory requirements for personal fall arrest systems. Therefore, the entire

powered platform rulemaking record is hereby incorporated into this proposed rulemaking (Dockets S-700 and S-700A).

In addition to proposing new requirements for personal protective equipment (PPE) used for fall protection, OSHA proposes to amend a number of general industry standards that already set a duty to use PPE by requiring that PPE meet the new requirements of subpart I. For example, paragraph (g) of § 1910.269 requires personal fall arrest systems to meet the requirements of subpart M of part 1926 (the construction industry requirements). This provision would be revised to require personal fall arrest systems to meet the mostly parallel criteria requirements of subpart I of 1910 (the general industry requirements). Subpart M of part 1926 differs from proposed subpart I in that subpart M addresses fall arrest systems used in the construction of elevator shafts, while subpart I does not address the construction of elevator shafts. In addition, subpart I uses performance language with regard to anchorages for fall arrest systems, while subpart M specifically prohibits the use of guardrails as anchorage points.

Finally, OSHA proposes to add two non-mandatory appendices to subpart I to provide examples of test methods and procedures that will assist employers and PPE manufacturers to demonstrate compliance with the criteria proposed in § 1910.140.

OSHA believes that many equipment manufacturers are currently following the criteria and test methods of the above-mentioned standards. Therefore, the vast majority of equipment covered by the proposed rule already complies with the requirements in this proposal. Also, OSHA notes that equipment that meets the proposed standards is readily available to any employer that does not already meet the proposed standard because personal fall protection systems required to be used by other OSHA standards (e.g., the construction

standards in 29 CFR part 1926 and the Shipyard Employment Standards in 29 CFR part 1915) must meet essentially the same criteria and testing requirements as in this proposed rule.

The OSH Act requires OSHA to make certain findings with respect to standards. One of these findings, specified by section 3(8) of the OSH Act, requires an OSHA standard to address a significant risk and to reduce this risk significantly. (*See Industrial Union Dep't v. American Petroleum Institute*, 448 U.S. 607 (1980).) As discussed in section II of this preamble, OSHA preliminarily finds that slips, trips, and falls constitute a significant risk, and estimates that the proposed standard will prevent 20 fatalities and 3,706 injuries annually. Section 6(b) of the OSH Act requires OSHA to determine if its standards are technologically and economically feasible. As discussed in section V of this preamble, OSHA preliminarily finds that this proposed standard is economically and technologically feasible.

The Regulatory Flexibility Act (5 U.S.C. 601, as amended) requires that OSHA determine whether a proposed standard will have a significant economic impact on a substantial number of small firms. As discussed in section VI, OSHA examined the small firms affected by this standard and certifies that the proposed standard will not have a significant impact on a substantial number of small firms.

Executive Order 12866 requires that OSHA estimate the benefits, costs, and net benefits of proposed standards. The table below summarizes OSHA's preliminary findings with respect to the estimated costs, benefits, and net benefits of this standard. As is clear, the annual benefits are significantly in excess of the annual costs. However, it should be noted that under the OSH Act, OSHA does not use the magnitude of net benefits as the decisionmaking criterion in determining what standards to promulgate.

NET BENEFITS AND COST EFFECTIVENESS OF THE PROPOSED REVISION TO OSHA'S WALKING-WORKING STANDARDS

Annualized Costs		
§ 1910.22	General Requirements .....	\$15.7 million.
§ 1910.23	Ladders .....	\$9.7 million.
§ 1910.24	Step Bolts and Manhole Steps .....	\$3.7 million.
§ 1910.27	Scaffolds .....	\$73.0 million.
§ 1910.28	Duty to Have Fall Protection .....	\$0.09 million.
§ 1910.29	Fall Protection Systems Criteria and Practices .....	\$8.4 million.
§ 1910.30	Training Requirements .....	\$44.1 million.
§ 1910.140	Fall Protection .....	\$18.5 million.
Total Annual Costs .....		\$173.2 million.

NET BENEFITS AND COST EFFECTIVENESS OF THE PROPOSED REVISION TO OSHA'S WALKING-WORKING STANDARDS—  
Continued

Annual Benefits	
Number of Injuries Prevented .....	3,706.
Number of Fatalities Prevented .....	20.
Monetized Benefits (assuming \$50,000 per injury and \$7.2 million per fatality prevented) .....	\$328.5 million.
OSHA standards that are updated and consistent with voluntary standards .....	Unquantified.
Net Benefits (benefits minus costs) .....	\$155.4 million.

Cost Effectiveness: Compliance with the proposed standards would result in the prevention of 1 fatality and 231 injuries for every \$10 million in costs, or alternatively, \$1.90 in benefits per dollar of costs.

**Source:** U.S. Dept. of Labor, OSHA, Directorate of Evaluation and Analysis, Office of Regulatory Analysis, 2009.

## II. Analysis of Risk

*Nature of the risk.* Falls and other hazards associated with walking-working surfaces, primarily resulting in slips, trips, and falls, and hazards leading to combustible dust explosions and other accidents, are addressed in this proposal. These hazards are encountered by millions of employees working in industry sectors regulated by OSHA under 29 CFR part 1910. There are many causal factors for slips, trips, and falls, such as ice, wet areas, grease, loose flooring or carpeting, inattention to surroundings, uneven scaffolding planking, clutter, worn rope on descent systems, open desk drawers and filing cabinets, damaged ladder steps, and a more subtle cause—a belief that the action being taken will not lead to an accident. For example, where a ladder is not readily available, employees may improvise and use a chair, or even a 5-gallon bucket, as a way to reach a higher level. In fact, accident data show that many falls could be prevented if existing OSHA regulations and recommended safe practices were followed. The hazards generally can be grouped into three (often interrelated) factors: Equipment, human, and environmental. Examples of some equipment factors include improper footwear, uneven surfaces, foreign substances on surfaces such as oil or litter, and unguarded sides and edges of elevated platforms. Some human factors are inattention, haste, human error, failure to follow instructions, and fatigue. Environmental factors may include poor lighting and weather-related conditions. The presence of multiple factors increases the risk. For instance, a polished marble floor may not present a slipping hazard to

someone wearing rubber-soled shoes; however, when the floor is wet from mopping or snow being tracked in from the outdoors, the risk of slipping greatly increases. The addition of other factors such as poor lighting, inattention, and haste are likely to further increase the risk.

Slips and trips can lead to falls that cause injuries such as back strains or other injuries when individuals try to “catch” themselves. Falls on the same level can cause injuries such as sprains, strains, fractures, and contusions that may affect any area of the body and, on occasion, can be fatal. Falling from an elevated surface increases injury severity and the likelihood of fatalities. Falls from elevations occur in all industries, in all occupations, and in a myriad of work settings—from the employee washing windows from a rope descent system 40 feet from the ground, to the stock clerk retrieving goods from a shelf using a 4-foot stepladder. These tasks represent only two of the numerous tasks that can result in injury or death to employees caused by failures to recognize fall hazards, to use fall protection equipment, or to take appropriate action to abate fall hazards.

Identifying fall hazards and deciding how best to protect employees is the first step in reducing or eliminating the hazards. Therefore, OSHA is proposing to expand existing § 1910.132(d), Hazard assessment and equipment selection, to apply to hazards covered in new § 1910.140—Fall protection. This expansion would require employers to assess the workplace to identify fall hazards and select and require the use of appropriate PPE. In addition, the employer must train (*see* § 1910.132(f)) the employee on the proper use of PPE.

Once employers determine that the use of PPE is the most appropriate way to protect their employees from falls, the proposed rule requires employers to provide equipment that meets certain strength and performance requirements.

*Injury and fatality data.* Recent employment data taken from the U.S. Census Bureau's 2007 Statistics of U.S. Businesses and the Bureau of Labor Statistics' (BLS) Occupational Employment Statistics indicate that over 106 million employees work in over 6 million establishments regulated by OSHA under its subpart D standards. Slips, trips, and falls constitute 15 percent of all accidental deaths, and are second only to motor vehicles as a cause of employee fatalities.

The BLS Census of Fatal Occupational Injuries (CFOI) has listed falls as one of the leading causes of traumatic injury and death in the workplace for many years. Fall-related injury and fatality statistics show that employees encounter hazards associated with walking-working surfaces at their worksites on a daily basis.

Tables V-10 and V-11 of section V (“Preliminary Economic and Initial Regulatory Flexibility Screening Analysis”) depict BLS data from 1992 to 2004. During this time period, BLS reported an annual average of 300 fatal falls, 213 (71%) of which resulted from falling from a higher level. Furthermore, of an annual average of 299,404 non-fatal falls resulting in lost-workday injuries, 79,593 (26%) were as a result of falling from a higher level.

An examination of more recent BLS data, shows that falls continue to be a significant source of workplace fatalities.

FATAL FALLS

	Fatal falls	Fatal falls from height	Percentage of fatal falls that were falls from height
1992–2004 (Average per Year) .....	300	213	71
2005 .....	320	257	80
2006 .....	343	285	83
2007 .....	357	267	75

According to this table, the number of falls resulting in death is increasing, although the percentage of fatal falls that are due to falls from heights dropped in 2007.

*Significance of risk.* As described more fully in section V of this preamble, many of the falls that occur in general industry could be prevented through the maintenance of safe conditions and the use of safe work practices on walking-working surfaces, as well as through the proper use of appropriate personal fall protection equipment when necessary. The Agency estimates that compliance with the proposed requirements in subparts D and I would prevent 20 fall-related fatalities and 3,706 fall related lost-workday injuries annually (see section V of this notice).

The Agency has concluded, on a preliminary basis, that these proposed standards address a significant risk. Furthermore, OSHA believes that compliance with these proposed requirements is reasonably necessary to protect employees from fall hazards and would substantially reduce this risk.

*Basis for Agency action.* In the 1990 proposed rule (55 FR 13361), OSHA described a number of studies and investigations conducted by both government agencies (OSHA, Consumer Product Safety Commission, the Bureau of Labor Statistics, and the former National Bureau of Standards, now called the National Institute for Standards and Technology) and academia (University of Michigan, Texas A&M, and the University of Texas). These studies, which are available in the earlier rulemaking docket (S-029) or from the sources listed in Appendix C of the 1990 proposed rule, provide useful information about the ways in which employees fall from various surfaces, and the forces applied when stepping on surfaces, particularly ladders and stairways. Additionally, they provide information about the strength necessary for various surfaces, the minimum and maximum spacing between rungs on ladders and steps on stairways, and other similar details. They also address the need for toe and

hand clearances, the height of stair rail and guardrail systems, and the size of openings in guardrails that would permit passage of employees. Many of the recommendations contained in referenced reports and studies are validated by inclusion of identical or essentially similar requirements in the national consensus standards applicable to the topic.

There are various ways of protecting employees from the hazards associated with walking-working surfaces. This proposal, in conjunction with the criteria for personal fall protection systems in the subpart I proposed rule, addresses conventional fall protection systems such as guardrail systems, safety net systems, and personal fall protection systems (travel restraint systems, fall arrest systems, and positioning systems). The proposal also includes non-conventional means such as allowing employees to work in a designated area (without conventional fall protection), provided they receive specific training and use safe work practices.

OSHA intends to ensure that all PPE requirements for fall protection in general industry are the same, and therefore is proposing to replace existing requirements in other general industry standards with references to subpart I, Personal Fall Protection Systems. This change will facilitate compliance, since all general industry fall protection criteria will be consolidated into subpart I.

Additionally, the rule requires employers to take easy-to-use measures, such as placing covers over holes in floors and using indicators or signs to warn employees that they are approaching a fall hazard.

The proposed standard would also require employers to ensure that walking-working surfaces are designed, constructed, maintained, and used in a safe manner, and that proper work practices are used by the employees. For example, when climbing a ladder, the employee must always maintain three points of contact and never use the top of a stepladder as a step. Many of the design requirements in the proposed

standard (such as those for step bolts, mobile ladder stands, and portable ladders) reflect the manufacturing specifications prescribed by national consensus standards. In most instances, the Agency used the most recent version of consensus standards in writing this proposal.<sup>1</sup>

OSHA proposes the requirements in subparts D and I as the minimum necessary to protect employees from significant hazards that can cause falls and other events which may result in serious injury and death. OSHA believes that many employers are already in compliance with the updated proposed rules because the majority of the proposed requirements are either already in existing OSHA rules or are prescribed by national consensus standards organizations in voluntary standards on the topic. The Agency believes that codifying more current consensus standard provisions, establishing personal fall protection systems criteria in subpart I, and specifying training requirements will lead to higher compliance with standards. The updated rules will make it easier and more effective to prevent slips, trips, and falls and other events.

A safety or health standard is a standard “which requires conditions, or the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe or healthful employment” (29 U.S.C. 652(8)). In addition, all standards must be highly protective (see 58 FR at 16614–16615; *International Union, UAW v. OSHA*, 37 F.3d 669 (DC Cir. 1994)) and, whenever practical, standards shall “be expressed in terms of objective criteria and of the performance desired.” *Id.* In this preamble, OSHA discusses the hazards associated with walking and working on elevated, slippery, or other surfaces, and explains why the provisions of the proposed rule are reasonably necessary to protect affected employees from those risks. The Agency estimates that compliance with the revised walking-

<sup>1</sup> Consensus standards are updated on a cyclical basis, thus staying current with industry practice and technological advances.

working surfaces standard will reduce the risks associated with these hazards by preventing an estimated 20 fatalities annually based upon the 1992–2007 BLS data and 1995–2001 OSHA data. OSHA believes that this constitutes a substantial reduction in the risk of material harm. Since falls from heights result in more fatalities and more serious injuries than falls on the same level, this proposed rule places emphasis on falls from heights.

### III. Issues

#### Issue #1—Fall Protection on Rolling Stock and Motor Vehicles

OSHA is requesting additional comment on whether specific regulations are needed to cover falls from rolling stock and commercial motor vehicles. Existing subpart D does not specifically address or exclude fall protection on rolling stock or motor vehicles from coverage. For the purposes of this issue, the term “rolling stock” means any locomotive, railcar, or vehicle operated exclusively on a rail or rails, or a trolley bus operated by electric power supplied from an overhead wire. The term “motor vehicle” means commercial buses, vans, and trucks (including tractor trailer trucks, tank trucks, and hopper trucks). For the purposes of this rule, the term “motor vehicle” does not include powered industrial trucks. OSHA is specifically seeking comment on whether it should include requirements specifying that when employees are exposed to falls from rolling stock and motor vehicles at heights greater than 4 feet, protective work practices, methods, or systems must be instituted. OSHA is also requesting comment on how it should define “rolling stock” and “motor vehicles,” or if the terms as defined are sufficiently inclusive.

The 1990 “Notice of Proposed Rulemaking for Walking-Working Surfaces” (68 FR 23530) generated one comment on the subject. The American Feed Industry Association said:

The section on Scope and Applications provides that this Subpart D does not apply to “surfaces that are an integral part of self-propelled, motorized mobile equipment” [§ 1910.21.] This is, obviously and correctly, meant to exclude work surfaces that are on railroad cars, truck trailers, and barges.

OSHA should add a line to section 1910.21(a)(1) that says: Railroad cars, truck trailers, barges and similar equipment designed for use with a separable source of propulsion are excluded from coverage by this subpart even when temporarily detached from any source of propulsion for purposes of loading or unloading.

In 1996, OSHA was asked to clarify its fall protection rules involving the

unloading of grain from rolling stock (meaning rail cars). In response, OSHA issued a memorandum to its Regional Administrators on October 18, 1996 (Ex. OSHA–S029–2006–0662–0018), directing OSHA inspectors not to cite rolling stock under subpart D. The memorandum also said that it would not be appropriate to use the PPE standard (29 CFR 1910.132(d)) to cite employee exposure to fall hazards on the tops of rolling stock unless the rolling stock was positioned inside of or contiguous to a building or other structure where the installation of fall protection is feasible. The memorandum did not result in clear direction to the public or to OSHA’s field staff. As a result, OSHA raised the issue of fall protection on rolling stock and motor vehicles in a separate **Federal Register** notice—the 2003 Reopening Notice. In response to that notice, OSHA received a number of comments that supported and opposed the inclusion of specific requirements regulating fall hazards from rolling stock and motor vehicles.

Commenters expressed diverse views on the approach that OSHA should pursue to regulate falls from rolling stock and motor vehicles. Some commenters supported an exclusion of rolling stock and motor vehicles from subpart D while other commenters supported the inclusion of new, specific rules. Referring to advances in fall protection technology, some of these commenters said they believed that it would be feasible to protect employees from falls, and cited the type of equipment that could be used to provide that protection. Other commenters simply stated their support for the policy OSHA set forth in the 1996 memorandum. However, the understanding of the 1996 memorandum also varied among commenters. Commenters provided little information to the record regarding injuries and deaths associated with falls from rolling stock and motor vehicles.

OSHA plans to continue gathering information and evidence to determine whether there is a need to propose *specific* requirements for the protection of employees exposed to falls from rolling stock and motor vehicles. Additionally, OSHA needs more information about what employers are presently doing and any feasibility and cost concerns associated with a requirement to provide protection. Therefore, OSHA is not including any *specific* requirements pertinent to rolling stock and motor vehicles in proposed § 1910.28. Rather, it will wait until the record is more fully developed to determine the appropriate course of action. If, in response to this issue, the

Agency receives sufficient comments and evidence to warrant additional rulemaking, a *separate* proposed rule will be issued.

In an effort to collect and assemble the information needed for OSHA to make an informed decision about the need for specific provisions regulating fall hazards from rolling stock and motor vehicles, the Agency requests comprehensive responses to the questions posed below. The Agency requests that the responses be directed specifically to individual questions and be clearly labeled with the number of the question.

With respect to rolling stock, OSHA is not soliciting information relating to personal fall protection equipment used on rolling stock involved in “railroad operations,” which include the movement of equipment over rails. The Federal Railroad Administration’s (FRA) “Railroad Occupational Safety and Health Standards Policy Statement” (the Policy Statement) sets out the respective areas of jurisdiction between FRA and OSHA. That Policy Statement provides that FRA has jurisdiction over railroad operations, including personal protective equipment and walking-working surfaces on rolling stock. With regard to FRA’s jurisdiction over personal protective equipment, the FRA Policy Statement notes, “OSHA regulations concerning personal protective equipment apply according to their terms, except to the extent the general requirements might be read to require protective equipment responsive to hazards growing out of railroad operations.” (See 43 FR 10583, 10588 (1978).) Addressing FRA’s jurisdiction over walking-working surfaces, the FRA Policy Statement reads, “[OSHA regulations] would not apply with respect to the design of locomotives and other rolling equipment used on a railroad, since working conditions related to such surfaces are regulated by FRA as major aspects of railroad operations.” (*Id.* at 10587.) A copy of the FRA’s Policy Statement can be found on FRA’s Web site. OSHA is, however, requesting comment and information regarding rolling stock not involved in railroad operations, such as, but not limited to, when rolling stock is being loaded or unloaded off railroad property by non-railroad employees or contractors to railroads, or when such rolling stock is being retrofitted or repaired off railroad property.

In regard to rolling stock:

1. In your establishment and/or industry, how many or what percentage of employees working on top of rolling stock are exposed to fall hazards?

2. How are these employees protected from fall hazards while working on such equipment?

3. If employee training on the recognition of fall hazards is provided in your workplace, please describe the nature and frequency of the training.

4. If fall protection equipment is used, please provide detailed information on the types and costs of the fall protection used on rolling stock and please explain how it is used.

5. If fall protection equipment is not used, please explain what technological and/or economic obstacles to such use may be involved.

6. Are there alternative means to protect employees from fall hazards while working on rolling stock? Please explain.

7. What is your safety experience with fall hazards on or from rolling stock?

8. Should OSHA exclude rolling stock from coverage under subpart D? Please explain and provide data and information to support your comments.

In regard to motor vehicles:

9. In your establishment and/or industry, how many or what percentage of employees working on top of motor vehicles are exposed to fall hazards?

10. How are these employees protected from fall hazards while working on such equipment?

11. If employee training on the recognition of fall hazards is provided in your workplace, please describe the nature and frequency of the training.

12. If fall protection equipment is used, please provide detailed information on the types and costs of the fall protection used on motor vehicles and please explain how it is used.

13. If fall protection equipment is not used, please explain what technological and/or economic obstacles may be involved.

14. Are there alternative means to protect employees from fall hazards while working on motor vehicles? Please explain.

15. What is your safety experience with fall hazards on or from motor vehicles?

16. Should OSHA exclude motor vehicles from coverage under subpart D? Please explain and provide data and information to support your comments.

*Issue #2—Fall Protection for Employees Standing or Climbing on Stacked Materials (e.g., Steel and Precast Concrete Products)*

OSHA is seeking comment on whether there is a need to promulgate a specific requirement in subpart D to address those situations where an employer can demonstrate that it is

infeasible or creates a greater hazard to use conventional fall protection to protect employees exposed to falling 4 feet (1.2 m) or more from stacked materials. Some commenters have recommended that OSHA allow the use of safe work practices by trained employees in lieu of conventional fall protection for certain activities. OSHA seeks comment on the current fall protection measures that are in use, and the degree to which conventional fall protection is infeasible or creates a greater hazard.

This issue was brought to OSHA's attention by the Precast Concrete Institute (PCI) and the American Iron and Steel Institute (AISI). OSHA notes that neither the existing nor the proposed revision to subpart D contains a *specific* requirement addressing fall protection for employees who must climb onto and stand on stacked materials (e.g., stacks of steel or concrete products) to perform their work—for example, rigging materials in preparation for transport. Rather, OSHA has enforced the general fall protection rules of subpart D (§ 1910.23) and subpart I (§ 1910.132), as well as the general duty clause (5)(a)(1) of the OSH Act, to protect workers. OSHA has considered the comments of both PCI and AISI and has conducted an information-gathering site visit to become more familiar with the specific concerns raised by the commenters. At this point, OSHA is unconvinced that its existing enforcement policy, which makes allowances for situations where a greater hazard exists or where it is infeasible to provide fall protection, does not adequately address the concerns of the commenters. Nonetheless, OSHA is considering adding a specific requirement to subpart D if sufficient information and support is received to demonstrate the need for such a specific requirement. Additionally, OSHA requests comment on whether there are other similar situations where employees work on stacked materials.

For background, the PCI, in correspondence to OSHA from 2000 to 2003, outlined its concerns regarding the feasibility of providing fall protection for employees working at precast concrete manufacturing plants who are working/walking on precast concrete products. Additionally, PCI expressed concern about the feasibility of providing fall protection for employees who are rigging precast products, placing them on trailers, and securing them for transport to construction sites. Specifically, in a letter dated January 3, 2000 (Ex. 1), PCI asked for an "interpretation and

exception for riggers loading/unloading precast concrete products on trucks \* \* \* and for riggers stacking, storing, loading or unloading precast concrete products in the plant, relative to fall protection. \* \* \*" PCI provided the following rationale:

When stacking, storing, loading or unloading precast concrete products, the need for employees to access the top of concrete products in excess of four (4) feet, for very short periods [of] time, to connect or disconnect lifting devices or rigging is necessary. The use of a conventional fall protection system is a greater hazard and in most cases infeasible because, while installing a fall protection system, employees are exposed to a fall hazard for an extended period of time. Since conventional fall protection is infeasible, employees shall be given individual instruction as well as have a mentor system hands-on process for training.

PCI also noted that OSHA does not require fall protection for employees off-loading the precast concrete products at construction sites because the definition of a walking-working surface in the construction rule excluded "vehicles or trailers on which employees must be located to perform their job duties." PCI included the following recommended work procedure:

A ladder shall be used to climb onto or off the vehicle deck and product. Employees shall not jump off [the] trailer or from product to product. Corrective and detail work shall be completed at ground level or from a ladder or mobile elevating work platform.

On May 20, 2004, the American Iron and Steel Institute (AISI) raised the same concern in its response to a request for comments from the Office of Management and Budget (67 FR 15014) on the "Draft Report to Congress on the Costs and Benefits of Federal Regulations." (Ex. 2) The AISI identified OSHA's subpart D as needing revision to permit employees standing on stacks of steel to work without fall protection when fall protection is not practical. Specifically, AISI said the following:

OSHA requires employers to provide either guardrails or tie-off protection to workers who must perform their duties 48 inches or greater above the ground (1910.23 and 1910.66). These requirements are infeasible for operations that exist in steel and steel products companies where individuals need to stand on "stacks" of product that have a large surface area in order to rig bundles for crane lifts and similar activities. These rules also affect the loading of product onto truck trailers and railcars that are, with rare exception, over 48 inches above the ground. OSHA's list of "solutions" are to build guardrails around the product stacks, use magnet cranes, or provide safety lines around trailers and railcars, but these solutions are not feasible. Use of fixed guardrails around



truck trailers and railcars is not feasible and would, additionally, create its own serious safety hazard. The use of magnet cranes that do not require a rigger is also infeasible because magnet [sic] cannot connect to only a single bundle. Providing safety lines around the stacks, trailers and railcars is infeasible because customer orders necessitate bundles to be in varied stack heights, based on quantity ordered. Finally, because product placement for shipment requires traversing the trailers and railcars, it would require product to move through required safety lines. These rules should provide employers with some flexibility by stating that activities that are over 48 inches above the ground should use either guardrails or tie-off protection, "where practical." In situations where their use is not practical, the employer should be permitted to use an alternative practice and to provide appropriate training to the employee.

OSHA requests comment on PCI's recommended procedures and AISI's position. The Agency also refers readers to Issue #1 above which also pertains to providing fall protection for employees on vehicles and railcars.

#### *Issue #3—Qualified Climber*

In the 1990 proposal (55 FR 13366), OSHA first introduced the concept of a "qualified climber." A qualified climber was defined as "an employee who, by virtue of physical capabilities, training, work experience, and job assignment is authorized by the employer to routinely climb fixed ladders, step bolts or similar climbing devices attached to structures." OSHA proposed that rather than always providing conventional fall protection (cages, wells, ladder safety systems, or other fall protection) to employees climbing fixed ladders over 24 feet (7.3 m), the employer could allow qualified climbers to climb without fall protection provided certain criteria were met.

On March 1, 1991, OSHA granted a variance to Gannett Outdoor Companies (56 FR 8801) permitting it to use qualified climbers as defined in the 1990 NPRM for outdoor advertising (billboard) applications. On January 26, 1993, OSHA issued a compliance directive applying these conditions to all outdoor-billboard applications.

The criteria included that the ladder be climbed two or fewer times per year and that installing a ladder safety system, cage, or well would create a greater hazard. The premise of the proposal was that many fixed ladders in use at the time were not equipped with cages or wells as required by the existing standard. In addition, installing them would be extremely costly and the installation process itself might pose a greater hazard to workers than simply climbing the ladder without fall protection. Newer, anecdotal information available to OSHA indicates

just the opposite—that most fixed ladders over 24 feet (7.3 m) in height are already equipped with a well, cage, or some other type of fall protection (ladder safety system or personal fall protection system). OSHA notes that newer fall protection systems have emerged that can be installed in one climb of a fixed ladder. Some ladders are even manufactured with a ladder safety system already installed as an integral part of the ladder. For these reasons OSHA is not proposing the use of qualified climbers in this rule, except in the outdoor advertising (billboard) industry. Permitting the exception for billboard applications would codify the aforementioned 1993 variance. However, considering the advances in fall protection since publication of the 1990 proposed rule, OSHA requests comment on the need for the qualified-climber provision for the outdoor advertising industry. Removing this proposed provision would result in requiring fall protection for this industry that is the same as on all other fixed ladders covered by subpart D; therefore, commenters are requested to also address the technological and economic feasibility of removing this proposed provision. Commenters should provide supporting rationale for all responses.

OSHA is not proposing to impose a duty to provide fall protection where an existing subpart D standard already requires the use of fall protection equipment. Thus, the proposed rule would not apply to electric power generation, transmission, or distribution work covered by § 1910.269(g)(2)(v), or to telecommunications work covered by § 1910.268(n)(7) or (n)(8). These two industry-specific standards generally permit employees to free climb to work locations on poles, towers, and similar structures without the use of fall protection equipment. These standards protect employees by requiring adequate training in climbing (§§ 1910.268(c) and 1910.269(a)(2)(i)) and, in the case of the electric power generation standard in § 1910.269, by ensuring that employees are proficient in safe climbing techniques (§ 1910.269(a)(2)(vii)). OSHA invites comment on whether §§ 1910.268(n)(7) and (n)(8) and 1910.269(g)(2)(v), which generally require fall protection only after the employee reaches the working position, adequately protect employees. In addition, the Agency requests information on the technological feasibility of requiring fall protection for employees climbing and changing position on electric power and telecommunications poles and

structures, and the costs and benefits of complying with such a requirement.

#### *Issue #4—Building Anchorages for Rope Descent Systems*

Section 1910.27(b) of the proposal addresses rope descent systems and includes a provision (in proposed § 1910.27(b)(2)(iv)) requiring "sound" anchorages. OSHA believes that sound anchorage points are necessary to ensure that rope descent systems can be safely attached to the building for any type of suspended work, not just window cleaning. The ideal solution is for anchorages to be installed and maintained as part of the regular schedule for renovating and inspecting commercial buildings.

Existing subpart D does not address the installation and maintenance of anchorages on buildings or other structures. Under the proposed rule, separate anchorages are required for personal fall arrest systems and for rope descent systems. The requirements for anchorages for personal fall arrest systems are contained in proposed subpart I, § 1910.140. However, no specific requirements for anchorages used with rope descent systems are included in this subpart D proposal, other than to specify that they be "sound."

OSHA raised this issue in the 1990 proposal (55 FR 29224, 29227–28, July 18, 1990) and again in the 2003 Reopening Notice (68 FR 23534). In those documents, OSHA requested comment on whether it should add an installation and maintenance provision to subpart D for "all structures where it is reasonably foreseeable that employees will need anchorage points" to attach rope descent systems and other equipment. OSHA raised the issue after the International Window Cleaning Association (IWCA) and small window cleaning companies told OSHA that quite often there were no anchorage points on rooftops for attaching their lines. Since they did not own the building, they had no control over the presence or location of anchorage points. They urged OSHA to require building owners to install anchorages on rooftops or designate existing structural members that would be strong enough to serve as anchor points to attach scaffolds, control descent devices, and safety lines (Ex. OSHA–S041–2006–0666–0543; Ex. OSHA–S041–2006–0666–1252, pp. 311, 313, 330–31; Ex. OSHA–S041–2006–0666–1253, pp. 483–84, 503, 543–44, 565–66, 596–97, 629–30).

OSHA also noted that the Building Owners and Managers Association International (BOMA) objected to

requiring building owners to provide anchor points, stating that window cleaners were generally able to find supports on which to tie off (Ex. OSHA-S041-2006-0666-1255, p. 1443), but agreed that new buildings completed two to five years after the effective date of the final rule should be equipped with anchor points (Ex. OSHA-S041-2006-0666-1212).

The ANSI standard for Window Cleaning Safety, ANSI I-14.1-2001 (Ex. OSHA-S029-2006-0662-0014), in section 3.9 prescribes criteria for anchorages used for rope descent systems and independent life lines, specifying, "Building owners and window cleaning contractors shall not allow suspended work to be performed unless it has been determined that the building has provided, identified and certified anchorages \* \* \*." OSHA notes that IWCA and BOMA participated on the ANSI committee that developed the national consensus standard addressing safety in window cleaning operations. According to the ANSI standard, anchorages must be capable of sustaining a 5,000 pound (2268 kg) load, or a minimum 4-to-1 safety factor, whichever is greater, in any direction that the load may be applied, among other requirements. It should be noted that ANSI/IWCA I-14.1 contained a recommendation in Appendix A that the requirements be implemented within 5 years of its

publication on October 25, 2001. OSHA requests comment on whether it should include the language of the ANSI/IWCA standard in the final rule or should it require some other criteria for building anchorages?

For example, under § 1910.66, Powered platforms for building maintenance, OSHA requires building owners to provide an employer with a certification of inspection, testing, and maintenance of anchorages for powered platforms used in building maintenance. OSHA requests comments on whether it should require building owners to provide employers with the same information required by § 1910.66.

OSHA is aware that some window cleaning companies are using the powered platform certified anchorages for rope descent systems. If OSHA were to adopt the same requirement, those building's owners would have no additional obligation to comply with the language under consideration.

OSHA believes that many building owners already meet the § 1910.66 requirements or the provisions of ANSI/IWCA I-14.1. For instance, it is the Agency's understanding that the General Services Administration (GSA) updated its policy to require building anchors to be installed during construction or extensive remodeling of government buildings.

*Issue #5—Technological Advances in Fall Protection and Fall Arrest*

The Agency is aware of a newer dual-mode operation self-retracting lanyard that, in the event of a fall, arrests the fall and then automatically lowers the worker at a controlled, slow rate of speed to the ground or to the next lower level. These devices show promise, for example, in rescuing some workers following a fall. OSHA requests comment regarding the current use and effectiveness of these devices, appropriate and inappropriate conditions of use, as well as relevant costs and benefits.

In addition, OSHA requests information on other new fall protection and fall arrest equipment that is not mentioned in this proposal. Please include a detailed explanation of the equipment, sources of supply, costs and benefits, applications, and conditions of use.

**IV. Summary and Explanation of the Proposed Rule**

*A. Format of Proposed Changes to Subparts D and I*

OSHA's proposed revisions to subpart D include a reorganization of the existing rule to make the rule clearer, necessitating reformatting the entire subpart. OSHA's proposed format changes are set forth in the following redesignation table:

REDESIGNATION TABLE

Existing	Proposed rule
§ 1910.21 Definitions.	§ 1910.21 Scope, application, and definitions.
§ 1910.22 General requirements.	§ 1910.22 General requirements.
§ 1910.23 Guarding floor and wall openings and holes.	§ 1910.23 Ladders.
§ 1910.24 Fixed industrial stairs.	§ 1910.24 Step bolts and manhole steps.
§ 1910.25 Portable wood ladders.	§ 1910.25 Stairways.
§ 1910.26 Portable metal ladders.	§ 1910.26 Dockboards (bridge plates).
§ 1910.27 Fixed ladders.	§ 1910.27 Scaffolds (including rope descent systems).
§ 1910.28 Safety requirements for scaffolding.	§ 1910.28 Duty to have fall protection.
§ 1910.29 Manually propelled mobile ladder stands and scaffolds (towers).	§ 1910.29 Fall protection systems criteria and practices.
§ 1910.30 Other working surfaces.	§ 1910.30 Training requirements.

The Agency seeks comment regarding this reorganization of subpart D, and rationale, to support any suggested modification(s). OSHA's proposed revisions to subpart I includes the addition of a new § 1910.140 and appendices C and D.

*B. Proposed Changes to Subpart D*

As mentioned earlier in the Summary statement of this notice, OSHA is publishing proposed rules for subpart D, Walking-Working Surfaces and subpart I, Personal Protective Equipment for Fall

Protection concurrently. Proposed subpart D establishes requirements for general industry walking-working surfaces and prescribes the use of fall protection systems (including *personal* fall protection systems) to protect employees from falls. Proposed subpart I contains performance criteria for *personal* fall protection systems only. OSHA notes that wherever subpart D makes specific reference to the requirements in subpart I, the reference is to the pertinent provisions in the proposed rule of subpart I (which

accompanies this proposed rule), and not to the existing subpart I requirements, unless specifically stated.

The following discussion explains the purpose of the proposed rule, and explains the differences between the proposed rule and existing standards. The rulemaking history is quite lengthy; to date two proposals have been issued, one in 1973 and one in 1990. Since the earlier proposals, technology has advanced greatly and many of the requirements proposed by OSHA in the two earlier rulemakings are no longer

appropriate. Similarly, OSHA believes that many of the comments received on those proposals are no longer relevant. Therefore, OSHA will only discuss comments from the 1990 proposal that are pertinent to today's proposal. However, all the comments are available for review in Docket No. S-041, located in the OSHA Docket Office.

References in parentheses are to exhibits in the current rulemaking record and are available in the OSHA Docket Office under Docket No. OSHA-2007-0072. Where references are made to the earlier proposal (1990), and the reopening of that record (2003), both the exhibit and docket number will be noted.

Throughout this proposal, where possible, performance-oriented language is used. Any employer who experiences difficulty applying these performance-oriented standards may consult the applicable national consensus standards for additional information.

#### Section 1910.21 Scope, Application, and Definitions

##### Paragraph (a) Scope and Application

Proposed § 1910.21 sets the scope and application for subpart D and also lists and defines the major terms used. Existing subpart D does not contain a scope and application section for the entire subpart, but it does contain several separate "application" requirements in various sections of subpart D. For example, each of the following existing sections contains "application" statements: the introductory text to § 1910.22 General requirements; paragraph (a) of § 1910.24 Fixed industrial stairs; paragraph (a) of § 1910.25 Portable wood ladders; paragraph (e)(3) of § 1910.27, Fixed ladders; and paragraph (a)(1) to § 1910.29 Manually propelled mobile ladder stands and scaffolds (towers). None of the other sections in existing subpart D address the scope or application.

Proposed paragraph (a) provides to the public a clear understanding of the rule and is consistent with the Agency's interpretation and enforcement of subpart D since its inception. That is, as a whole, existing subpart D applies to all general industry workplaces. However, as proposed, there are some sections within subpart D that do not apply to certain operations or activities. These exceptions are addressed in individual sections of this subpart.

An exclusion contained in a specific section applies to that section only; all other sections in subpart D do apply. For example, if an employee is working on a ladder on an entertainment stage,

the applicable requirements of proposed § 1910.23, Ladders, apply, as would § 1910.22, General requirements, even though § 1910.28, Duty to have fall protection, does not apply to exposed perimeters of entertainment stages.

##### Paragraph (b) Definitions

Proposed paragraph (b) of § 1910.21 lists and defines all major terms used in the proposed standard. The existing rule defines 125 terms and, in some cases, the same term is defined differently several times due to the context in which it is used. For example, in existing § 1910.21(a)(4) the term "platform" is defined as "A working space for persons, elevated above the surrounding floor or ground; such as a balcony or platform for the operation of machinery and equipment." In existing § 1910.21(b)(4), "platform" is defined as "an extended step or landing breaking a continuous run of stairs."

Another example of the same term being defined differently in the existing rule is the term "handrail." In existing § 1910.21(a)(3), the term is defined as "A single bar or pipe supported on brackets from a wall or partition, as on a stairway or ramp, to furnish persons with a handhold in case of tripping," whereas § 1910.21(b)(1) and (g)(8) define "handrail" as "a rail connected to a ladder stand running parallel to the slope and/or top step."

Likewise, the term "toeboard" is defined in § 1910.21(a)(9) as "a vertical barrier at floor level erected along exposed edges of a floor opening, wall opening, platform, runway, or ramp to prevent falls of materials," whereas in § 1910.21(g)(16) the term is defined as "a barrier at platform level erected along the exposed sides and ends of a scaffold platform to prevent falls of materials."

In today's proposal, all major terms are listed and defined in paragraph (b), and the term will have the same meaning in all sections of proposed subpart D. Many of the definitions are the same as those in the existing standard, although some have been reworded for uniformity or clarity.

OSHA seeks to improve subpart D by making it easier to understand, as well as consistent with other Agency rules regulating the same topics. To that end, where terms used in subpart D have been defined in other general industry, construction, or maritime standards, the Agency has, where possible, used the same definition. OSHA believes such consistency will lead to a better understanding of the rules, and to greater compliance, resulting in increased employee safety. The following terms are defined in the proposed rule: alternating tread-type

stair; authorized; cage; carrier; combination ladder; designated area; dockboard (bridge plate); equivalent; extension ladder; failure; fall hazard; fall protection; fixed ladder; grab bars; guardrail system; handrail; hoist area; hole; individual rung ladder; ladder; ladder safety system; lower level; manhole steps; maximum intended load (designed working load); mobile; mobile ladder stand (ladder stand); mobile ladder stand platform; open riser; opening; platform; portable ladder; qualified; qualified climber; ramp; riser; rope descent system; rung, step, or cleat; runway; safety factor; scaffold; ship stairs (ship ladders); side-step ladder; single-point adjustable suspension scaffold; spiral stairway; stair rail system; standard stairs; step-ladder; step-bolt (pole step); stepstool; through ladder; tieback; toeboard; tread; unprotected sides and edges; walking-working surface; and well.

Some terms defined in the existing standard are not defined in the proposal because they are: (1) not used in the proposal, or (2) do not need to be defined because their meaning is clear without further explanation. An example of a term that does not need definition is the term "working level." This term does not need to be defined because it is obvious that the level at which the employee is working is the working level.

Many of the existing terms and definitions pertain to scaffolds. Because OSHA is proposing that scaffolds used in general industry comply with the construction industry scaffold requirements of subpart L of part 1926 (§§ 1926.450 through 1926.454), there is no need to define scaffold terms in this general industry proposal. For example, the term "check" refers to the lengthwise separation of wood in scaffold planking. Because subpart D is referring to § 1926 for scaffolding requirements, there is no need for this definition in § 1910.21(b).

Although many definitions remain unchanged, the following proposed terms have been added or revised from the existing definitions:

*Alternating tread-type stair.* This term means a series of treads usually attached to a center support in an alternating manner so that a user of the stair normally does not have both feet on the same level at any time whether ascending, descending, or standing. The proposed definition is consistent with ANSI A1264.1-1995(R2002), Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems.

*Authorized.* This term describes an employee who is approved or assigned by the employer to perform a specific

type of duty or an employee who is permitted by the employer to be at a specific location.

**Cage.** This term means a barrier mounted on the side rails of a fixed ladder or fastened to the structure behind the fixed ladder designed to encircle the climbing space of the ladder to safeguard the employee while climbing the ladder. A cage may also be called a “cage guard” or “basket guard.” The proposed definition is essentially the same as the definition in existing paragraph (e)(11), but was revised for clarity. This proposed definition is also consistent with ANSI A14.3–2002, American National Standard for Ladders—Fixed—Safety Requirements.

**Combination ladder.** This term means a portable ladder that can be used as a stepladder, single extension ladder, trestle ladder, or a stairwell ladder. Its components may be used as a single ladder. This definition is consistent with ANSI A14.1–2000, American National Standard for Safety Requirements for Portable Wood Ladders; A14.2–2000, American National Standard for Safety Requirements for Portable Metal Ladders; and A14.5–2000, American National Standard for Safety Requirements for Portable Reinforced Plastic Ladders.

**Designated area.** This term means a distinct portion of a walking-working surface delineated by a perimeter warning line in which temporary work may be performed by employees without additional fall protection. The concept of a designated area is patterned after controlled access zones and warning line systems used in OSHA’s construction standards at subpart M of part 1926.

**Dockboard (bridge plate).** This term means a portable or fixed device for spanning the gap or compensating for the difference in level between loading platforms and carriers.

**Equivalent.** This term means alternate designs, materials, or methods that the employer can demonstrate will provide an equal or greater degree of safety for employees compared to the design, material, or method specified in this subpart. The existing definition in paragraph (g)(6) has been revised for consistency with OSHA’s construction standards at subpart M of part 1926. To be deemed “equivalent,” the employer would have the burden of demonstrating that the alternate designs, materials, or methods will provide an equal or greater degree of safety for employees than the design, material, or method specified in this subpart.

**Extension ladder.** This term means a non-self-supporting portable ladder,

adjustable in length. This proposed definition is consistent with ANSI A14.1–2000, ANSI A14.2–2000, and ANSI A14.5–2000, and removes the overly specific measurement criteria and is clearer and more concise than the definition in existing paragraphs (c)(4) and (d)(4) of § 1910.21.

**Failure.** This term means a load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded. This term is consistent with OSHA’s construction fall protection standard at § 1926.500(b), Definitions.

**Fall hazard.** This term means any condition on a walking-working surface that exposes an employee to injury from a fall on the same level or to a lower level.

**Fall protection.** This term means any equipment, device, or system that prevents an employee from experiencing a fall from elevation or that mitigates the effect of such a fall. Examples of fall protection include, but are not limited to, guardrail systems, ladder safety systems, and personal fall arrest systems.

**Fixed ladder.** This term means a ladder, including an individual rung ladder, which is permanently attached to a structure, building, or equipment. It does not include ship stairs or manhole steps. This definition is essentially the same as existing paragraph (e)(2) of § 1910.21, and clarifies that the term includes individual rung ladders but not ship stairs or manhole steps. The proposed definition is consistent with ANSI A14.3–2002.

**Grab bars.** This term means individual handholds placed adjacent to or as an extension of ladder side rails for the purpose of providing access beyond the limits of a ladder.

**Guardrail system.** This term means a barrier erected to prevent employees from falling to lower levels. Existing subpart D uses the terms “guardrail” and “standard railing.” Both terms are defined as a barrier to prevent falls to lower levels. OSHA proposes to use one term—guardrail system to describe this type of barrier. The proposed definition is consistent with both subparts L—Scaffolds, and M—Fall Protection of the construction industry standards.

**Handrail.** This term means a rail used to provide employees with a handhold for support. There are three definitions for the term “handrail” in existing subpart D. OSHA proposes to define the term to be consistent with Subpart X—Stairways and Ladders of the construction industry standards.

**Hoist area.** This term means any elevated access opening to a walking-working surface where hoisted

equipment or materials are loaded or received. The existing rule does not use the term “hoist area,” whereas the proposed rule does.

**Hole.** This term means a gap or void 2 inches (5 cm) or more in its least dimension, in a floor, roof, or other walking-working surface. The existing standard defines holes and openings separately; however, the treatment of each is essentially the same. The existing rule defines a floor *hole* as an opening less than 12 inches (30 cm) but more than 1 inch (3 cm) in its least dimension through which materials may fall, and defines a floor *opening* as a hole measuring 12 inches (30 cm) or more in its least dimension through which persons may fall. To bring clarity to the terms and consistency with its fall protection rules in construction industry standards, OSHA is proposing to use the term “hole” to describe all voids and gaps (holes and openings) in floors, roofs, and other walking-working surfaces. Likewise, OSHA is proposing to use the term “opening” to describe voids and gaps in vertical surfaces such as walls and partitions.

**Individual rung ladder.** This term means a ladder consisting of rungs individually attached to a structure, building, or piece of equipment. It does not include manhole steps. The proposed definition has been editorially revised from the existing definition in paragraph (e)(3) to clarify its meaning, and to make it clear that manhole steps are not considered individual rung ladders.

**Ladder.** This term means a device with rungs, steps, or cleats typically used to gain access to a different elevation. This proposed definition for the term is consistent with the definitions used in the ANSI A14 consensus standards that are applicable to various types of ladders. Additionally, the proposed language is more concise than the existing definitions of the term.

**Ladder safety system.** This term means a device, other than a cage or well, designed to eliminate or reduce the possibility of falls from ladders. A ladder safety system usually consists of a carrier (the track of flexible cable or rigid rail), safety sleeve (moving component which travels on the carrier), lanyard, connectors, and body belt or harness. The term “ladder safety system” is not used or defined in existing OSHA standards; however, the synonymous term “ladder safety device” is defined in existing construction industry standards for fixed ladders at subpart X. The proposed definition is consistent with the definition in the

national consensus standard applicable to fixed ladders, ANSI A14.3–2002.

*Lower level.* This term means an area to which an employee could fall. Such areas include ground levels, floors, roofs, ramps, runways, excavations, pits, tanks, materials, water, equipment, and similar surfaces. This definition is consistent with that located in the construction industry standards in subpart M.

*Manhole steps.* This term means steps individually attached or set into the walls of a manhole structure.

*Maximum intended load.* This term (also referred to as the “designed working load”) means the total load of all employees, equipment, tools, materials, transmitted loads, and other loads reasonably anticipated to be applied to a walking-working surface. It is based on and consistent with the definition in the construction industry standards in subpart M.

*Mobile.* This term means manually propelled and/or movable. This is a clarification of existing paragraph (g)(12) which simply defines the term as “manually propelled.” The proposed definition is consistent with ANSI A14.7–2006, Safety Requirements for Mobile Ladder Stands and Mobile Ladder Stand Platforms, and facilitates the definition of the next two terms. OSHA requests comment on whether the term “mobile” is so common that defining it in the final rule is unnecessary.

*Mobile ladder stand.* This term (also known as “ladder stand”) means a mobile, fixed-size, self-supporting ladder consisting of wide flat treads in the form of steps accessing a top step. The assembly may include handrails and is intended for use by one employee. This definition is consistent with ANSI A14.7–2006, American National Standard for Mobile Ladder Stands and Mobile Ladder Stand Platforms. The definition for ladder stand in existing paragraph (g)(9) of § 1910.21 has been incorporated into the proposed definition of “mobile ladder stand.”

*Mobile ladder stand platform.* This term means a mobile fixed-height, self-supporting unit having one or more standing levels, provided with means of access to or egress from the platform or platforms. This definition is consistent with ANSI A14.7–2006, American National Standard for Mobile Ladder Stands and Mobile Ladder Stand Platforms.

*Opening.* This term means a gap or void 30 inches (76 cm) or more high and 18 inches (46 cm) or more wide in any wall or partition through which employees can fall to a lower level. This

definition is consistent with ANSI A10.18–1996, Safety Requirements for Temporary Floor Holes, Wall Openings, Stairways and Other Unprotected Edges—American National Standard for Construction and Demolition Operations, and the construction industry standard at § 1926.500, and would replace existing paragraphs (a)(2) and (a)(11) of § 1910.21 that defined “floor opening” and “wall opening” (see above discussion under “hole”). This is another area where the Agency would harmonize construction and general industry regulations to make them more understandable, thereby increasing compliance and employee safety.

*Platform.* This term means a walking-working surface elevated above the surrounding area. This definition is based on and consistent with the construction industry standard at § 1926.450(b), and would replace existing definitions in paragraphs (a)(4) and (b)(4) of § 1910.21.

*Portable ladder.* This term means a ladder that can readily be moved or carried and usually consists of side rails joined at intervals by steps, rungs, cleats, or rear braces. The definition is identical to ANSI A14.1–2000, American National Standard for Safety Requirements for Portable Wood Ladders, ANSI A14.2–2000, American National Standard for Ladders—Portable Metal—Safety Requirements, and ANSI A14.5–2000, American National Standard for Safety Requirements for Portable Reinforced Plastic Ladders.

*Qualified.* This term describes a person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project. This definition is consistent with proposed subpart I, the shipyard employment standards, and the construction industry standard in § 1926.32.

*Qualified climber.* This term means an employee engaged in outdoor advertising work who, by virtue of physical capabilities, training, work experience and job assignment, is authorized by the employer to climb fixed ladders without using fall protection.

*Rope descent system.* This term means a suspension device that supports one employee in a chair (seat board) and allows the user to descend in a controlled manner and to stop at any time at a desired level of descent. A rope descent system is a variation of the single-point adjustable suspension scaffold. It is also known as a controlled

descent device, controlled descent equipment, or controlled descent apparatus. Existing subpart D does not regulate rope descent systems, thus there is no existing definition for the term. The proposal, on the other hand, contains new requirements for rope descent systems since these are widely used in general industry. The proposed definition is based on the national consensus standard ANSI/IWCA I–14.1–2007, Window Cleaning Safety.

*Rung, step, or cleat.* This term means, when used on a ladder, a cross-piece on which a person may step to ascend or descend. The proposed definition combines the existing definitions for rungs, steps, and cleats.

*Runway.* This term means a passageway for employees, elevated above the surrounding floor or ground level, such as a catwalk, a foot walk along shafting, or a walkway between buildings. The proposed definition is consistent with the existing definition, and has been revised for clarity.

*Safety factor.* This term means the ratio of the design load and the ultimate strength of the material.

*Scaffold.* This term means any temporary elevated or suspended platform, and its supporting structure, including points of anchorage, used to support employees or materials or both. The term “scaffold” would not include crane or derrick suspended personnel platforms. This term is consistent with § 1926.450(b), and replaces the definitions in existing paragraphs (f)(27) and (g)(15) of § 1910.21.

*Ship stairs (ship ladders).* This term means a stairway that is equipped with treads and stair rails that has a slope between 50 and 70 degrees from the horizontal and has open risers. Ship stairs are also called “ship ladders.”

*Spiral stairway.* This term means a stairway having a helical (spiral) structure attached to a supporting pole.

*Stair rail or stair rail system.* This term means a vertical barrier (such as rails, decorative panels, and mesh) erected along open sides of stairways to prevent employees from falling to lower levels. The top surface of a stair rail system may also serve as a handrail. The proposed definition would replace existing definitions in paragraphs (a)(8), (b)(5), and (e)(5) of § 1910.21.

*Standard stairs.* This term means a permanently installed stairway. Ship stairs, spiral stairs, and alternating tread-type stairs are not standard stairs.

*Stepladder.* This term means a self-supporting portable ladder, non-adjustable in length, with flat steps and a hinged back. The definition would replace those found in existing paragraphs (c)(2) and (d)(2) of § 1910.21

that also contain specifications for length measurements.

*Step bolt (pole step).* This term means a bolt or rung attached at intervals along a structural member and used for foot placement during climbing or standing. Step bolts are also called "pole steps." This definition is consistent with the one found in § 1910.269.

*Stepstool.* This term means a self-supporting, foldable, portable ladder, nonadjustable in length, 32 inches (81 cm) or less in overall size, with flat steps and without a pail shelf, designed so that the ladder top cap, as well as all steps, can be climbed on. The side rails may continue above the top cap. This definition is consistent with ANSI A14.2–2000.

*Through ladder.* This term means a type of fixed ladder designed to allow a person to get off at the top by stepping through the ladder to reach a landing. The existing term found in § 1910.21(e)(15) is revised for clarity.

*Tieback.* This term means an attachment from an anchorage (e.g., structural member) to a supporting device. This definition is consistent with ANSI A10.8–2001, American National Standard for Construction and Demolition Operations—Safety Requirements for Scaffolding.

*Toeboard.* This term means a low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for employees. This definition is consistent with OSHA's construction industry standards at § 1926.500(b), and is consistent with, and would replace, the existing definition in § 1910.21(a)(9), (f)(31), and (g)(16).

*Unprotected sides and edges.* This term means any side or edge of a walking-working surface (except at entrances to points of access) where there is no wall or guardrail system at least 39 inches (99 cm) high. This definition is consistent with § 1926.500(b) and replaces the phrase "open-sided floors, platforms, and runways" used in existing § 1910.23(c)(1).

*Walking-working surface.* This term means any surface, horizontal or vertical, on or through which an employee walks, works, or gains access to a workplace location. Walking-working surfaces include, but are not limited to, floors, stairs, steps, roofs, ladders, ramps, runways, aisles, and step bolts.

#### Section 1910.22 General Requirements

OSHA proposes to revise the existing requirements contained in § 1910.22, and introduce new requirements addressing general hazards associated

with all walking-working surfaces. The existing requirements in § 1910.22 address the scope of subpart D—housekeeping, aisles and passageways, covers and guardrails, and floor loading protection. Where language of the existing standards appropriately addresses surface hazards, OSHA proposes to use that language with editorial corrections as necessary. The revised performance-oriented provisions are designed to eliminate detailed specifications and facilitate compliance.

Proposed paragraph (a)(1) requires that all places of employment, passageways, storerooms, and service rooms be kept clean and orderly, and in a sanitary condition. Proposed paragraph (a)(2) requires that floors of workrooms be maintained in a clean and, so far as possible, dry condition. It also requires that, where wet processes are used, drainage be maintained, and false floors, platforms, mats, or other dry standing places be provided when practicable. OSHA does not expect all surfaces to be maintained in a pristine manner; however, surfaces must be maintained in a condition that will prevent slips, trips, falls, and other hazards. These two provisions are identical to existing § 1910.22(a)(1) and (a)(2).

Historically, OSHA interpreted these provisions as applying to combustible-dust accumulations associated with fire and explosion hazards. Regarding this interpretation, one court stated that "the housekeeping standard is not limited to tripping and falling hazards, but may be applied to [a] significant accumulation of combustible dust." *Con Agra, Inc. v. Occupational Safety and Health Review Com'n*, 672 F.2d 699, 702 (8th Cir. 1982), citing *Bunge Corp. v. Secretary of Labor*, 638 F.2d 831, 834 (5th Cir. 1981), which reached the same conclusion. (See, also, *Farmer's Co-op*, 1982 WL 2222661 (O.S.H.R.C.); *CTA Acoustics (KY 2003)*, CSB Report No. 2003–09–I–KY (February 2005); *Hayes Lemmerz Int'l (Indiana 2003)*, CSB Report No. 2004–01–I–IN (September 2005).)

As these cases show, § 1910.22(a) serves as one of OSHA's most important enforcement tools for preventing combustible-dust accumulations, and it continues to be an important element of OSHA's enforcement strategy for this hazard; see, e.g., "Combustible Dust in Industry: Preventing and Mitigating the Effects of Fire and Explosion," OSHA Safety and Health Information Bulletin (SHIB) 07–31–2005, (2005, July 31), available at <http://www.osha.gov/dts/shib/shib073105.html>; "Hazard Alert: Combustible Dust Explosions," OSHA Fact Sheet (2008, March), available at [\*General Facts/OSHAcombustible dust.pdf\*; and OSHA Compliance Directive CPL–03–00–008, "Combustible Dust National Emphasis Program," \(March 11, 2008\), \(replacing CPL 03–00–006, "Combustible Dust National Emphasis Program," October 18, 2007\) available at \[http://www.osha.gov/pls/oshaweb/owadis.show\\\_document?p\\\_table=DIRECTIVES&p\\\_id=3830\]\(http://www.osha.gov/pls/oshaweb/owadis.show\_document?p\_table=DIRECTIVES&p\_id=3830\).](http://www.osha.gov/OshDoc/data_</a></p>
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The Agency seeks comment on whether it should include an explicit reference to combustible dust or other hazardous material in the regulatory language of the final rule. This language would merely clarify OSHA's long-held interpretation: That § 1910.22(a) is not limited to the hazards of slips, trips, and falls, but also addresses any hazard that can be created when floors and work areas are not maintained in an orderly, clean, dry, and sanitary condition. Therefore, OSHA is seeking comment on the following questions: (1) Should OSHA reference combustible dust in either paragraph (a)(1) or (a)(2), or both; and (2) should OSHA reference other types of dust or other materials? Please explain your answers.

On December 27, 2007, in the notice of proposed rulemaking for General Working Conditions in Shipyard Employment (FR 72:72451), OSHA used the following language in proposed § 1915.81(d):

The employer shall ensure that the floor or deck of every work area shall be maintained, so far as practicable, in a dry condition. Where wet processes are used, drainage shall be maintained and the employer shall provide false floors, platforms, mats or other dry standing places. Where this is not practicable, the employer shall provide appropriate waterproof footwear, such as rubber overboots, in accordance with Sec. 1915.152.

The Agency requests comment on whether it would be appropriate to use similar language in place of that proposed in paragraph 1910.22(a)(2). Furthermore, OSHA requests comment on the costs and benefits of this alternative.

In proposed paragraph (a)(3), OSHA requires employers to ensure that all surfaces be designed, constructed, and maintained free of recognized hazards that can result in death or serious injury to employees. This requirement's performance language replaces the more specific language in existing paragraph (a)(3) of § 1910.22.

Proposed paragraph (b) sets requirements for the application of loads. Proposed paragraph (b)(1) requires employers to ensure that all walking-working surfaces are designed, constructed, and maintained to support

their maximum intended load. These surfaces include, for example, platforms used with fixed ladders, and dockboards. Proposed paragraph (b)(2) would prohibit exceeding the maximum intended load. Proposed paragraphs (b)(1) and (b)(2) would replace existing paragraphs (d)(1) and (d)(2) of § 1910.22, which addressed floor and roof load limits. The intent of the proposed provisions is to ensure that walking-working surfaces are strong enough to support loads placed on them to protect employees from injury. The proposed language imposes essentially the same burden as the existing rule, but has been reworded for clarity and ease of understanding.

Additionally, the proposed provisions do not continue the existing requirement that employers post plates indicating load limits of the building/structure. This information was posted to indicate how much weight could safely be loaded onto a walking-working surface. Currently, this information is available from building plans, and usage and expected loads are taken into consideration when surfaces are designed. The proposed requirement puts the burden on the employer to ensure walking-working surfaces are strong enough to support any loads placed on them. OSHA believes the proposed language provides adequate protection to employees without the added burden on employers to gather and post information.

Proposed paragraph (c) requires employers to provide, and ensure use of, a safe means of access and egress from one level to another. This provision is patterned after a similar provision in the construction industry standards. The proposed language clearly expresses the Agency's intent—to ensure that employees are provided with and use appropriate, suitable means (such as stairways, ladders, or ramps) to go from one walking-working surface to another.

Proposed paragraph (d) is new and addresses the maintenance and repair of walking-working surfaces in general industry. Proposed paragraph (d)(1) requires the employer to ensure through regular and periodic inspection and maintenance that walking-working surfaces are in a safe condition for employee use. Proposed paragraph (d)(2) requires the employer to ensure that all hazardous conditions are corrected, repaired, or guarded to prevent employee use until repairs are made. Proposed paragraph (d)(3) requires that where hazardous conditions may affect the structural integrity of the walking-working surface, a qualified person must perform or

supervise the maintenance or repair of that surface.

The intent of proposed paragraph (d) is to ensure that the employer, or the employer's designee, monitors walking-working surfaces to identify hazards that may lead to injury or death and to address those hazards promptly. A qualified person must perform or supervise the repair where hazards are of such a nature that the structural integrity of the walking-working surface may be affected. While the provision does not require the employer to develop an inspection schedule, or keep records of inspections, it does require the employer to ensure that inspections are conducted frequently enough so that hazards are corrected in a timely manner.

OSHA notes that the existing requirements in § 1910.22(b) and (c) are not retained in proposed subpart D because they duplicate provisions in § 1910.176, or the hazards are addressed elsewhere in the proposed rule, such as in the fall protection section.

#### Section 1910.23 Ladders

Proposed § 1910.23 is a revision and consolidation of existing ladder requirements in §§ 1910.25, 1910.26, and 1910.27, that regulate portable wooden, portable metal, and fixed ladders, respectively. Many of these requirements are retained in the proposed rule as OSHA believes they provide a reasonable and appropriate level of safety. Some requirements are revised for reasons of clarity, consistency, or to improve safety. Requirements common to all types of ladders are located in proposed paragraph (b), General requirements. Requirements specific to a particular type of ladder are located in proposed paragraphs (c), Portable ladders, or (d), Fixed ladders. Proposed paragraph (e) regulates mobile ladder stands and mobile ladder stand platforms. The proposed requirements have been updated and rewritten to be consistent with OSHA's construction industry ladder standard and the national consensus standards, *i.e.*, the ANSI A14 series for ladders.

Throughout this proposal, OSHA uses performance language whenever appropriate. However, in this section, a number of specifications are proposed with regard to clearances and rung widths for ladders. OSHA believes the specifications in this section, which are based upon human factors engineering (Ex. OSHA-S041-2006-0666-0004), are necessary and reflect the requirements of the ANSI A14 series for ladders.

#### Paragraph (a) Application

Proposed paragraph (a) states that § 1910.23 covers all ladders used in general industry, except ladders that are designed into (an integral part of) a machine or piece of equipment and ladders that are used only for firefighting or rescue operations. OSHA recognizes that it would not be reasonable or practicable to write standards for ladders designed into a part of a machine or piece of equipment because of variable design restrictions such as limited space and unlimited equipment configurations. Therefore, OSHA is exempting such equipment from specific ladder requirements. However, OSHA reminds employers that any surface on which employees walk or work would still have to meet the general requirements of proposed § 1910.22.

OSHA is also proposing to exempt ladders used in firefighting or rescue operations because such ladders are used only in emergency situations. The Agency notes that the primary concern expressed in the design of some of those ladders, such as single-rail ladders, is for fast placement and access. By contrast, this proposed paragraph focuses on the need to protect employees who use ladders routinely, in non-emergency situations. Therefore, given the circumstance in which firefighting and rescue operations are conducted, OSHA believes that it would be inappropriate to regulate firefighting and rescue ladders under proposed § 1910.23. When employees are members of a company fire brigade they must be trained as required by § 1910.156 in the use of such ladders.

#### Paragraph (b) General Requirements for All Ladders

As noted above, OSHA is consolidating some of the existing requirements for portable and fixed ladders. Requirements that apply in general to all types of ladders are included in paragraph (b), reducing redundancy and enhancing consistency of ladder requirements.

Proposed paragraph (b)(1) requires ladder rungs and steps to be parallel, level, and uniformly spaced when the ladder is in position for use. The proposed provision is consistent with and based upon existing § 1910.25(c)(2)(i)(b) for portable wood stepladders and existing § 1910.27(b)(1)(ii) for fixed ladders. The proposed language is consistent with the construction industry standard at § 1926.1053(a)(2).

Proposed paragraphs (b)(2) and (b)(3) provide spacing requirements for rungs,

cleats, and steps. Spacing is measured between the center lines of the rungs, cleats, and steps.

Proposed paragraph (b)(2) applies to all ladders except ladders in elevator shafts and telecommunication towers. Proposed paragraph (b)(2) permits flexibility in rung, step, and cleat spacing, as long as the rungs are parallel, level, and uniformly spaced, as required in the preceding paragraph. The proposed paragraph is a revision of requirements in existing § 1910.26(a)(1)(iii) which requires rungs to be spaced 12 inches (30 cm) apart, and existing paragraphs § 1910.25(c)(2)(i)(b) and § 1910.27(b)(1)(ii), which require rungs to be spaced not more than 12 inches (30 cm) apart. The proposed provision, which permits spacing of not less than 10 nor more than 14 inches apart, is consistent with the construction industry standard at § 1926.1053(a)(3)(i). It will not require any change to ladders that are already in compliance with the existing standard.

An exception to the spacing requirement in proposed paragraph (b)(2) of this section provides that rungs and steps on ladders in elevator shafts must be spaced no less than 6 inches (15 cm) apart, nor more than 16.5 inches (42 cm) apart, as measured along the ladder siderails. Another exemption is provided for fixed ladders on telecommunication towers which sets rung or step spacing at a maximum of 18 inches (46 cm). These exceptions are necessary due to the space restrictions in these areas. The latter part of the provision is consistent with the existing requirements for rungs and steps in § 1910.268(h)(2).

Proposed paragraph (b)(3) requires rungs, cleats, and steps of stepstools to be spaced between 8 inches (20 cm) and 12 inches (30 cm) apart, as measured between center lines of the rungs, cleats, or steps. There is no existing requirement regulating spacing on stepstools. OSHA is proposing this requirement because it believes that stepstools are routinely used in general industry and they should not be treated as portable ladders. This provision is consistent with the construction industry standard at § 1926.1053(a)(3)(ii) and is based on the national consensus standards ANSI A14.1–2000 and ANSI A14.2–2000. OSHA believes that virtually all stepstools currently in use already meet the proposed requirements.

Proposed paragraph (b)(4) requires ladder rungs and steps to have a minimum clear width of 11.5 inches (29 cm) for portable ladders and 16 inches (41 cm) for individual rung and fixed

ladders. The proposal consolidates existing requirements in § 1910.25(c)(2)(i)(c), § 1910.26(a)(2)(i), and § 1910.27(b)(1)(iii). The proposed revision is consistent with both the construction industry standard at § 1926.1053(a)(4)(i) and (a)(4)(ii) and the national consensus standards in the ANSI A14 series for ladders. A note to proposed paragraph (b)(4) explains how to measure the width when a ladder safety system is used on a fixed ladder. An exception to the provision is provided in (b)(4)(i) for narrow rungs that are not designed to be stepped on, such as those on the top end of fruit pickers' ladders.

Proposed paragraph (b)(4)(ii) provides an exception for manhole entry ladders that are supported by manhole openings, and requires that they have rungs or steps with a clear width of at least 9 inches (23 cm). The width would increase the available climbing space for employees to pass through the manhole opening.

A final exception is provided in proposed paragraph (b)(4)(iii), which permits rolling ladders used in the telecommunication industry to have a minimum clear step or rung width of 8 inches (20 cm). This provision has been moved, without change, from § 1910.268(h)(5).

Proposed paragraph (b)(5) prohibits wooden ladders from being coated or covered with any material that may obscure structural defects. For the purposes of this paragraph, OSHA does not consider manufacturer-applied warning and informational labels to be coverings that obscure structural defects. This requirement is consistent with the construction industry standard at § 1926.1053(a)(12) and national consensus standard, ANSI A14.1–2000.

Proposed paragraph (b)(6) requires that metal ladders be protected against corrosion. For example, ladders may be made more corrosion resistant by painting or the ladder may be made of a material that is inherently corrosion-resistant. The proposed requirement is essentially the same as existing requirements in § 1910.26(a)(1) and § 1910.27(b)(7)(i), which require employers to take some action to protect against corrosion.

Proposed paragraph (b)(7) requires ladder surfaces to be free of puncture or laceration hazards. The proposed provision is a consolidation of similar requirements found in existing § 1910.25(b)(1)(i) and (c)(2)(i)(f), § 1910.26(a)(1) and (a)(3)(viii), and § 1910.27(b)(1)(iv).

Proposed paragraph (b)(8) requires that ladders be used only for the purposes for which they were designed.

This proposed requirement is based on requirements applicable to portable wooden ladders in existing § 1910.25(d)(2) and portable metal ladders in existing § 1910.26(c)(3)(vii). The intent of this requirement is to prohibit the use of a ladder as a scaffold plank, gangway, material hoist, brace, or other application unless it is designed for that application. The intent of the proposed paragraph is *not* to prohibit employees from working while on ladders, for example, performing painting activities while on a ladder. OSHA believes the requirement is reasonable for all ladders, and no additional burden is anticipated.

Proposed paragraph (b)(9) requires ladders to be inspected before use to identify any visible defects that could cause employee injury. This requirement is essentially the same as requirements in existing § 1910.25(d)(1)(x) for portable wooden ladders and § 1910.27(f) for fixed ladders. It is also consistent with requirements in the ANSI A14 series national consensus standards for ladders.

OSHA's intent is that a short visual inspection of the ladder be made to ensure that it is properly set up and safe to use. The inspection may include such things as checking for firm footing, engagement of spreader or locking devices (if so equipped) and missing or damaged components of the ladder. OSHA does not expect a ladder to be inspected multiple times per work shift, unless there is a reason to believe a ladder may have been damaged due to an event such as being dropped. After the employee is trained to inspect ladders (*see* § 1910.30, Training) the actual inspection process could be accomplished as the employee sets up, approaches, or climbs the ladder.

Proposed paragraph (b)(10) requires ladders with structural or other defects to be tagged "Do Not Use" or with similar language, in accordance with § 1910.145. It also requires the ladder to be removed from service until repaired, in accordance with § 1910.22(d), or replaced. This proposed paragraph is a consolidation and editorial revision of existing requirements in § 1910.25(d)(1), § 1910.26(c)(2), and § 1910.27(b).

Proposed paragraphs (b)(11), (b)(12), and (b)(13), together, enable employees to climb ladders safely by using proper climbing techniques and prohibiting employers from permitting employees to carry materials that would prevent them from having both hands free to hold onto the ladder. The proposed paragraphs are consistent with the construction industry standards at § 1926.1053(b)(20), (b)(21), and (b)(22),



and generally consistent with the ANSI A14 series consensus standards for ladders. OSHA's intent is for employers to ensure that employees maintain three points of contact with the ladder when ascending or descending. (Please note this requirement *only* addresses the act of moving up or down a ladder, not working from a ladder.)

#### Paragraph (c) Portable Ladders

Proposed paragraph (c) sets specific, additional requirements for portable ladders. OSHA proposes to: (1) Remove many existing paragraphs that contain detailed specifications for the design and construction of portable ladders, and (2) no longer address special-purpose ladders, such as painter's stepladders and mason's ladders, in individual paragraphs. In this rulemaking, OSHA uses performance-oriented language, where possible.

Proposed paragraph (c)(1) requires that rungs and steps of portable metal ladders be corrugated, knurled, dimpled, coated with skid-resistant material, or otherwise treated to minimize the possibility of slipping. This provision is nearly identical to existing § 1910.26 (a)(1)(v), and has been editorially changed for clarity.

Proposed paragraph (c)(2) requires that each stepladder or any combination ladder that is used in a stepladder mode be designed with a metal spreader or locking device to hold the front and back sections securely in an open position while in use. This requirement has been changed for clarity and is consistent with existing requirements in § 1910.25(c)(2)(i)(f) and § 1910.26(a)(3)(viii).

Proposed paragraph (c)(3) prohibits loading ladders beyond the maximum intended load for which they were designed and tested, or beyond the manufacturer's rated capacity. The maximum intended load, as defined in proposed paragraph § 1910.21(b), includes the weight of the worker and all tools and supplies carried. Manufactured ladders are designed, tested, and in most cases, load-rated and labeled.

Proposed paragraph (c)(4) requires that ladders be used only on stable and level surfaces unless the ladders are secured or stabilized to prevent accidental displacement. The proposed paragraph replaces similar language in existing § 1910.25(d)(2)(iii) and § 1910.26(c)(3)(iii) and is consistent with the construction industry standard at § 1926.1053(b)(6) and ANSI A14.1–2000.

Proposed paragraph (c)(5) prohibits the use of portable single-rail ladders. The provision is consistent with the

construction industry ladder standard at § 1926.1053(b)(19). In the preamble to the final rule of that standard (55 FR 47681, November 14, 1990), OSHA said it was prohibiting their use because it believed “that single-rail ladders are inherently difficult to use and hazardous because of their instability \* \* \*.” OSHA believes that single rail ladders are also unsafe in general industry.

Proposed paragraph (c)(6) is new and requires that ladders not be moved, shifted, or extended while occupied by an employee. Moving a ladder while it is occupied is unsafe, whether an employee on a ladder “hops” with the ladder in a lateral direction, or a ladder is extended or moved laterally by one employee while occupied by another. This is identical to the construction industry requirement at § 1926.1053(b)(11).

Proposed paragraph (c)(7) requires that ladders placed in any location where they can be displaced by other activities or by traffic, such as ladders used in passageways, doorways, or driveways, be secured to prevent accidental displacement unless a temporary barricade, such as a row of traffic cones, is used to keep the activities or traffic away from the ladder. The proposed paragraph is clearer than existing § 1910.25(d)(2)(iv) and identical to the existing construction industry requirement at § 1926.1053(b)(8).

Proposed paragraph (c)(8) is an editorial revision of existing § 1910.25(d)(2)(xii) which prohibits the top of a stepladder from being used as a step because it may decrease stability.

Proposed paragraph (c)(9) prohibits the use of a non-self-supporting ladder on slippery surfaces unless it is secured and stabilized to prevent accidental displacement. This paragraph is consistent with existing requirements in § 1910.25(d)(2)(i) and the construction industry standard at § 1926.1053(b)(7). It is based upon ANSI A14.1–2000.

Proposed paragraph (c)(10) requires the top of a non-self-supporting ladder be placed with the two rails supported unless it is equipped with a single support attachment. Such an attachment is designed to provide greater stability. This is consistent with the existing requirement in § 1910.26(c)(3)(iv) and the construction industry standard at § 1926.1053(b)(10).

Proposed paragraph (c)(11) requires that when portable ladders are used to gain access to an upper landing surface, the ladder side rails must extend at least 3 feet (0.9 m) above that upper landing surface. This additional length enables an employee to hold onto the ladder

while stepping from the ladder onto the upper landing surface, providing safer access. The proposed paragraph is consistent with the existing requirement in § 1910.25(d)(2)(xv) and ANSI A14.1–2000. OSHA notes that after-market ladder extensions, such as walk-through railing systems, may be used to increase the length of a ladder to meet this requirement. When the ladder's top rung is level with or slightly below the upper landing surface, and the rail extensions are securely attached (that is, secured to the extent necessary to stabilize the extension and not expose the employee to a falling hazard from the extension's displacement), the rail extensions would be considered part of the ladder itself. The use of ladder extensions would also have to meet the requirements of proposed (c)(14) of this section which states that ladders shall not have their reach increased by other means unless specifically designed for the application.

Proposed paragraph (c)(12) requires that when work is performed on or near electrical circuits, the work practice requirements of subpart S, Electrical, apply to protect against electrical hazards. The proposed requirement is essentially the same as existing § 1910.26(c)(3)(viii).

Proposed paragraph (c)(13) prohibits ladders and ladder sections from being tied or fastened together to provide a longer length unless they are specifically designed for such use. The proposed provision is essentially the same as existing § 1910.26(c)(3)(vi), and is intended to prevent employees from using unsafe rigging methods.

Proposed paragraph (c)(14) prohibits ladders and ladder sections from having their reach increased by other means (for example, placing a box under a ladder), unless the length extension is specifically designed for the application. This proposed requirement replaces existing § 1910.25(d)(2)(v), which explicitly lists boxes and barrels, with more general language. This proposed paragraph is consistent with the ANSI A14 series consensus standards.

#### Paragraph (d) Fixed Ladders

In paragraph (d), OSHA proposes to revise existing § 1910.27 to eliminate unnecessary, overly specific requirements and to clarify and update others. To assist in compliance, OSHA has included figures D–2 through D–5 in the regulatory language.

In paragraph (d)(1), OSHA proposes that fixed ladders be capable of supporting their maximum intended load. This provision replaces the current specification requirement with a more

general performance requirement. The Agency requests comment on whether the existing provisions should be maintained in lieu of the proposed requirement.

Proposed paragraph (d)(2) would apply to new installations, requiring that fixed ladders installed on or after the effective date of the final rule be designed, constructed, and maintained as proposed in (d)(2)(i) and (ii).

Proposed paragraph (d)(2)(i) requires that fixed ladders be capable of supporting at least two live loads of at least 250 pounds (113 kg) each, concentrated between any two consecutive attachments, as well as anticipated loads caused by ice buildup, winds, rigging, and impact loads (e.g., impact load resulting from an employee falling onto the ladder). If it is anticipated that the ladder will be used by more than two employees simultaneously, then the number and position of additional concentrated live loads of 250 pounds (113 kg) must also be included in determining the capabilities of fixed ladders. Proposed paragraph (d)(2)(ii) requires that each step or rung be capable of supporting at least a single concentrated load of 250 pounds (113 kg) applied in the middle of the step or rung.

OSHA proposes the two provisions in (d)(2)(i) and (d)(2)(ii) as a replacement for existing requirements in § 1910.27(a)(1)(i) to (iv). Existing § 1910.27(a)(1)(i) requires the ladder to support only a single concentrated load of 200 pounds, whereas the proposal requires the ladder to support greater loads. The proposal is consistent with the national consensus standard, ANSI A14.3–2002, and OSHA's construction industry standard at § 1926.1053(a)(1)(iii). The Agency notes that the ANSI requirement, which is based on loads of 250 pounds (113 kg), reflects OSHA's belief that 250 pounds (113 kg) is the average weight of an employee with tools.

Proposed paragraph (d)(3) requires that the minimum perpendicular distance from the centerline of the steps and rungs, or grab bars, or both, to the nearest permanent object in back of the ladder be 7 inches (18 cm), except in the case of an elevator pit ladder, for which a minimum perpendicular clearance of 4.5 inches (11 cm) is required. In addition, the employer must ensure that grab bars do not protrude on the climbing side beyond the rungs of the ladder which they serve. The proposed requirement is a revision of existing § 1910.27(c)(4) and (c)(5) in which OSHA has removed the language that allows for a reduction of the minimum clearance to account for unavoidable

obstructions. As OSHA stated in the final rule to the construction industry standard, “[it] believes that, in general, the minimum clearance requirement is necessary, regardless of any obstructions, so that employees can get safe footholds on ladders.” (55 FR 47675.) This change is consistent with the most recent edition of the pertinent provisions of the national consensus standard, ANSI A14.3–2002, as well as the construction industry standard at § 1926.1053(a)(13).

Proposed paragraphs (d)(4) through (d)(8) address ladder extensions and grab bars. To provide safe transition from a fixed ladder to a landing surface, fixed ladders (except those at the top of manholes) must extend above the access or egress level or landing platform either by the continuation of the rungs for use as horizontal grab bars or by providing vertical grab bars. Proposed paragraph (d)(4) requires side rails of through or side-step ladders to extend 42 inches (1.1 m) above the top of the access level or landing platform served by the ladder. For a parapet ladder, the access level must be the roof if the parapet is cut to permit passage through the parapet; if the parapet is continuous, the access level must be the top of the parapet.

Proposed paragraph (d)(5) requires the steps or rungs of through ladder extensions to be omitted from the extensions. In addition, the extensions of the side rails must be flared to provide not less than 24 inches (61 cm) nor more than 30 inches (76 cm) clearance between side rails. Where ladder safety systems are provided, the maximum clearance between side rails of the extensions must not exceed 36 inches (91 cm). Proposed paragraph (d)(6) requires the side rails and the steps or rungs of side-step ladders to be continuous in the extension.

The proposed requirements in (d)(4), (d)(5), and (d)(6) are a revision and update of the existing requirement at § 1910.27(d)(3). The proposed provisions are consistent with OSHA's construction industry standard at §§ 1926.1053(a)(24) through (a)(26) and with the national consensus standard, ANSI A14.3–2002.

Proposed paragraphs (d)(7) and (d)(8) specify criteria for grab bars. The proposed requirements are consistent with existing § 1910.27(d)(4), but are editorially revised for clarity.

Proposed paragraph (d)(9) addresses ladders that terminate at hatch covers. The proposed provision requires that the opening be large enough for the employee to pass and that it be counterbalanced to remain open, thus preventing accidental closure. The

proposed requirement replaces the overly specific provision of existing § 1910.27(c)(7) and is consistent with similar provisions in the national consensus standard, ANSI A14.3–2002.

Proposed paragraph (d)(10) requires fixed individual rung ladders to be constructed to prevent the employee's feet from sliding off the end. This requirement replaces existing § 1910.27(b)(1)(v) and is consistent with the construction industry standard at § 1926.1053(a)(5).

Proposed paragraph (d)(11) prohibits the use of fixed ladders having a pitch greater than 90 degrees from the horizontal. The proposed provision is a revision of the existing requirements in § 1910.27(d)(1) through (d)(4). The existing requirements are overly specific and complex, whereas the proposed provisions are easier to understand.

Proposed paragraph (d)(12) addresses the step-across distance from the centerline of the steps or rungs of a fixed ladder. Proposed paragraph (d)(12)(i) requires that the step-across distance for *through ladders* be between 7 inches (18 cm) and 12 inches (30 cm) to the nearest edge of the structure, building, or equipment accessed. Proposed paragraph (d)(12)(ii) requires that the step-across distance be between 15 inches (38 cm) and 20 inches (51 cm), measured from the centerline of the ladder, at the point of access and egress to a platform edge for *side-step ladders*. (See Figure D–2.) The proposed provisions are based on existing § 1910.27(c)(6), which address the step-across distances for all fixed ladders. In the proposal, OSHA addresses step-across distances for through ladders and side-step ladders separately. OSHA believes the revised language allows greater flexibility and provides the same degree of safety. It is also consistent with the construction industry standard at § 1926.1053(a)(16) and the national consensus standard for fixed ladders, ANSI A14.3–2002.

Proposed paragraph (d)(13) addresses fixed ladders without cages or wells. Proposed paragraph (d)(13)(i) requires ladders without cages or wells to have a clear width of at least 15 inches (38 cm) on each side of the centerline of the ladder to the nearest permanent object to allow safe climbing clearance (see Figure D–2). This proposed provision revises existing § 1910.27(c)(2) for clarity. It is also consistent with the construction industry standard at § 1926.1053(a)(17) and the national consensus standard for fixed ladders, ANSI A14.3–2002.

Proposed paragraph (d)(13)(ii) requires a minimum perpendicular distance of 30 inches (76 cm) from the

center line of the steps and rungs to the nearest object on the climbing side to allow safe climbing clearance. This proposed provision would replace a number of specifications found at existing § 1910.27(c)(1) for clearance distances based on the pitch of the ladder. The proposed language removes the overly detailed information and establishes a single, minimum clearance distance regardless of pitch. This proposed provision is consistent with the construction industry standard at § 1926.1053(a)(14) and the national consensus standard for fixed ladders, ANSI A14.3–2002. An exception is permitted when unavoidable obstructions on the climbing side of a fixed ladder are encountered. The minimum clearance then may be reduced to 24 inches (61 cm), as long as deflector plates are provided to protect the employee's head. A similar exception may be found in existing § 1910.27(c)(7) and its accompanying Figure D–5. This proposed paragraph is consistent with the construction industry standard at § 1926.1053(a)(15) and national consensus standard, ANSI A14.3–2002.

Paragraph (d) ends with a note stating that the duty to provide fall protection for employees working on fixed ladders is found at proposed § 1910.28 and the criteria for such fall protection systems is found at proposed § 1910.29.

Paragraph (e) Mobile Ladder Stands and Mobile Ladder Stand Platforms (Mobile Ladder Stands and Platforms)

Proposed paragraph (e) covers mobile ladder stands and mobile ladder stand platforms (mobile ladder stands and platforms). The proposed design requirements are a performance language revision of the design specifications provided in existing paragraphs (a) and (f) of § 1910.29. All of the requirements proposed in this paragraph are consistent with the consensus standard, ANSI A14.7–2006.

Proposed paragraph (e)(1) addresses general design requirements for mobile ladder stands and platforms. Proposed paragraph (e)(1)(i) requires mobile ladder stands and platforms to have a step width of at least 16 inches (41 cm). Proposed paragraph (e)(1)(ii) requires steps, standing levels, and platforms of mobile ladder stands and platforms be provided with a slip-resistant surface. This surface may be an integral part of the structure or may be provided by a durable, secondary process or operation, e.g., dimpling, knurling, shot-blasting, coating, metal spraying, or slip-resistant tape. These requirements provide employees with a reasonable level of safe footing.

The next two proposed paragraphs are important to the stability of the unit and the balance of the employee using it. Proposed paragraph (e)(1)(iii) requires that wheels or casters, when under load, be designed to support their proportional share of four times the rated load, plus the proportional share of the unit's weight. This requirement is consistent with the existing provision at § 1910.29(a)(4).

Proposed paragraph (e)(1)(iv) requires mobile ladder stands and platforms, which use wheels or casters, to be equipped with a system to impede horizontal movement. This proposed provision is written in performance language, replacing the existing specification requirements in § 1910.29(a)(4).

Proposed paragraph (e)(1)(v) requires that the maximum work surface heights of mobile ladder stands and platforms not exceed four times the least base dimension without additional support. When greater heights are needed to prevent toppling, outriggers, counterweights, or comparable means must be used to maintain this minimum base ratio. The proposed paragraph would replace similar existing requirements in § 1910.29(a)(3)(i) and (f)(2).

Proposed paragraph (e)(1)(vi) requires mobile ladder stands and platforms to be capable of supporting at least four times their intended load. This proposed paragraph replaces a similar requirement in existing § 1910.29(f)(5), which requires a safety factor of four.

Proposed paragraph (e)(1)(vii) prohibits moving mobile ladder stands and platforms when occupied. This new requirement is based on the national consensus standard ANSI A14.7–2006, and is intended to prevent employees from falling from a mobile ladder stand or platform when it is being moved. When the additional weight of an employee is added to the top of a unit, the center of gravity is raised and the unit is less stable than when there is no weight on it. Also, an employee may lose his or her balance when a unit moves suddenly, or when simply riding on a unit.

Proposed paragraph (e)(2) addresses design requirements for mobile ladder stands. Proposed paragraph (e)(2)(i) requires that steps be uniformly spaced and arranged with a rise of not more than 10 inches (25 cm), and a depth of not less than 7 inches (18 cm). The slope of the step stringer (inclined side step support) to which the steps are attached must not be more than 60 degrees measured from the horizontal. This proposed paragraph is essentially the same as existing § 1910.29(f)(3)

except that the existing provision requires the slope of the steps section to be a minimum of 55 degrees, and a maximum of 60 degrees, measured from the horizontal.

Proposed paragraph (e)(2)(ii) requires all ladder stands with a top step height between 4 and 10 feet (1.2 m and 3 m) to be provided with handrails having a vertical height of 29.5 inches (75 cm) to 37 inches (94 cm) as measured from the front edge of a step. The use of removable gates or non-rigid members, such as chains, is permitted for special use applications. This proposed requirement is essentially the same as the existing provision at § 1910.29(f)(4)(ii), except that the existing requirement does not set a maximum height.

Proposed paragraph (e)(2)(iii) requires all ladder stands with a top step over 10 feet high (3 m) to have the top step protected on three sides by a handrail that has a vertical height of at least 36 inches (91 cm). The use of removable gates or non-rigid members such as chains is permitted for special use applications. Top steps that are 20 inches (51 cm) or more, front to back, must be provided with a midrail and toeboard.

Proposed paragraphs (e)(2)(ii) and (e)(2)(iii) replace existing paragraph § 1910.29(f)(4)(i), which requires units to be equipped with handrails when they have more than five (5) steps or measure 5 feet (1.5 m) in vertical height to the top step. This provision ensures employees have a handhold to prevent falling while they climb.

Proposed paragraph (e)(2)(iv) is new and requires the standing areas of mobile ladder stands to be within the base frame. This requirement enhances the stability of the unit by keeping the center of gravity within the base frame, thus reducing the chance of tipping.

Proposed paragraph (e)(3) addresses design requirements for mobile ladder stand platforms. Proposed paragraph (e)(3)(i) requires steps on a ladder stand platform to conform to paragraph (e)(2)(i) of this section. An exception to this requirement is provided when the employer demonstrates that conforming to paragraph (e)(2)(i) is not practicable. Steeper slopes or vertical ladders may be used, provided the unit is stabilized to prevent its overturning. OSHA realizes that in a few applications the steps to a mobile ladder stand platform may have to be greater than the required 60 degree maximum prescribed in proposed paragraph (e)(2)(i) of this paragraph. OSHA does not seek to prohibit the use of such units; however, this exception acknowledges that need and still provides for employee safety.

Proposed paragraph (e)(3)(ii) requires all mobile ladder stand platforms with a platform height between 4 feet and 10 feet (1.2 m and 3 m) to be provided with handrails having a vertical height of 29.5 inches (75 cm) to 37 inches (94 cm) measured from the front edge of a step. Handrails in the platform area are required to have a vertical height of at least 36 inches (91 cm) and include a midrail to protect employees from the fall hazard. This requirement is a clarification of the general provision found in proposed § 1910.29(b)(1). The use of removable gates or non-rigid members, such as chains, is permitted for special-use applications. This proposed requirement is essentially the same as the existing provision at § 1910.29(f)(4)(ii), except the existing requirement does not set a maximum height. OSHA is proposing a maximum height in accordance with anthropomorphic studies (Ex. OSHA-S041-2006-0666-0004).

Proposed paragraph (e)(3)(iii) requires all mobile ladder stand platforms with a platform height of over 10 feet (3 m) to have guardrails and toeboards provided on the exposed sides and ends of the platform. The use of removable gates or non-rigid members, such as chains, would be permitted for special-use applications. Toeboards prevent objects from falling onto employees who may be below the unit. The requirements in proposed paragraphs (e)(2) and (e)(3) are based on ANSI A14.7-2006, American National Standard for Mobile Ladder Stands and Mobile Ladder Stand Platforms.

#### Section 1910.24 Step Bolts and Manhole Steps

Proposed § 1910.24 establishes requirements for step bolts and manhole steps. Step bolts and manhole steps are used in the telecommunications industry, gas and electric utility industries, and some large manufacturing plants, usually in lieu of conventional ladders (*e.g.*, fixed ladders). While the Agency has a number of requirements addressing ladders, those requirements are not consistently or directly applicable to step bolts and manhole steps. For this reason OSHA is proposing requirements that address the design, capacity, and strength of step bolts and manhole steps. OSHA believes that these requirements provide for the safe use of this equipment. The provisions include the general requirements in existing § 1910.268(h) for pole steps and manhole ladders. Pole steps (normally used on wooden utility poles) and step bolts (normally used on metal poles or towers) are covered jointly under the

proposed provisions for step bolts, and are based upon provisions in § 1910.268, Telecommunications, and the national consensus standards, American Society for Testing and Materials (ASTM) C 478-07, Standard Specification for Precast Reinforced Concrete Manhole Sections, and ANSI/TIA/EIA 222G-1996 and 2006, Structural Standard for Antenna Supporting Structures and Antennas.

OSHA recognizes that many workplaces already have step bolts or manhole steps installed, and that it could be unreasonably disruptive and burdensome to require employers to retrofit those bolts and steps to comply with certain provisions of the proposed standard. Therefore, OSHA is proposing certain design changes to step bolts and manhole steps on new installations performed 90 days after the standard's effective date. These proposed provisions are described individually below.

As part of this proposal, OSHA is removing the requirements in § 1910.268(h), and instead requiring that the telecommunications industry comply with the provisions for ladders, step bolts, and manhole steps in subpart D. Additionally, as per § 1910.269 (Electric power generation, transmission, and distribution), ladders, step bolts, and manhole steps used in the electric power industry must meet the requirements of subpart D. Therefore, OSHA is proposing § 1910.24 as the minimum requirements necessary to ensure the safety of employees climbing and descending step bolts and manhole steps. These provisions are essentially the same as those in the 1990 proposed rule (55 FR 13360).

The rules in proposed § 1910.24 are performance-based where possible. For example, proposed paragraph § 1910.24(a)(6) sets performance-based strength requirements that do not specify the types or sizes of materials that must be used. Where dimensions are specified, such as in paragraphs (b)(2)(iii) and (b)(2)(iv), they are based on anthropometrics, existing § 1910.268, and current industry practices and standards, such as the national consensus standard, ASTM C 478-07.

#### Paragraph (a) Step Bolts

Proposed paragraph (a) addresses the design, capacity, and use of step bolts. Proposed paragraph (a)(1) requires that all step bolts installed on or after the effective date of the final rule that are used in corrosive environments be constructed of, or coated with, a material that will retard corrosion of the step or bolt. This is important to protect

against deterioration, and the resultant weakening of the step bolt.

Proposed paragraph (a)(2) requires step bolts to be designed to prevent the employee's foot from slipping or sliding off the end of the step bolt, which could contribute to a fall.

Proposed paragraph (a)(3) requires step bolts to be spaced uniformly, 12 inches (30 cm) minimum center to center, alternately spaced, and an 18 inches (46 cm) maximum spacing. To assist in compliance, OSHA has included figure D-6 in the proposed regulatory text. The proposed paragraph matches existing § 1910.268(h)(2) and the 1996 version of ANSI/EIA/TIA 222, both of which allow step bolts to be spaced as much as 18 inches (46 cm) apart, 36 inches (91 cm) on any one side. An exception to this requirement permits the spacing from the entry and exit surface to the first step bolt to be different from the spacing between the other step bolts. This exception allows the height of the entry or exit surface to be modified without necessitating the reinstallation of all the step bolts.

OSHA notes that the 2006 version of ANSI/EIA/TIA 222 specifies that the center to center spacing between alternately spaced step bolts be 10 inches (25 cm) minimum and 16 inches (41 cm) maximum as opposed to the 12- and 18-inch (30 and 46 cm) requirements of the proposal. The Agency requests comment on whether to adopt the language of the 2006 ANSI/EIA/TIA standard.

Proposed paragraph (a)(4) requires that the minimum clear width of each step bolt be 4.5 inches (11 cm). Proposed paragraph (a)(5) requires the minimum perpendicular distance between the centerline of the step bolt to the nearest permanent object in back of the bolt to be at least 7 inches (18 cm). Where obstructions cannot be avoided, toe clearances may be reduced to 4.5 inches (11 cm). Both of these provisions ensure there is adequate room both on and behind the step bolt to enable the employee to stand securely.

Proposed paragraph (a)(6) requires step bolts installed before the effective date of the final rule to be capable of supporting their maximum intended load. All walking-working surfaces must be capable of supporting employees and equipment, without failure. The proposed language of (a)(6) "grandfathers," or allows the continued use of, existing step bolts that are capable of supporting their maximum intended load.

Proposed paragraph (a)(7) requires each step bolt installed on or after the effective date of the final rule to be

capable of supporting, without failure, at least four times its maximum intended load. OSHA believes that this requirement is necessary to provide a safety factor to ensure that step bolts do not fail during use. Common engineering practice demands that a safety factor be provided in any product design to account for any unanticipated factors that may stress the product beyond its designed capabilities. OSHA's understanding is that a 5/8-inch (1.6-cm) diameter steel step bolt is normally expected to meet this requirement, and step bolts of this size are currently used in the industry.

Proposed paragraph (a)(8) requires step bolts to be visually inspected before each use and to be maintained in accordance with proposed § 1910.22. This provision reinforces the necessity to meet the general requirements of all walking-working surfaces. As with the requirements in proposed § 1910.22, this visual inspection is not intended to be burdensome, and can be performed as the employee climbs the unit.

Proposed paragraph (a)(9) requires step bolts that are bent more than 15 degrees from the perpendicular to be removed and replaced with bolts that meet the requirements of this section. The proposed requirement is intended to apply to displacement in any direction the bolt may be bent. The intent of this provision is to replace bolts that are bent to such a degree that an employee's foot may slip or slide off the end of the step bolt, which may cause an employee to fall.

#### Paragraph (b) Manhole Steps

Proposed paragraph (b) addresses the design, capacity, and use of manhole steps. Proposed paragraph (b)(1) requires manhole steps installed before the effective date of the final rule to be capable of supporting their maximum intended load. The proposed language "grandfathers," or allows the continued use of, existing manhole steps. Under proposed § 1910.22(b), employers would be obligated to ensure that all walking-working surfaces are designed, constructed, and maintained to support their maximum intended load. This provision is consistent with the requirements in existing § 1910.268(h) that address steps in manholes used in the telecommunications industry.

Proposed paragraph (b)(2) sets requirements for the design of manhole steps. The requirements apply to manhole steps installed on or after the effective date of the final rule. Proposed paragraph (b)(2)(i) requires that all manhole steps be provided with slip-resistant surfaces such as corrugated, knurled, or dimpled surfaces.

Proposed paragraph (b)(2)(ii) requires all manhole steps that are used in corrosive environments to be constructed of, or coated with, a material that will retard corrosion of the step. This corrosion resistance will help prevent deterioration that can lead to failure of the manhole step, which may cause the employee to fall.

Proposed paragraph (b)(2)(iii) requires that manhole steps have a minimum clear step width of 10 inches (25 cm). Proposed paragraph (b)(2)(iv) requires that steps be spaced uniformly, not more than 16 inches (41 cm) apart. As in proposed paragraph (a)(3) above, an exception to this requirement permits the spacing from the entry and exit surface to the first manhole step to be different from the spacing between the other steps. This exception allows for the height of the entry or exit surface to be modified without necessitating the reinstallation of the entire set of manhole steps.

Proposed paragraph (b)(2)(v) would require manhole steps to have a minimum perpendicular distance between the centerline of the manhole step to the nearest permanent object in back of the step of at least 4.5 inches (11 cm). Proposed paragraph (b)(2)(vi) requires the steps be designed to prevent the employee's foot from slipping or sliding off the end of the manhole step, which may result in a fall.

Proposed paragraph (b)(3) requires manhole steps to be visually inspected before each use and maintained in accordance with proposed § 1910.22. The purpose of the inspection is to ensure that no manhole steps are damaged or missing. This proposed paragraph is essentially a restatement of the requirements in proposed § 1910.22 for inspecting and maintaining walking-working surfaces. The visual inspection is expected to take only a few seconds before use of each step.

#### Section 1910.25 Stairways

Proposed § 1910.25 provides stairway design and installation criteria. This proposed section combines, clarifies, and updates existing requirements, and adds new provisions for stairs and stairways. The majority of the requirements for this section are derived from existing § 1910.24, Fixed industrial stairs, and are consistent with American National Standard Institute (ANSI) A1264.1–2007, Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Roof Openings; Stairs and Guardrail Systems, the National Fire Protection Association (NFPA) 101–2006, Life Safety Code, and the

International Code Council's (ICC's) International Building Code ICC–2003.

On March 28, 2002, the Office of Management and Budget (OMB) published a request for comment regarding the "Draft Report to Congress on the Costs and Benefits of Federal Regulations" (67 FR 15014), specifically requesting nominations of rules and regulations in need of reform. In response to this request, the Copper and Brass Fabricators Council (CBFC) (Ex. 3) identified OSHA's subpart D as in need of revision to permit use of ship and spiral stairs. Specifically, CBFC requested that OSHA revise its existing rule in § 1910.24(b), which requires fixed stairs (referred to as standard stairs in this proposal) and prohibits spiral stairs except for special limited use and secondary access situations where it is not practical to provide a conventional stairway. CBFC suggested that OSHA revise this standard to permit the installation and use of ship stairs and spiral stairs in more circumstances. In the earlier rulemaking (1990), OSHA had proposed to allow more flexibility in the use of these stairs. In this proposed rule, OSHA would permit the installation of spiral, ship, and alternating tread-type stairs for limited secondary use where it is not practical to provide a standard stairway and provides design criteria for them. Provisions to prevent employees from falling from unprotected sides or edges of stairway landings are provided in proposed § 1910.28, Duty to have fall protection.

#### Paragraph (a) General Requirements

Proposed paragraph (a) contains general requirements applicable to all stairways. In this proposed rule, the Agency is using the term "standard stairs" in place of the term "fixed industrial stairs" which is used in the existing standard. OSHA has used the term "fixed industrial stair" since 1971 because the term was used in the national consensus standard ANSI A64.1–1968 (now ANSI A1264.1–2007) that prescribed requirements for them. OSHA believes the term "standard stairs" is clearer and easier to understand and therefore is proposing to use the new term. The Agency is proposing to define the term "standard stairs" to mean a permanently installed stairway and to make it clear that ship stairs, spiral stairs, and alternating tread-type stairs are not standard stairs.

OSHA's proposed change in terminology is consistent with current industry codes and standards that use the terms "standard stairs," "stairways," and "fixed stairs" interchangeably. The Life Safety Code (NFPA 101–2006)

includes requirements for “standard stairs” that are similar to OSHA’s requirements for “fixed industrial stairs,” but does not define “standard stairs.” The International Building Code (IBC–2003) defines “stairways,” but not “fixed” or “standard stairs,” and also includes requirements similar to OSHA’s for “fixed industrial stairs.” The consensus standard ANSI A1264.1–2007 uses the term “fixed stairs.” The Agency requests comment on whether this change in terminology (from fixed industrial stairs to standard stairs) is appropriate or whether it leaves a gap in the coverage of stairways.

Proposed paragraph (a)(1) establishes the scope of this section, making it clear that generally all stairs, including standard stairs, spiral stairs, ship stairs, and alternating tread-type stairs, are covered. Additional requirements for stairs serving as required exit routes are located in subpart E, Means of Egress. This provision is based on existing paragraph § 1910.24(a) and is consistent with ANSI A1264.1–2007. It also makes clear that this section does *not* cover stairs serving floating roof tanks, stairs on scaffolds, stairs designed into a machine or piece of equipment, or stairs on self-propelled motorized mobile equipment. To ensure consistency among OSHA standards and assist those working in both construction and general industries, requirements for stairs on scaffolds also are provided in the construction industry standards at § 1926.451. Stairs serving floating roof tanks, stairs designed into a machine or piece of equipment, and stairs on self-propelled motorized mobile equipment are not covered by recognized industry standards, and the Agency does not have any information or sufficient evidence on how to regulate these types of stairs. OSHA requests comments on whether there is a need to regulate these stairs.

Proposed paragraph (a)(2) is intended to protect employees from falling off unprotected sides and edges. It requires that stairs be equipped with handrails and stair rail systems that meet the requirements of proposed § 1910.28, Duty to have fall protection. OSHA notes that the top rail of a stair rail system may also serve as a handrail when installed in accordance with proposed § 1910.29(f).

Paragraph (a)(3) proposes that the vertical clearance above any stair tread to an overhead obstruction must be at least 6 feet, 8 inches (1.8 m) measured from the leading edge of the tread, except as proposed in (c)(3) below. This is a change from the existing rule, found in § 1910.24(i), where the clearance is required to be at least 7 feet (2.1 m).

This proposed change is consistent with national consensus standards (i.e., ANSI A1264.1–2007).

In paragraphs (a)(4) through (a)(6), OSHA proposes requirements for riser heights and stairway landing platform widths. All three provisions are based on requirements in existing subpart D but are rewritten in performance-based language for ease of compliance and enforcement. These proposed requirements are the minimum criteria OSHA feels are necessary to ensure employee safety when traversing stairs.

In paragraph (a)(4), OSHA proposes that stairs be installed with uniform riser heights and tread depths between landings. This provision is essentially the same as the existing requirement in § 1910.24(f).

OSHA proposes, in § 1910.25(a)(5), that stairway landings and platforms be no less than the width of the stair and not less than 30 inches (76 cm) in length as measured in the direction of travel. The proposed language is essentially the same as that in existing § 1910.24(g).

In paragraph (a)(6), OSHA proposes to revise the platform width requirements where doors or gates open directly on a stairway. Specifically, OSHA proposes that when a door or a gate opens directly on a stairway, a platform must be provided, and the swing of the door or gate must not reduce the effective usable depth to less than 20 inches (51 cm) for platforms installed before 90 days after the effective date of the final rule; and 22 inches (56 cm) for platforms installed thereafter. The 20 or 22 inches (51 or 56 cm) is measured beyond the swing radius of the door after the door is opened fully. (See Figure D–7.) This change increases the effective usable depth of the platform, required in existing § 1910.23(a)(10), by 2 inches (5 cm), making OSHA’s proposal consistent with the national consensus standard, ANSI A1264.1–1995 (R2002). OSHA notes that the 2007 version of ANSI/ASSE A1264.1, section 6.11, *Door and Gate Openings*, states, “Stairs shall have landings at door openings and gate openings. During its swing, the door shall leave not less than one-half of the required width of the landing unobstructed. The door shall project not more than seven inches (180 mm) into the required width of the landing when the door is fully open.” OSHA requests comment on how much clear, unobstructed space is necessary on landing platforms where doors or gates open directly onto them.

In paragraph (a)(7), OSHA proposes that stairs be designed and constructed to carry five times the normal anticipated live load, but never less than a concentrated load of 1,000 pounds

(454 kg) applied at any point. This provision is nearly the same as existing § 1910.24(c), which applies to fixed industrial stairs, except that the proposed provision will apply to *all* stairs covered by this section. In addition, it is consistent with ANSI/ASSE A1264.1–2007.

In paragraph (a)(8), OSHA proposes that standard stairs be provided for access from one walking-working surface to another where operations necessitate regular and routine travel between levels and for access to operating platforms for equipment. An exception allows the use of winding stairways on tanks and similar round structures where the diameter of the structure is five (5) feet (1.5 m) or more. OSHA recognizes that standard stairs are the principal means of providing safe access from one working level to another. Therefore, this provision is designed to ensure that employees have a reasonable means of access to different walking-working surfaces. This provision is essentially the same as the existing requirement in § 1910.24(b) except that it has been rewritten for clarity. OSHA does not intend for this section to preclude the use of fixed ladders for access to elevated tanks, towers, and similar structures, or to overhead traveling cranes, when the use of fixed ladders is common practice. The proposed provision is consistent with the national consensus standard, ANSI/ASSE A1264.1–2007.

In paragraph (a)(9), OSHA proposes to limit the use of spiral stairs, ship stairs, or alternating tread-type stairs to “special limited usage” and “secondary access” situations when the employer demonstrates that it is not practical to provide a standard stairway. This is consistent with the national consensus standard, ANSI/ASSE A1264.1–2007. ANSI does not define “special limited usage” or “secondary access.” The ICC Building Code, however, refers to “special limited use” as “a space not more than 250 square feet (23 m<sup>2</sup>) in area and serving not more than five occupants, or from galleries, catwalks and gridirons. \* \* \*” The proposal would require employers to demonstrate that it is not practical to provide a standard stairway before using an alternate type of stairway in “special limited use” situations; therefore, it may be helpful to employers if OSHA defines special limited usage. For the purpose of this proposed rule, OSHA’s use of the term is the same as the ICC’s; however there may be other usages that warrant inclusion. OSHA requests comment on these points. The term “secondary access” is self explanatory and refers to any stairway that is not used as a

primary means of egress. OSHA notes that where spiral stairs, ship stairs, or alternating tread-type stairs are permitted, those stairs must meet the general requirements in proposed § 1910.25(a) and the additional specific requirements for each stair type in paragraphs (c), (d), or (e) of proposed § 1910.25, respectively. Proposed paragraphs (c), (d), and (e) for spiral stairways, ship stairs, and alternating-type stairs respectively, are new and have no counterparts in existing § 1910.24.

#### Paragraph (b) Standard Stairs

In paragraph (b), OSHA proposes specific requirements for standard stairs. The proposed requirements are the minimum criteria OSHA believes are necessary to allow adequate clearance for employees to negotiate standard stairs safely. These requirements apply in addition to the general requirements in proposed paragraph (a) above. All of the proposed requirements in this paragraph are consistent with the national consensus standard, ANSI/ASSE A1264.1–2007. For compliance assistance, OSHA has included figures D–7 through D–10 in the regulatory language.

Paragraph (b)(1) proposes that standard stairs be installed at angles between 30 and 50 degrees from the horizontal, which is equivalent to existing § 1910.24(e). However, the existing rule allows any combination of riser height and tread depth necessary to achieve the 30 to 50 degree angle, whereas the proposed rule sets a maximum and minimum range, respectively. Proposed paragraphs (b)(2) and (b)(3) set the maximum riser height and the minimum tread depth, allowing an exception when open risers are used. In paragraph (b)(2), OSHA proposes that standard stairs have a maximum riser height of 9.5 inches (24 cm). In paragraph (b)(3), OSHA proposes that standard stairs have a minimum tread depth of 9.5 inches (24 cm) except when open risers are used; that is, standard stairs having open risers can have tread depths of less than 9.5 inches (24 cm). Proposed paragraph (b)(3) differs from the existing rule in that it uses the term “tread depth” instead of “tread run.” OSHA believes that stairs currently used in general industry already meet these requirements.

In paragraph (b)(4), OSHA proposes that standard stairs have a minimum width of 22 inches (56 cm) between vertical barriers (such as a stair rail, guardrail, or wall). This requirement is essentially the same as existing § 1910.24(d).

The proposed criteria for spiral stairs, ship stairs, and alternating tread-type stairs presented below in proposed paragraphs (c), (d), and (e), respectively, parallel the provisions provided for standard stairs. They represent the minimum requirements OSHA believes are necessary for employees to traverse spiral stairs, ship stairs, and alternating tread-type stairs safely.

#### Paragraph (c) Spiral Stairs

In paragraph (c), OSHA proposes specific requirements for spiral stairs. These requirements apply in addition to the general requirements in proposed paragraph (a) above. These provisions are based on NFPA 101–2006.

Proposed paragraph (c)(1) requires that spiral stairways have a clear width not less than 26 inches (66 cm). Proposed paragraph (c)(2) requires spiral stairways to have risers with a maximum height of 9.5 inches (24 cm). In paragraph (c)(3), OSHA proposes that spiral stairs have a minimum amount of headroom above the spiral stairway of 6 feet, 6 inches (2 m) measured vertically from the center of the leading edge of the tread. To maintain a safe tread depth and size for spiral stairs, OSHA proposes in paragraph (c)(4) that spiral stair treads have a minimum depth of 7.5 inches (19 cm) at a point 12 inches (30 cm) from the narrowest edge. Proposed paragraph (c)(5) requires that spiral stairs have uniform size treads.

#### Paragraph (d) Ship Stairs

In paragraph (d), OSHA proposes specific requirements for ship stairs. These requirements apply in addition to the general requirements in proposed paragraph (a) above. Proposed paragraph (d)(1) requires that ship stairs be installed at a slope of 50 to 70 degrees from the horizontal. Paragraph (d)(2) proposes that ship stairs have open risers. In paragraph (d)(3), OSHA proposes that ship stairs have treads with a minimum depth of 4 inches (10 cm), a minimum width of 18 inches (46 cm), and a vertical rise between tread surfaces in the range of 6.5 to 12 inches (17 to 30 cm). These provisions are based on the national consensus standard, ANSI A1264.1–2007.

#### Paragraph (e) Alternating Tread-Type Stairs

In proposed paragraph (e), OSHA proposes specific requirements for alternating tread-type stairs. These requirements apply in addition to the general requirements in proposed paragraph (a) above. Proposed paragraph (e)(1) requires that alternating tread-type stairs be installed at a slope between 50 and 70 degrees from the

horizontal. Proposed paragraph (e)(2) requires that the distance between handrails be between 20 and 24 inches (51 to 61 cm). Proposed paragraph (e)(3) requires that the stairs have treads with a minimum depth of 8.5 inches (22 cm). Proposed paragraph (e)(4) requires that alternating tread-type stairs have open risers if the depth is less than 9.5 inches (24 cm), and proposed paragraph (e)(5) requires treads that are a minimum of 7 inches (18 cm) wide at the leading edge of the step (nosing). The proposed requirements of this paragraph are based on ANSI A1264.1–2007, NFPA 101–2006, and the 2003 International Building Code.

#### Section 1910.26 Dockboards (Bridge Plates)

Proposed § 1910.26 establishes requirements for dockboards (bridge plates). This section relocates, updates, and clarifies requirements for dockboards located in existing § 1910.30, Other working surfaces. In addition, two requirements in existing § 1910.30(b) and (c), Forging machine and Veneer machinery, respectively, would be revoked because the hazards addressed in those provisions are already covered elsewhere in proposed subpart D (e.g., § 1910.22) or in other subparts in the general industry standards (e.g., subpart O, Machinery and Machine Guarding, and in particular § 1910.218, Forging machines).

In paragraph (a), OSHA proposes that portable and powered dockboards be capable of supporting their maximum intended load. This requirement essentially restates the general requirement for load support in proposed § 1910.22(b) for all walking-working surfaces, and it is essentially the same as existing provision § 1910.30(a)(1).

In paragraph (b), OSHA proposes that dockboards put into service at least 90 days after the effective date of the final rule be designed, constructed, and maintained to prevent equipment (such as hand trucks and vehicles) from running off the edge. This performance language provision requires that where equipment is used on dockboards, the dockboard must be provided with a means, such as edging or curbing, to prevent equipment from running off the edge. This is a new requirement, which is being proposed to protect employees from injury in the event the equipment falls off the edge of the dockboard.

OSHA proposes in paragraph (c) that portable dockboards be secured in position, either by being anchored or equipped with devices that will prevent their slipping. Where this is infeasible,

the employer must ensure there is substantial contact between the portable dockboard and the unattached surface or surfaces. The dockboard and the unattached surface or surfaces should overlap with one another so that the dockboard does not rock, slide, or slip while being used by employees. The provision is essentially the same as existing provision § 1910.30(a)(2) and is based on ANSI/ASME B56.1–2000, Safety Standard for Low Lift and High Lift Trucks (sections 4.13.2 and 4.13.5).

In paragraph (d), OSHA proposes that vehicles onto which a dockboard has been placed must be prevented from moving (e.g., by using wheel chocks) while the dockboard is being used by employees. If a vehicle rolls forward when a dockboard is in use, the dockboard may fall off the end of the vehicle and an employee may fall as well. The provision identifies positive steps to prevent movement of vehicles rolling forward away from the dock and is essentially the same as the existing § 1910.30(a)(5). The paragraph is consistent with ANSI MH30.2–2005, Portable Dock Leveling Devices: Safety, Performance and Testing.

OSHA proposes in paragraph (e) that portable dockboards be equipped with handholds or other means to permit safe handling. The provision is essentially the same as existing § 1910.30(a)(4) and is based on ANSI/ASME B56.1–2000, Safety Standard for Low Lift and High Lift Trucks (section 4.13.3).

Section 1910.27 Scaffolds (Including Rope Descent Systems)

In § 1910.27, OSHA is proposing significant revisions to the existing general industry scaffold standards. First, OSHA is proposing to remove all the existing scaffolding requirements now located at § 1910.28 and § 1910.29, with the exception of mobile ladder stand requirements in existing § 1910.28(f). Instead, in paragraph (a), it is proposing to require that employers comply with the construction industry standards in § 1926 subpart L, Scaffolds. Requirements for mobile ladder stands are relocated to proposed § 1910.23(e). Second, in paragraph (b) OSHA is proposing to add new requirements for rope descent systems (sometimes called controlled descent systems)—a type of scaffold not now regulated by either OSHA’s general industry or construction industry standards.

Paragraph (a) Scaffolds

The primary reason for the proposed changes is to ensure consistency among OSHA standards for scaffolds. The construction industry scaffold standards (subpart L of 29 CFR part 1926) were updated on August 30, 1996 (61 FR 46026), and contain requirements for the same types of scaffolds that are now regulated by the general industry standards. Rather than updating the part 1910 standard to harmonize with the part 1926 standard, OSHA concluded

that a better way to ease compliance and ensure regulatory consistency, both now and in the future, is to refer general industry employers to the construction industry standards. OSHA believes that this will ensure consistency in worker protection in both industries, increase understanding of the rules, and reduce any confusion that might occur when employers are subject to two sets of rules for scaffolds—one that applies when general industry work (such as maintenance) is being done and another when construction work is being done. In addition, OSHA believes that many general industry employers who use scaffolds also perform work covered by the construction industry standards and are, therefore, already familiar, and in compliance, with the construction industry scaffold standards. OSHA believes that using just one set of regulations will simplify both compliance and enforcement of the scaffold standards and result in greater employee protection. OSHA notes that all 21 types of scaffolds currently regulated by the general industry standards are also regulated by the construction industry standards.

The following table lists the different types of scaffolding addressed in the existing part 1910 general industry standards, and the corresponding paragraphs in part 1926 construction industry standards.

LIST OF COMPARABLE SCAFFOLDING STANDARDS IN EXISTING PARTS 1910 AND 1926

Existing 1910		Existing 1926 Subpart L	
.28 (b) .....	Wood pole scaffolds .....	.452 (a) .....	Pole scaffolds.
.28 (c) .....	Tube and coupler scaffolds .....	.452 (b) .....	Tube and coupler scaffolds.
.28 (d) .....	Tubular welded frame scaffolds .....	.452 (c) .....	Fabricated frame (tubular welded) scaffolds.
.28 (e) .....	Outrigger scaffolds .....	.452 (i) .....	Outrigger scaffolds.
.28 (g) .....	Two-point suspension scaffolds .....	.452 (p) .....	Two-point adjustable suspension scaffolds.
.28 (h) .....	Stone setter’s adjustable multipoint suspension scaffolds.	.452 (q) .....	Multi-point adjustable suspension scaffolds, stone setters’ multi-point adjustable suspension scaffolds, and masons’ multi-point adjustable suspension scaffolds.
.28 (f) .....	Masons’ adjustable multi-point suspension scaffolds.		
.28 (i) .....	Single-point adjustable suspension scaffolds .....	.452 (o) .....	Single-point adjustable suspension scaffolds.
.28 (j) .....	Boatswain’s chair.		
.28 (k) .....	Carpenters’ bracket scaffolds .....	.452 (g) .....	Form scaffolds and carpenters’ bracket scaffolds.
.28 (l) .....	Bricklayers’ square scaffolds .....	.452 (e) .....	Bricklayers’ square scaffolds.
.28 (m) .....	Horse scaffolds .....	.452 (f) .....	Horse scaffolds.
.28 (n) .....	Needle beam scaffolds .....	.452 (u) .....	Needle beam scaffolds.
.28 (o) .....	Plasterers’, decorators’, and large area scaffolds ...	.452 (d) .....	Plasterers’, decorators’, and large area scaffolds.
.28 (p) .....	Interior hung scaffolds .....	.452 (t) .....	Interior hung scaffolds.
.28 (q) .....	Ladder jack scaffolds .....	.452 (k) .....	Ladder jack scaffolds.
.28 (r) .....	Window-jack scaffolds .....	.452 (l) .....	Window-jack scaffolds.
.28 (s) .....	Roofing bracket scaffolds .....	.452 (h) .....	Roof bracket scaffolds.
.28 (t) .....	Crawling boards or chicken ladders .....	.452 (m) .....	Crawling boards (chicken ladders).
.28 (u) .....	Float or ship scaffolds .....	.452 (s) .....	Float (ship) scaffolds.
.29 (e) .....	Mobile work platforms .....	.452 (w) .....	Mobile scaffolds.



OSHA is aware that by requiring general industry employers to comply with the construction industry scaffold requirements, some employers may encounter new requirements. However, the Agency anticipates there will be minimal new compliance burdens or new costs associated with requiring compliance with the construction industry rules. The Agency believes that any requirements in the construction industry scaffold standard that would be "new" to general industry employers are requirements that only apply when construction work is being done. For example, § 1926.451(g)(2) requires, under certain conditions, that employees be protected from falls while erecting and dismantling supported scaffolds. There is no similar requirement in the existing general industry scaffold standard. However, OSHA believes that most work performed from supported scaffolds is construction work that is already subject to the § 1926.451(g)(2) requirement.

OSHA requests comment on its position as discussed here. Is there general industry work—maintenance work, for example—performed while working from supported scaffolds that would cause employers to be subjected to a new rule? Are there other requirements in the construction industry rule that would impose new obligations on general industry employers because of OSHA's proposed action to require employers to comply with the construction scaffold rule? If so, what are those requirements and how would general industry employers be impacted?

#### Paragraph (b) Rope descent systems (RDS).

Rope descent systems (RDS), newly covered in proposed paragraph (b), are suspension-type devices that support one employee in a chair (seat board) and allow the user to descend in a controlled manner, stopping at desired points during the descent. RDS are a variation of single-point adjustable suspension scaffolds, but operate only in a descending direction. The use of rope descent systems is prevalent in the United States, frequently used in building cleaning, maintenance, and inspection. RDS are also known as "controlled descent devices" (CDD), and have been referred to as such in previous **Federal Register** notices (see example in following paragraph). To reduce confusion, in this notice OSHA will only use the term RDS.

In the July 18, 1990, **Federal Register**, OSHA solicited comments on regulating the use of RDS (CDD). On May 2, 2003,

OSHA again raised the issue (68 FR 23534):

In a March 12, 1991, memorandum to its Regional Administrators, OSHA stated that employers who use CDD to perform building cleaning, inspection, and maintenance must do so in accordance with the manufacturer's instructions, warnings, and design limitations. In addition, OSHA said it expected employers using CDD to implement eight specific safety provisions covering the following areas: employee training, inspection of equipment, proper rigging, separate fall arrest systems, installation of lines, rescue, prevention of rope damage, and stabilization (Docket S-029; Ex. 1-16-3). These eight provisions also are included in the current national consensus standard, ANSI I-14.1-2001—Window Cleaning Safety (Docket S-029; Ex. 1-13). The ANSI standard also limits the use of CDD, which it refers to as rope descent systems (RDS) to window cleaning operations performed 300 feet (91 m) or less above grade, unless the windows cannot be safely and practicably accessed by other means such as powered platforms.

The inclusion of these eight provisions in the ANSI standard on window cleaning indicates industry acceptance of these specific safety precautions. Comments to the earlier rulemaking record, both written and in public hearings, indicate that there are basically two view points on the RDS issue—either strongly in support of their use or strongly opposed to their use.

The supporting comments noted that RDS are a vital piece of equipment for the window cleaning industry (along with powered platforms, ladders, and other devices). Comments were made that, in some instances, such as certain multi-level roofs, saw-tooth roof edges, and buildings without parapets, RDS were the safest equipment to use (Ex. OSHA-S041-2006-0666-1253, p. 489).

Mr. Steve Powers, an owner/operator of a high-rise window cleaning company testified:

[T]he only solution to reducing the number of injuries and fatalities is in proper training, not in banning or restricting equipment. Human error and the lack of proper training is the primary cause of injuries and fatalities in our industry, not the equipment (Tr. 685).

The opposing commenters discussed the advantages of powered platforms over RDS. A window cleaning company owner expressed the belief that most window cleaners in this country do not have the proper training to use RDS in a safe manner (Ex. OSHA-S041-2006-0666-1254, p. 997). Many members of the Service Employees International Union (SEIU) also opposed the use of RDS (e.g., Ex. OSHA-S029-2006-0662-0277 through Ex. OSHA-S029-2006-0662-0284).

Since issuing its policy on the use of RDS over 19 years ago, OSHA is not

aware of any fatalities involving RDS when all eight of the safety provisions outlined in the March 12, 1991, memorandum have been followed. Therefore, at this time, OSHA believes that RDS may address a need and can be used safely so long as proper procedures are followed. Due to the design of some structures, the use of RDS may be the only way to perform some maintenance work and, if RDS is the only feasible method, OSHA believes that requirements are essential to protect employees while they are using this equipment.

To have the most complete information on RDS incidents, OSHA requests comment on incidents, including fatalities, injuries, and near misses, that have occurred while using this equipment. Additionally, OSHA requests information regarding any other provisions that should be included in the final rule to increase worker safety, including whether or not RDS should be prohibited or should be allowed only when the employer can demonstrate that other methods, such as powered platforms, are not feasible or pose additional safety risks. Please include comment on how such feasibility and safety risk determinations could be made, as well as applicable rationale, costs, and benefits for all comments on RDS.

The specific requirements in this proposed rule are based on the eight provisions of OSHA's 1991 memorandum and the national consensus standard, IWCA I-14.1-2001. These provisions are described in the following paragraphs. Additionally, although some provisions of this section are essentially the same as provisions in proposed subpart I, OSHA believes it is appropriate for the provisions to be presented here, in proposed subpart D, as a complete unit for ease of compliance and enforcement.

Proposed paragraph (b)(1) prohibits the use of RDS at heights greater than 300 feet (91.4 m) above grade unless the employer can demonstrate that access cannot otherwise be attained safely and practicably. Therefore, RDS would be permitted at heights of 300 feet (91.4 m) or less.

While the March 12, 1991, memorandum did not include a 300-foot limitation, the national consensus standard, IWCA I-14.1-2001 (section 5.7.12), prescribes the limitation. OSHA uses IWCA I-14 (section 5.7.11) as the basis for this prohibition, noting that the greater the length of rope used for a descent, the greater the adverse effects of environmental factors such as wind gusts, microbursts, or tunneling wind currents; these effects increase the risk

of injury to employees. For this reason, OSHA believes it is appropriate to propose this prohibition.

Proposed paragraph (b)(2) establishes eleven requirements employers must meet when RDS are used. Proposed paragraph (b)(2)(i) requires RDS to be used in accordance with the instructions, warnings, and design limitations set by manufacturers and distributors. Equipment is to be used only as the manufacturer designed it to be used. For instance, ropes and equipment that are designed and sold for recreational climbing are not always rated for industrial use. OSHA is aware that some elements of one manufacturer's system may be compatible with elements of a different manufacturer's system; however, incompatibility of systems can be disastrous. OSHA requests comment on whether changing the provision to read "set by manufacturers or qualified persons" (using the word "qualified" as defined in proposed § 1910.21) would be more appropriate.

Proposed paragraph (b)(2)(ii) requires employee training in accordance with proposed § 1910.30. OSHA believes that RDS can be safely used only if employees are thoroughly knowledgeable in the equipment and its proper use. Please see the training discussion below.

Proposed paragraph (b)(2)(iii) requires daily inspection of all equipment used in RDS before use. Also, any damaged equipment must be removed from service. This inspection enables changes and defects (such as abrasions and cracks) that occurred during the last use or during storage to be discovered, and appropriate action taken. This provision is reflected in a similar requirement in proposed § 1910.140, Personal fall arrest systems.

Proposed paragraph (b)(2)(iv) requires proper rigging, including sound anchorages and tiebacks, with particular emphasis on providing tiebacks when counterweights, cornice hooks, or similar non-permanent anchorages are used. Sound anchorage and tiebacks are essential to the safety of RDS. Emphasis is placed upon non-permanent anchorages because of the increased possibility of damage during transport and improper installation. The Agency requests comment on whether this provision is sufficient to ensure the safety of anchorages, and whether OSHA should include any specific requirements for anchorages beyond those presented here.

Proposed paragraph (b)(2)(v) requires a separate, independent personal fall arrest system meeting the requirements of subpart I of this part to be used so

that any failure in a friction device, support seat, support line, or anchorage system will not affect the ability of the fall arrest system to operate and quickly stop the employee's fall. This requirement is consistent with existing § 1910.66(j) and § 1926.451(g), and is reflected in proposed § 1910.140.

Proposed paragraph (b)(2)(vi) requires that all lines be capable of sustaining a minimum tensile load of 5,000 pounds (2,268 kg). This requirement does not preclude the use of a knot, swage, or eye splice that reduces the tensile strength of a rope, but it does require that when such a knot, swage, or splice is used, the rope must have a resulting strength capable of supporting a minimum tensile load of 5,000 pounds (2,268 kg). This provision is the same as a requirement in proposed § 1910.140, Personal fall arrest systems.

Proposed paragraph (b)(2)(vii) requires the employer to provide for prompt rescue of employees in the event of a fall. This provision is the same as a requirement in proposed § 1910.140.

Proposed paragraph (b)(2)(viii) requires ropes to be effectively padded when they contact edges of the building, anchorage, obstructions, or other surfaces that might cut or weaken the rope. Padding protects ropes from abrasions that can weaken the tensile strength of a rope.

Proposed paragraph (b)(2)(ix) requires stabilization at employee work locations when descents are greater than 130 feet (39.6 m). As required in ANSI/IWCA I-14 (section 5.7.12), stabilization at the specific work station reduces risks imposed by sway. The Agency requests information on stabilization methods commonly used, and other stabilization methods not commonly used that may increase employee safety. Please include information regarding costs and benefits of these methods.

The greater the length of rope used for a descent, the greater the adverse effects of environmental factors such as wind gusts, microbursts, or tunneling wind currents; these effects increase the risk of injury to employees. OSHA requests information on the use of RDS during inclement weather. Should the use of RDS be prohibited in certain weather conditions? If so, what are those conditions? How should an employer determine whether the conditions are severe enough to prevent the use of RDS? The term "excessive winds" as used in the consensus standard is subjective and open to differing interpretations. How should the term be defined? Is a specific wind speed appropriate? What speed and why? Should wind speed be monitored, and if so, how?

Proposed paragraph (b)(2)(x) requires equipment, including tools, squeegees, and buckets, to be secured to prevent equipment from falling, thus protecting any workers below from being struck by falling equipment. This provision is based on IWCA I-14.1-2001, which is written for the protection of the general public. However, OSHA believes this provision also is necessary to protect employees working below RDS from injuries resulting from dropped equipment.

Proposed paragraph (b)(2)(xi) requires suspension ropes to be protected from exposure to open flames, hot work, corrosive chemicals, or other destructive conditions that can weaken them. This requirement is essentially the same as existing § 1910.28(a)(21).

#### Section 1910.28 Duty To Have Fall Protection

This is the first of three new sections in subpart D that consolidate requirements pertinent to fall protection. The new sections (§§ 1910.28, 1910.29, and 1910.30), when viewed together, represent a comprehensive approach to managing fall hazards. OSHA believes this revised approach will ensure a better understanding of employer obligations; provide flexibility for employers when choosing a fall protection system that works best for them; and most importantly, will significantly reduce the number of falls in general industry.

Proposed § 1910.28 specifies the areas and operations where fall protection systems are required. The criteria to be met for fall protection systems and the training necessary to use the systems properly are covered in proposed §§ 1910.29 and 1910.30, respectively. In addition, criteria to be met when *personal* fall protection systems are used are covered in subpart I of this part at § 1910.140. New § 1910.28 is patterned after § 1926.501, Duty to have fall protection, of the construction industry standards and contains many similar requirements. As indicated in proposed § 1910.21, Scope and application, OSHA intends that this new section will consolidate most general industry fall protection requirements. There are, however, some exceptions. OSHA is not proposing to relocate the existing "duty to have fall protection" requirements in § 1910.66 (for powered platforms), § 1910.67 (for aerial lifts), § 1910.268 (for telecommunications operations), or § 1910.269 (electric power generation, distribution and transmission operations). In addition, nothing in this section applies to fall hazards from the perimeter of entertainment stages or rail

(subway) station platforms. In these contexts, the use of guardrails or other fall protection systems could unreasonably interfere with work operations or would create a greater hazard than would otherwise be present. OSHA recognizes that there may be limited circumstances where fall protection may be feasible in these occupational settings, and encourages the use of fall protection when possible.

The duty to have fall protection in general industry is not new. Existing subpart D already requires employees to be protected from falls and, in general, requires that protection be provided whenever an employee is exposed to falling 4 feet (1.2 m) or more to a lower level. The origin of the 4-foot rule in subpart D is the American National Standard, ANSI A12.1–1967, Safety Requirements for Floor and Wall Openings, Railings, and Toe Boards. Historical records indicate that, generally, the 4-foot rule was prescribed in consensus standards as far back as 1932 (see ANSI A12.1–1932). Therefore, it is reasonable to conclude that providing fall protection when employees are exposed to falls of 4 feet (1.2 m) or more has been the accepted practice in general industry for more than 75 years.

Furthermore, a 1978 University of Michigan study (*An Ergonomic Basis for Recommendations Pertaining to Specific Sections of OSHA Standard 29 CFR Part 1910, Subpart D-Walking and Working Surfaces*, Ex. OSHA–S041–2006–0666–0004) supports maintaining the 4-foot rule. For these reasons, OSHA believes it would be unreasonable to change this trigger height. The Agency requests more recent studies or information that support or contradict this position.

OSHA notes that its construction industry rules require, except for certain specific work or operations, that employees be protected whenever the fall distance is 6 feet (1.8 m) or more to lower levels. Comments to OSHA's 2003 Reopening Notice indicated that some members of the public believed that the trigger height for providing fall protection in general industry is 6 feet (1.8 m), which is the construction industry trigger. OSHA wishes to be clear on this point: for general industry, the trigger height for providing fall protection has—for more than 75 years—been 4 feet (1.2 m). Exceptional trigger heights have been established for construction, work performed on scaffolds or fixed ladders, or utility work. Throughout its entire history, OSHA has consistently reinforced the policy in public statements, as well as in documents issued to clarify and

interpret the standard. For example, as far back as 1978, OSHA, in a letter of interpretation to Mr. John Reilly ([http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=INTERPRETATIONS&p\\_id=18715](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=18715)) restated the requirement for fall protection for open-sided surfaces more than 4 feet above adjacent levels.

A major difference between the proposed requirements in § 1910.28, and the existing requirements of subpart D, is that under the proposed rule, employers will be able to choose from several options in providing fall protection. The existing rule, for the most part, mandates the use of guardrail systems (see, e.g., § 1910.23), thereby limiting the employer's ability to choose the system that works best for the particular situation or work activity. The proposed rule allows employers to choose from several options in providing fall protection. These include conventional fall protection systems such as guardrail systems, safety net systems, and personal fall protection systems (travel restraint systems, fall arrest systems, and positioning systems), and non-conventional means. An example of non-conventional means would be the establishment of a designated area in which an employee is to work. An employee working in a designated area must be trained in safe work practices specific to that area and must be required to use those safe work practices. OSHA believes that an important key to protecting employees is allowing employers flexibility to select the fall protection systems or methods that will work best for the particular work activities or operations, thereby allowing employers to consider factors such as exposure time, availability of attachment points, and feasibility and cost constraints.

OSHA believes that the reorganized format presented here will reduce confusion about fall protection requirements, as well as reduce the need for interpretations of those requirements. As noted above, by patterning this section after the construction industry standards, OSHA intends to ensure that employees in both industries, when exposed to similar fall hazards, are afforded similar protection. The proposed subpart D fall protection requirements also reflect today's technology and recognize the use of innovative fall protection measures, such as working in designated areas or using travel restraint systems, as reasonable and appropriate ways to protect employees from fall hazards. Once an employer has chosen a system or method from the options allowed in proposed § 1910.28, that

system/method would have to meet the requirements in proposed § 1910.29, and employees would have to be trained on the use of the chosen system per proposed § 1910.30. OSHA believes the proposed fall protection requirements will allow for a much higher level of compliance, leading to a higher level of protection and may, at the same time, reduce employer costs.

#### Paragraph (a) General

Proposed paragraph (a) of § 1910.28 contains two general requirements relating to an employer's obligation, or duty, to have fall protection. In proposed paragraph (a)(1), OSHA establishes the employer's obligation to provide fall protection and clarifies that all fall protection systems used must conform to the criteria and work practices set forth in proposed § 1910.29, except that, when personal fall protection systems are used, compliance with the criteria and work practices of proposed § 1910.140 in subpart I would be required. Proposed § 1910.28 does not apply to powered platforms because the duty to have fall protection is already provided in § 1910.66, the general industry standard for powered platforms. Proposed § 1910.28 also does not apply to aerial lifts (§ 1910.67), telecommunications (§ 1910.268), or electric power generation, transmission, and distribution (§ 1910.269) because each of these sections, like § 1910.66, already contains a requirement specifying the employer's duty to have fall protection. OSHA notes that most of the requirements in this proposed section allow several choices for providing fall protection, but some requirements limit the choices. For example, only the use of guardrail and handrail systems is permitted to protect employees on dockboards (bridge plates). Here, OSHA believes these systems offer the appropriate type of fall protection.

As stated above, existing subpart D requires employers to provide guardrails as the primary method of protecting employees from fall hazards (for example, see proposed § 1910.23(c)). The 1990 proposed revision of subpart D (55 FR 13401) continued the concept of using guardrails as the primary fall protection method, allowing other alternatives in limited situations. Thus, the subpart D proposal established a hierarchy of controls. However, in the 2003 Reopening Notice (68 FR 23533), OSHA acknowledged that it may not always be feasible to provide guardrails and raised this as an issue. Issue #4, Hierarchy of Fall Protection Controls, elicited comment on whether OSHA should permit employers to provide

other fall protection systems such as personal fall arrest systems, positioning systems, or restraint systems to protect employees from falls. In raising the issue, OSHA noted that the final Fall Protection rule for the construction industry did not have a hierarchy of fall protection systems. Instead, that standard included a list of options which employers would be permitted to follow (59 FR 40672, August 9, 1994). In the 2003 reopening, OSHA said that, to achieve consistency between OSHA's construction standards and general industry standards, it could abandon the hierarchy of fall protection controls that had been proposed in 1990 in favor of a more flexible approach (68 FR 23533).

Comments on Issue #4 overwhelmingly favored removal of the hierarchy and promulgation of rules consistent with those already established for the construction industry. Today's proposal reflects those comments and removes the hierarchy in favor of provisions establishing several fall protection systems that offer equivalent protections, and allows employers flexibility to select among them. It is OSHA's belief that the alternatives (or options) listed for each work activity operation will allow employers to choose the system that they determine is most appropriate and cost effective. OSHA has limited the employer's choices to those systems that it believes will provide an appropriate and equal level of safety.

In an earlier **Federal Register** (59 FR 40680) document, OSHA discussed its position that all employers are responsible for obtaining information about the workplace hazards to which their employees may be exposed and for taking appropriate action to protect affected employees from any such hazards. OSHA also noted that "[t]he [Occupational Safety and Health Review] Commission has held that an employer must make a reasonable effort to anticipate particular hazards to which its employees may be exposed in the course of their scheduled work." (*Id.* 40680.) Specifically, an employer must inspect the area to determine what hazards exist or may arise during the work before permitting employees to work in that area, and the employer must then give specific and appropriate instructions to prevent exposure to unsafe conditions. This is particularly important when employees are allowed to work in a "designated area" and are not protected by conventional fall protection systems.

Additionally, when general industry employers contract with others to provide work at their site, OSHA expects both the host employer and

contract employer to work together to identify and address fall hazards. One method of accomplishing this is to conduct a hazard assessment following the guidelines in Appendix B to subpart I of part 1910, Non-Mandatory Compliance Guidelines for Hazard Assessment and Personal Protective Equipment Selection. Another resource is consensus standards. ANSI/ASSE Z359.2-2007, Minimum Requirements for a Comprehensive Managed Fall Protection Program, provides procedures for eliminating and controlling fall hazards. OSHA, of course, encourages employers to go beyond its minimum requirements and to take additional measures to address fall hazards in a comprehensive manner, starting with a discussion about the elimination of fall hazards and ending with a plan to rescue employees if they fall.

In this proposed rule, OSHA requires employers to protect employees performing work from fall hazards, and sets criteria for the proper implementation of fall protection through the requirements in subparts D and I, specifically in the requirements at §§ 1910.28-1910.30 and § 1910.140.

In paragraph (a)(2), OSHA proposes to require that employers ensure that any walking-working surface on which they allow employees to work has the strength and structural integrity to support employees safely. OSHA is proposing to add this new requirement, which is identical to § 1926.501(a)(2) of the construction fall protection standard, to ensure that the surfaces can support the weight of employees, equipment, and materials. OSHA's intent is that a simple inspection of the work surface be made before work begins. If conditions warrant, a more involved inspection will be necessary to ensure the surface is safe for employees. OSHA is aware of incidents when employees have fallen through floors or roofs because they were not inspected before the work began to ensure that the surfaces would support the loads imposed (employees, equipment, and material). OSHA believes this is particularly true when employees are doing maintenance and servicing work of equipment on roofs, platforms, and runways. The hazards addressed by the proposed provision are similar to the hazards addressed in proposed § 1910.22, a revision of existing § 1910.22(d), which is concerned with ensuring employees work on surfaces that can support them so they will not fall onto or through the walking-working surface. The provision in proposed § 1910.28(a)(2), while similar to proposed § 1910.22(a) (which

requires that surfaces be designed, constructed, and maintained free of hazards), is intended to focus the attention of the employer on the need to inspect work surfaces (especially non-routine work surfaces) before employees are required to walk or work on them. It is noted that while some surfaces are not specifically designed as a walking or working surface, employees walk on or work from them from time to time. OSHA believes that this approach is consistent with the approach described in the preamble to the construction rule (59 FR 40681).

#### Paragraph (b) Protection From Fall Hazards

Proposed paragraph (b) contains 13 requirements that set forth the options from which employers may choose to protect employees exposed to fall hazards when on a walking-working surface, as defined in proposed § 1910.21. OSHA is using the term "walking-working surfaces" instead of the existing term "floor" to indicate clearly that subpart D addresses all surfaces where employees perform work. The Agency has always maintained that the OSHA general industry fall protection standards cover all walking-working surfaces. In fact, although OSHA never mentioned the term "roof" in the existing rule, it has consistently held that falls from roofs are covered by the existing rule. OSHA notes that the consensus standards on which the original fall protection requirements were based, ANSI A12.1 and A64, now combined at ANSI A1264.1, includes the term "roof" in its title. The revised rule reaffirms the existing Agency interpretation and practice and clarifies the language of the standards in that regard. Also, OSHA has consistently held that subpart D addresses the hazards of falling from a walking-working surface to any kind of lower level (*e.g.*, solid, liquid, or colloid).

Under paragraph (b) of the proposal, employers are required to select and use a fall protection system (or combination of systems) as provided by paragraphs (b)(1) through (b)(14). Each individual paragraph addresses the fall protection needs of particular walking-working surfaces and lists the fall protection systems that OSHA believes are appropriate to those surfaces. Only the systems listed are permitted to be used. The revised rule requires essentially the same coverage as the existing rule—protection of employees from falls of 4 feet or more to lower levels, with a few exceptions. One exception is when employees are working over dangerous equipment (*see* proposed paragraph

(b)(6) below). In that situation, employees must be protected from falls regardless of the height. On the other hand, when employees are working on scaffolds or fixed ladders, it is reasonable to allow a higher trigger height, hence the 10- and 24-foot (3 and 7.3 m) trigger heights proposed. Also, as mentioned above, the proposed general industry fall protection standards have been reorganized and formatted to be similar to the construction industry fall protection rule to bring consistency to the two rules.

Proposed paragraph (b)(1) sets forth the requirements for fall protection from unprotected sides and edges of walking-working surfaces. It provides that employees must be protected when they are exposed to falls from unprotected sides and edges of walking-working surfaces which are 4 feet (1.2 m) or more above lower levels. The options from which an employer can choose to provide this protection include both conventional systems—guardrail systems, safety net systems, personal fall protection systems, and travel restraint systems—and having employees work in a “designated area.” OSHA defines a “designated area” in proposed § 1910.21(b) as a distinct portion of a walking-working surface delineated by a perimeter warning line in which *temporary* work may be performed without additional fall protection. A “designated area” is similar to a “controlled access zone” at construction worksites. Except for the “designated area” option, the proposed requirements are essentially the same as the existing general industry requirements in § 1910.23(c) and are similar to the construction standard at § 1926.501(b)(1).

This proposed standard does not specify a distance from the edge that is considered safe, *i.e.*, a distance at which fall protection is not required. Instead, it allows the employer to designate an area in which employees can work without fall protection. The criteria for designated areas and other fall protection systems are set forth in proposed § 1910.29. It is essential for authorized employees in designated areas exposed to fall hazards to be trained in accordance with provisions set forth in § 1910.30.

An exception to proposed paragraph (b)(1) applies to the unprotected side or edge of the *working side* of platforms used in slaughtering facilities, loading racks, loading docks, and teeming tables used in molten metal work. The exception states that when the employer demonstrates that use of guardrails on the working side of these platforms is infeasible, the work may be done

without guardrails provided: (1) The work operation for which guardrails are infeasible is in process; (2) access to the platform is limited to authorized employees; and, (3) the authorized employees have been trained in accordance with proposed § 1910.30. Note that the exception is only for that part of the guardrail that would normally be installed on the *working side* of the platform. Employees must still be protected from falls from the other sides and edges of the platform. When work operations for which guardrails are infeasible are not in process, for example, during cleaning or maintenance, the exception does not apply. This is because OSHA is aware that, in some cases, work cannot be done when access is blocked by guardrails, or the guardrails touch carcasses and pose a health issue. These situations are not present during cleaning or maintenance. The Agency requests comment regarding the technological feasibility of requiring other means of fall protection (*e.g.*, travel restraint systems) in these applications. Please include supporting rationale, as well as information on the costs and benefits of such a provision.

Paragraph (b)(2) proposes fall protection requirements for employees in hoist areas of walking-working surfaces that are 4 feet (1.2 m) or more above lower levels. Employees must be protected through the use of guardrail systems, personal fall arrest systems, or travel restraint systems. If guardrails (or chains or gates if they are being used in lieu of guardrails at the hoist area) are removed to facilitate hoisting operations, then employees who lean through the access opening or out over the edge of the access opening to perform their duties are at risk and must be protected by the use of personal fall arrest systems. The proposed requirement is consistent with the existing general industry standard in § 1910.23(b)(1)(i). Except that the trigger height for providing fall protection is 4 feet (1.2 m) in the proposed general industry rule, the proposed requirement is also consistent with the construction industry standard at 1926.501(b)(3). The existing subpart D standard does not address fall protection at hoist areas separately from other holes and wall openings. In this proposal, holes are addressed in paragraph (b)(3) and wall openings in paragraph (b)(7) below. The criteria for grab handles are located at proposed § 1910.29(l).

Paragraph (b)(3) of this proposed rule requires that employees be protected from hazards associated with holes. Employees may be injured or killed if they step into holes, trip when caught

in holes, fall through holes, or are hit by objects falling through holes. Some workplaces may present all of these hazards while others may have fewer. The proposed rule specifies protective measures applicable to each hazard.

Proposed paragraph (b)(3)(i) requires that employees be protected from falling into or through holes (including skylight openings) 4 feet (1.2 m) or more above lower levels by covers over the hole, erecting a guardrail system around the hole, or by the use of a personal fall arrest system. Proposed paragraph (b)(3)(ii) requires that covers be used to protect employees from tripping in or stepping into holes, and proposed paragraph (b)(3)(iii) requires that covers be used to protect employees from objects falling through overhead holes. The proposed requirements are essentially the same as those in existing general industry standards at § 1910.23(a)(4), (a)(8), and (a)(9), and the construction standard at § 1926.501(b)(4) except that the trigger height for providing fall protection for employees falling through holes is 4 feet (1.2 m) in the proposed general industry rule.

Proposed paragraph (b)(4) addresses fall protection from dockboards (bridge plates). Proposed paragraph (b)(4)(i) states that each employee on a dockboard (bridge plate) be protected from falling 4 feet (1.2 m) or more to lower levels by guardrail or handrail systems, except as provided by proposed (b)(4)(ii) of this section. Proposed paragraph (b)(4)(ii) provides that no fall protection (guardrail or handrail system) is required when motorized equipment is being used on dockboards (bridge plates) solely for material handling operations, provided that: (A) Employees are exposed to fall hazards of less than 10 feet (3 m); and (B) employees have been trained as provided by proposed § 1910.30. The proposed provision, in permitting employers to rely on training rather than on the use of conventional fall protection systems, is consistent with the proposed requirements for repair pits and assembly pits in § 1910.28(b)(8). An example of when this situation might occur would be the transfer of material between boxcars. Materials handling exposure is generally of limited duration, and requires ready access to the open sides. Guardrails would interfere with the transfer and could create a greater hazard to employees. The 10-foot (3 m) limitation in proposed paragraph § 1910.28(b)(4)(ii)(A) is consistent with similar requirements for work on elevated surfaces such as scaffolds (*see* proposed §§ 1910.27, and 1926.451(g)).

Additional requirements related to positioning and securing ramps and bridging devices are found in proposed § 1910.26, Dockboards (bridge plates).

In paragraph (b)(5), OSHA proposes that employees on runways and similar walkways be protected from falling 4 feet (1.2 m) or more to lower levels by guardrails. The proposed paragraph is essentially the same as existing § 1910.23(c)(1) and (2) and is consistent with the construction standard at § 1926.501(b)(6), except that the trigger height for providing fall protection is 4 feet (1.2 m) in the proposed general industry rule.

An exception to proposed paragraph (b)(5) permits runways used for special purposes (such as filling tank cars) to have the railing on one side omitted when the employer demonstrates that operating conditions necessitate such an omission. In these circumstances, the employer must minimize the fall hazard by providing a runway that is at least 18 inches (46 cm) wide, and providing employees with, and ensuring the proper use of, personal fall arrest systems or travel restraint systems. This proposed exception is consistent with ANSI 1264.1–2007. The Agency invites comment on current practices involving runways that are used for special purposes. Where are such runways used and how are employees who work on them protected?

Proposed paragraph (b)(6) addresses dangerous equipment. It proposes two requirements to protect employees from falling into or onto dangerous equipment. Examples of dangerous equipment include protruding objects, machinery, pickling or galvanizing tanks, degreasing units, or similar equipment. Proposed paragraph (b)(6)(i) addresses situations where employees are less than 4 feet (1.2 m) above dangerous equipment, and it requires that employees be protected by the use of guardrail systems or travel restraint systems unless the equipment is covered or otherwise guarded to eliminate the hazard. Proposed paragraph (b)(6)(ii) addresses situations where employees are more than 4 feet above dangerous equipment, and it requires employees to be protected by guardrail systems, safety net systems, personal fall arrest systems, or travel restraint systems. OSHA is proposing different methods for protecting employees depending on the fall distance. The Agency does not believe the use of safety net systems or personal fall arrest systems that meet the requirements of proposed § 1910.29 are appropriate when the fall distance is less than 4 feet (1.2 m), since there will not be sufficient distance below the

employee for the system to work and the employee could make contact with the dangerous equipment. The proposed paragraph is essentially the same as the existing general industry standard at § 1910.23(c)(3) and the construction standard at § 1926.501(b)(8), except that the trigger height for providing fall protection is 4 feet (1.2 m) in both the proposed and existing general industry rules.

Paragraph (b)(7) proposes to require protection for employees who are exposed to the hazard of falling out or through wall openings. Under the proposal, wall openings (defined as a gap or void 30 inches (76 cm) or more high and 18 inches (46 cm) or more wide in any wall or partition through which employees can fall to a lower level) must be equipped with a guardrail system, safety net system, travel restraint system, or personal fall arrest system. OSHA believes the most practical method of compliance is the guardrail system because it provides protection at all times and for all employees who may have exposure at the wall opening. However, there may be cases where employers choose to use safety net systems, travel restraint systems, or personal fall arrest systems, which also will provide an appropriate level of protection. For that reason the provision has been written to permit the use of these other systems. This provision is essentially the same as the existing general industry standard at § 1910.23(b) and also with the construction industry rule for wall openings found in § 1926.501(b)(14), except that the trigger height for fall protection is 4 feet (1.2 m) in both the proposed and existing general industry rules.

The earlier (1990) proposed revision of subpart D proposed that in addition to providing conventional fall protection, employers also install grab handles on each side of the wall opening whenever the work activity required employees to reach through an unprotected opening. That requirement was based on existing § 1910.23(b)(1)(i) and (e)(10). OSHA is not including a requirement for grab handles at wall openings in this proposal because, unlike the 1990 proposal, this document contains a separate, specific requirement (see proposed paragraph (b)(2) above) for hoist areas, which includes a requirement to install grab handles. OSHA is not including the requirement for grab handles for all wall openings because OSHA intends that, when employees lean out and through a wall opening, that opening constitutes a “hoist area” and the requirements of proposed paragraph (b)(2) apply. The

use of grab handles as a handhold is, of course, permitted at wall openings.

Proposed paragraph (b)(8) is a new provision, proposed to address the specific fall hazard created by vehicle repair pits and assembly pits. These pits are designed to provide employee access to the underside of a vehicle without elevating the vehicle. Typically, a vehicle is driven over the pit and the employee enters the pit via a flight of stairs. The employee then performs work on the underside of the vehicle.

OSHA currently requires fall protection for these pits, and has addressed their hazards through section 5(a)(1) (the general duty clause) of the OSH Act. This proposal sets out specific requirements to address this fall hazard. Under the proposal, employees exposed to falling a distance between 4 and 10 feet (1.2 and 3 m) into a vehicle repair pit need not be protected as required in proposed § 1910.28(b)(1) for unprotected sides and edges, provided the employer institutes the three specific work practices that OSHA believes will provide an appropriate level of protection. The option to use work practices is being proposed in recognition that repair and assembly pits present a unique problem in terms of striking a balance between protecting employees from falls and ensuring that the employees can reach the work area and perform their work. Conventional fall protection systems may not always be the most appropriate way to protect employees. For example, the use of guardrails for perimeter protection could interfere with driving vehicles over, or away from, the pit. Likewise, the use of personal fall arrest or travel restraint systems might prevent employees from reaching the area where the work needs to be performed. Further, once a vehicle is placed over the pit, the fall hazard is normally eliminated. The primary fall hazard to employees exists when there is no vehicle over the pit, but it is OSHA's understanding that employees are unlikely to be in the vicinity of a repair pit when there is no vehicle over the pit.

OSHA believes that adequate fall protection for employees can be provided by the methods proposed in paragraph (b)(8). Access to the edge (within 6 feet (1.8 m)) of the pit must be limited to trained, authorized employees (proposed (b)(8)(i)); the floor must be marked (proposed (b)(8)(ii)) to designate the unprotected area; and caution signs must be posted to warn employees of the unprotected area (proposed (b)(8)(iii)). OSHA believes such a well-marked designated area, extending back 6 feet (1.8 m) from the rim of the pit, provides sufficient early

warning to employees to protect them from unexpectedly falling into the pit. The use of caution signs that effectively notify employees of the presence of the fall hazard would restrict the area to authorized employees and would further limit employee exposure to the open perimeter. This provision only applies to pits less than 10 feet (3 m) deep; however, where employees are exposed to falling 10 feet (3 m) or more into a pit, conventional fall protection in accord with proposed paragraph (b)(1) must be used. OSHA notes that caution signs must meet the requirements of § 1910.145.

In proposed paragraph (b)(9), OSHA addresses fall hazards related to fixed ladders. Under the proposed standard, no fall protection is required when employees are exposed to falls from fixed ladders of less than 24 feet (7.3 m). Proposed paragraph (b)(9)(i) requires that fixed ladders be provided with cages, wells, ladder safety systems, or personal fall protection systems where the length of the climb is less than 24 feet (7.3 m) but the top of the ladder is more than 24 feet (7.3 m) above lower levels. Proposed paragraph (b)(9)(ii) addresses fall hazards where the total length of a climb equals or exceeds 24 feet (7.3 m). In the latter situation, additional measures also apply when cages, wells, ladder safety systems, or personal fall protection systems are used. If an employer chooses a personal fall protection system, rest platforms must be installed at intervals no greater than 150 feet (45.7 m). If the employer chooses a cage or well, no ladder sections may exceed 50 feet (15.2 m) in length, and each section must be offset from adjacent sections with landing platforms at maximum intervals of 50 feet (15.2 m). If an employer chooses a ladder safety system, no additional measures are proposed.

The existing standard imposes similar requirements but provides fewer fall protection options. Section 1910.27(d)(1)(ii) requires that either cages or wells be provided “on ladders of more than 20 feet to a maximum unbroken length of 30 feet,” and § 1910.27(d)(2) requires landing platforms at 30-foot (9.1 m) intervals. This language, which is based on a 1956 ANSI standard that OSHA adopted in 1971, has widely been understood to mean that fall protection is required whenever the length of climb is 20 feet (6.1 m) or more. The proposed revision is consistent with the national consensus standard for fixed ladders, ANSI A14.3–2002. Additionally, as a matter of enforcement policy, OSHA has been allowing the use of other fall protection systems such as those

proposed herein. Thus, the proposed requirement represents current industry practice. The proposed requirements are also identical to the construction industry standard at §§ 1926.1053(a)(18) and (19).

In proposed paragraph (b)(10), OSHA addresses fall hazards in the outdoor advertising industry. In this industry, employees often climb both portable and fixed ladders to reach their destination on the advertising billboard platform. OSHA is proposing seven provisions that take into consideration the unique nature of the work wherein both types of ladders are often used, with the portable ladder being used to reach the fixed ladder. The requirements proposed in paragraph (b)(10) are more flexible than those of proposed paragraph (b)(9) for fixed ladders in that (1) the trigger height for fall protection differs for employees engaged in outdoor advertising work and, (2) the method of fall protection differs. The proposed requirements reflect a policy that OSHA instituted for outdoor advertising work in 1991.

Specifically, on March 1, 1991 (56 FR 8801), OSHA granted a variance to one outdoor advertising employer, and later expanded this policy to apply to all outdoor advertising employers. The policy allowed some climbing activities to be performed without any conventional fall protection (wells, cages, ladder safety systems), provided that employees had received specific training *and* that certain work practices (for example, wearing a rest lanyard) were followed. If the employee’s climb was above 50 feet (15.2 m), however, additional requirements applied. These requirements apply only where employees are engaged in climbing ladders to reach a billboard platform. Once the employees reach the platform (that is, they are no longer climbing a ladder), conventional fall protection is required with no exceptions. The seven proposed requirements are listed in the following paragraphs.

Proposed paragraph (b)(10)(i) would apply whenever the length of the climb is 50 feet (15.2 m) or less or where the total fall distance does not exceed 65 feet (19.8 m) above grade. In this situation, OSHA proposes that each employee who climbs a combination of a portable and a fixed ladder must wear a body belt or body harness equipped with an 18 inch (46 cm) rest lanyard that will enable the employee to tie off to the fixed ladder.

In paragraph (b)(10)(ii), OSHA proposes to require that employees who climb a combination of a portable and a fixed ladder where the length of the fixed ladder climb exceeds 50 feet (15.2

m), or where the ladder ascends to heights exceeding 65 feet (19.8 m) from grade, be protected through the installation of a ladder safety system for the entire length of the fixed ladder climb.

Proposed paragraph (b)(10)(iii) would require employers to ensure that each employee who climbs fixed ladders equipped with ladder safety systems use the systems properly and follow appropriate procedures for inspection and maintenance of the systems. In paragraph (b)(10)(iv), OSHA proposes that all ladder safety systems be properly maintained to ensure employee safety. This includes all ladder safety systems, regardless of height or date of installation.

In paragraph (b)(10)(v), OSHA proposes that each employee who routinely climbs fixed ladders must undergo training and demonstrate the physical capacity to perform the necessary climbs safely. These employees must satisfy the criteria for qualified climber found in § 1910.29(h). In the 1990 proposed rulemaking (55 FR 13364–66), OSHA had also proposed to allow the use of a “qualified climber” outside of the outdoor advertising industry. In this proposal, OSHA is limiting the use of qualified climbers to the outdoor advertising (billboard) industry because, over the last 18 years, there has been significant progress in protecting employees generally, and many new, easier-to-use fall protection systems are now readily available. In fact, anecdotal information as well as enforcement experience indicates that there is no reasonable basis for proposing to allow the use of qualified climbers in lieu of conventional fall protection outside of the outdoor advertising industry.

In paragraph (b)(10)(vi), OSHA proposes to require that employees must have both hands free of tools or material when ascending or descending a ladder. This provision is consistent with requirements of the national consensus standards in the ANSI/ALI A14 series on ladders, and with OSHA ladder standards for the construction industry at § 1926.1053. The same provision is also proposed in § 1910.23(b)(13) and will be applicable, in general, to all employees on ladders to ensure that employees keep three points of contact on the ladder at all times while ascending or descending.

In paragraph (b)(10)(vii), OSHA proposes to require that where qualified climbers are used, they must be protected by an appropriate fall protection system upon reaching their work positions.

In paragraph (b)(11), OSHA proposes requirements to protect employees from falling off stairway landings and from stairs. This paragraph addresses fall hazards from both the stairway landing and the exposed sides of the stairway. The requirements are essentially the same as the existing requirements in § 1910.24(h) to protect employees from falls from stairways.

In paragraph (b)(11)(i), OSHA is proposing that each employee exposed to a fall of 4 feet or more to lower levels from an unprotected side or edge of a stairway landing be protected by a stair rail or guardrail system. The proposal is essentially the same as the existing requirement in § 1910.24(h) and the construction industry standard for stairway landings in § 1926.1052(c)(12). Unlike proposed § 1910.28(b)(1) which addresses unprotected sides and edges in general, and allows the use of several systems to protect employees from falls, unprotected sides and edges of stairway landings must have stair rails or guardrails installed. OSHA believes that limiting the fall protection options to stair rails or guardrails is necessary because the other options listed in proposed § 1910.28(b)(1), such as safety net systems or personal fall arrest systems, would not be appropriate at stairway landings where employees are regularly and routinely exposed to falls from the unprotected sides and edges. Stair rail or guardrail systems provide for continuous protection.

In paragraph (b)(11)(ii), OSHA is proposing that employees exposed to falls from stairs having three treads and four or more risers be protected by stair railing systems and hand rails. Included with the proposed provision is a table that sets out the type/number of stair rails and handrails required based on the stair width and configuration of the stairway. An exception to the table is that handrails must be provided on both sides of ship stairs and alternating-tread type stairs. The proposed requirements are essentially the same as existing § 1910.23(d)(1).

In proposed paragraph (b)(12), OSHA establishes requirements to protect employees on scaffolds and rope descent systems from falls. As discussed earlier, OSHA is proposing to remove all the scaffold requirements from the general industry standards and require employers to comply with the construction industry standards for scaffolds. In view of that, OSHA is proposing in paragraph (b)(12)(i) to require that employers protect employees from falls from scaffolds by meeting the requirements for fall protection already set out in the construction industry standards of

subpart L, Scaffolds (29 CFR 1926). In general, those requirements provide for fall protection whenever employees are exposed to falls of 10 feet (3 m) or more above lower levels. The existing requirements in subpart D already set the duty to have fall protection from scaffolds at or above 10 feet (3 m) from grade, so effectively there is no change.

In proposed paragraph (b)(12)(ii), OSHA requires that employees using a rope descent system be protected from falling 4 feet (1.2 m) or more to lower levels by a personal fall arrest system meeting the requirements in proposed § 1910.140 of subpart I of this part. OSHA notes that paragraph (c)(3) of proposed § 1910.140 requires that ropes used for fall protection be separate from ropes used to suspend the rope descent system. The principle of using independent fall protection systems is also reflected in § 1926.502(d)(15).

Proposed paragraph (b)(13) is a “catch all” provision applicable to walking-working surfaces not otherwise addressed and is intended to ensure that § 1910.28 covers all fall hazards in general industry. It sets forth clearly that *all* employees exposed to falls of 4 feet (1.2 m) or more to lower levels must be protected by a guardrail system, safety net system, personal fall arrest system, or travel restraint system, except where otherwise provided by proposed § 1910.28 or by fall protection provisions in other subparts of part 1910. This provision is intended to facilitate compliance for employers who do not fit any of the specific categories set by proposed § 1910.28. OSHA used this same approach in its fall protection requirements for the construction industry at § 1926.501(b)(15). The proposed new language expresses the current enforcement practice of the Agency, making it clear that employers must address all fall hazards in the workplace.

Proposed paragraph (b)(14) addresses fall protection for floor holes such as stairway floor holes and ladderways, and is consistent with existing requirements found in § 1910.23(a). Accordingly, as with existing § 1910.23(a) (and ANSI A1264.1–2007, Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Roof Openings; Stairs and Guardrails Systems), some, but not all, of the provisions in this proposed paragraph require toeboards when using fixed or removable guardrail systems. OSHA requests comment on whether toeboards should be required as a part of the guardrail systems used for all floor holes regulated under this proposed paragraph. If possible, the comments

should provide information regarding the need for such a requirement, current industry practice, the effectiveness of toeboards in these situations, and the cost associated with adding this requirement to provisions of this paragraph not proposing to use toeboards.

Proposed paragraph (b)(14)(i) requires stairway floor holes to be guarded by a guardrail system. The railing must be provided on all exposed sides except at the entrance to the stairway. For infrequently used stairways where traffic across the hole prevents the use of a fixed guardrail system (as when located in an aisle), the employer has an option to use a guard that consists of a hinged floor-hole cover of standard strength and construction and a removable guardrail system on all exposed sides except at the entrance to the stairway.

Proposed paragraph (b)(14)(i) differs slightly from existing § 1910.23(a) in that it clarifies that use of a hinged floor-hole cover is an alternative to using fixed guardrail systems, which is only implied in existing § 1910.23(a). The proposed provision also defines the term “infrequently” in a manner that is consistent with proposed § 1910.265, which defines the term “routinely” as “on a daily basis.” OSHA believes the proposed definition will provide employers with helpful information about when use of a hinged floor-hole cover may be appropriate. With regard to the option to use a hinged floor-opening cover, OSHA requests information and comment on the use of automatically rising railings that come into position with the opening of a load-bearing cover on some infrequently used stairways as specified by the explanatory paragraph E3.1 of ANSI/ASSE A1264.1–2007, Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Roof Openings; Stairs and Guardrails Systems. The comments should provide, if possible, information regarding the availability of such guardrail systems, the prevalence of their use, the cost of the systems (including installation), and the protection such systems afford employees compared to fixed systems.

Proposed paragraph (b)(14)(ii) requires that ladderway floor holes or platforms be guarded by a guardrail system with toeboards on all exposed sides, except at the entrance opening, with passage through the railing provided by a swinging gate or offset so that an employee cannot walk directly into the hole.

Proposed paragraph (b)(14)(iii) requires that hatchway and chute-floor



holes be guarded using one of three options. The first option, specified in proposed (b)(14)(iii)(A), provides for hinged floor-hole covers of standard strength and construction and equipped with permanently attached guardrails that only leave one exposed side. When the hole is not in use, the cover must be closed, or the exposed side must be guarded by a removable guardrail system with top and mid rails. The second option, found in proposed paragraph (b)(14)(iii)(B), specifies a removable guardrail system with toeboards on not more than two sides of the hole and a fixed guardrail with toeboards on all other exposed sides. The removable guardrail system must remain in place when the hole is not in use. The third option, found in proposed paragraph (b)(14)(iii)(C), provides that, when operating conditions require feeding material through a hatchway or chute hole, employees be protected from falling through the hole by a guardrail system or a travel-restraint system meeting the applicable requirements of 29 CFR part 1910, subpart I.

OSHA requests comment on whether there are any other specific surfaces, operations, or work activities (e.g., satellite dish realignment, chimney cleaning, and sky light maintenance) not addressed here in proposed paragraph (b) that should be treated separately. For each surface, operation, or activity, please provide the types of fall protection that OSHA should permit and provide the reasons why the surface, operation, or activity should be treated separately.

In paragraph (c) of § 1910.28, OSHA proposes to require employers to protect employees from injury from falling objects both by ensuring the use of head protection, and by complying with one of the following provisions: (1) Using toeboards, screens, or guardrail systems; (2) erecting a canopy structure over the potential fall area and keeping potential falling objects far enough from the edge of the higher level so those objects are unlikely to fall, even if they are accidentally displaced; or (3) barricading the area into which objects could fall, prohibiting employees from entering the barricaded area, and keeping objects far enough away from the edge of a higher level so those objects are unlikely to fall even if they are accidentally displaced. The proposed requirements, patterned after OSHA's construction industry standards in § 1926.501(c), clarify the intent of the existing general industry requirements in § 1910.23(b)(5) and (c)(1) pertaining to falling object hazards.

#### Section 1910.29 Fall Protection Systems Criteria and Practices

This section of the proposal provides the requirements for fall protection systems required by proposed § 1910.28 and by other subparts in part 1910 where criteria and practices are not specifically required. However, proposed § 1910.29 does not apply where another standard in part 1910 already specifies the criteria for a required fall protection system. For example, § 1910.269(g) sets a duty to use fall protection and also specifies the criteria for some of the required systems.

As explained in proposed § 1910.28, Duty to have fall protection, employers who are required by that section to provide fall protection must choose a fall protection measure from the options provided for the particular activity or operation. Then the employer must ensure that the chosen system or practice meets the criteria established in proposed § 1910.29. Additionally, as required by proposed § 1910.30 and § 1910.132(f), employees must be trained in how to use the system, including, where applicable, the installation and maintenance of the fall protection system.

The requirements proposed here, like the requirements proposed in § 1910.28, are patterned after the requirements in OSHA's construction industry standards. OSHA believes that this approach will bring consistency to its fall protection standards and make it easier for employers to comply, especially employers who perform work covered by both the construction and general industry standards. The criteria for *personal* fall protection systems are located at newly proposed § 1910.140 of subpart I, Personal Protective Equipment, which is being published as part of this proposal.

#### Paragraph (a)—General Requirements.

Proposed paragraph (a) sets general requirements applicable to all fall protection systems covered by part 1910. In paragraph (a)(1), OSHA proposes that all fall protection systems required throughout part 1910 conform to the requirements of this section or, where personal fall protection systems are used, to subpart I of this part. In proposed paragraph (a)(2), OSHA requires that employers provide and install all fall protection systems required by this subpart and comply with all other pertinent requirements of this subpart (including training) before any employee begins work that necessitates the use of fall protection. OSHA notes that under existing

§ 1910.132(h), with few exceptions (such as non-specialty safety-toe protective footwear), personal protective equipment, including fall protection equipment, must be provided by the employer at no cost to the employee.

OSHA's intent is that fall protection systems be installed, permanently where possible, so that the systems are in place and available for use whenever there is a potential exposure to fall hazards. Because most general industry employers are at fixed sites, OSHA envisions that employers will take a proactive approach to managing fall hazards and will want to have fall protection systems in place at all times. That is, OSHA believes employers will anticipate the need for employees to walk or work on surfaces where a potential fall hazard exists and install a permanent fall protection system (e.g., guardrail system) or attachment (tie-off) point so that fall protection is readily available when needed. OSHA believes such planning is part of the standard operating procedures for many employers as they plan for overall safety at the workplace. Planning eliminates the need to use a less protective measure, like a safe work practice, when a more conventional method such as a guardrail system, restraint system, or personal fall arrest system would be more appropriate. OSHA, however, recognizes that there may be some, limited situations where the use of less protective, but nonetheless effective, measures may be warranted; for example, when the work to be performed is of a short term or temporary nature. To illustrate, OSHA does not envision that employers will put a permanent guardrail system around the perimeter of an entire roof when work on the roof is non-routine. When the work is non-routine, they may erect a permanent guardrail system on one small area of the roof, or, most likely, establish a designated area meeting the criteria in proposed paragraph (d).

#### Paragraph (b)—Guardrail Systems.

In paragraph (b), OSHA proposes that all guardrail systems (except those used on scaffolds which must comply with applicable part 1926 requirements) comply with the criteria set forth in proposed paragraphs (b)(1) to (b)(15) of this section. The 15 proposed requirements are essentially the same as the existing requirements in subpart D, and they are nearly identical to the construction industry requirements for guardrail systems found in § 1926.502(b). OSHA notes that the preamble to the final rule establishing § 1926.502 (59 FR 40733) contains

explanatory material for each of the provisions proposed for paragraph (b) and may provide additional information to assist employers in complying with the proposed rules.

Existing subpart D refers to both “standard railings” and “guardrails.” In this proposal, the term “standard railings” will not be used. OSHA believes that the proposed revisions to the guardrail requirements are easier to understand, reflect current work practices, and ensure consistency among OSHA rules applicable to guardrails.

Proposed paragraph (b)(1) requires that the top edge of guardrail systems be 42 inches (107 cm), plus or minus 3 inches (8 cm), above the walking-working surface.<sup>2</sup> It also states that, when conditions warrant, the top edge of the guardrail system may exceed 45 inches (114 cm) provided all other conditions of proposed paragraph (b) have been met to protect employees from falling through openings in the guardrail system. The proposed provision is essentially the same as the existing requirement in § 1910.23(e)(1), except that the existing requirement does not specifically allow for exceeding the 45-inch (114 cm) top height requirement. The new language is added because OSHA has already adopted this approach in its construction industry standards at § 1926.502(b)(1). In the preamble to the final rule for the construction industry standard OSHA noted that it was allowing employers to exceed the 45-inch (114 cm) height requirement because it was aware that there will be situations where work conditions necessitate erecting the guardrail so the top edge height is greater than 45 inches (114 cm). OSHA believes such conditions may also exist in general industry; if so, exceeding the 42-inch (107 cm) height requirement would not impact employee safety. For that reason,

<sup>2</sup> OSHA notes that the two previous proposals on walking-working surfaces included a “grandfather provision” permitting a guardrail height of 36 inches, rather than the proposed 42 inches, for guardrails installed within 60 days of the effective date of the final rule. (See proposed § 1910.28(b)(3), 55 FR 13360 (April 10, 1990) and 68 FR 23528 (May 2, 2003).) The 36-inch grandfather provision is not included in this proposal, nor does OSHA consider it to be equally safe to the “42 inches nominal” height currently required under existing § 1910.23(e). Therefore, to the extent that any previous OSHA letters of interpretation characterized a 36-inch guardrail height as a de minimis violation because of the grandfather provision in the two previous proposals, those interpretations are hereby superseded. (See, e.g., 08/27/2008 Letter to Bryan Cobb and 03/08/1995 Memorandum from John Miles to Byron Chadwick.)

OSHA is proposing the revised language.

OSHA is considering a new provision that would allow the use of barriers as the functional equivalent of guardrails. This provision would permit barriers, such as parapets, to be as low as 30 inches (76 cm) in height, provided the sum of the depth of the top of the barrier and the height of the top edge of the barrier is at least 48 inches (1.2 m). For example, at the minimum height of 30 inches, an 18-inch width would be required. The Agency requests comment regarding the technological feasibility of this proposed provision requiring other means of fall protection (e.g., travel restraint systems) in these applications. Please include supporting rationale, as well as information on the costs and benefits of such a provision.

Proposed paragraph (b)(2) requires midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members to 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 to keep employees from falling through the opening. The proposed provision is essentially the same as the existing requirements in § 1910.23(e)(1) and (e)(3)(v)(c), and in the construction industry standard at § 1926.502(b)(2).

In proposed paragraphs (b)(2)(i) through (iv) OSHA establishes requirements for midrails, screens, mesh, intermediate vertical members, and other structural members. Proposed paragraph (b)(2)(i) specifies that when midrails are used to comply with proposed paragraph (b)(2), they must be installed midway between the top edge of the guardrail system and the walking-working level. Proposed paragraphs (b)(2)(ii), (iii), and (iv) address the proper placement of screens, mesh, intermediate vertical members, and other structural members when they are used in lieu of midrails in the guardrail system.

Proposed paragraph (b)(3) requires guardrail systems to be capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied within 2 inches (5 cm) of the top edge, in any outward or downward direction at any point along the top edge. Proposed paragraph (b)(4) requires that when the 200-pound load is applied in a downward direction, the top edge of the guardrail must not deflect to a height less than 39 inches (99 cm) above the walking-working level. Deflection is specified for the top edge because that is the point an employee is most likely to fall against and it must be high enough, at all times, to prevent the

employee from falling over the top rail. The proposed provisions are essentially the same as the existing requirements in § 1910.23(e)(3)(v)(b), and in the construction industry standard at § 1926.502(b)(3) and (b)(4).

Proposed paragraph (b)(5) requires midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members to be capable of withstanding, without failure, a force of at least 150 pounds (667 N) applied in any downward or outward direction at any point along the midrail or other member. The existing standard does not contain a strength requirement for midrails and this omission has caused confusion among employers. The proposed provision is nearly identical to OSHA’s construction industry standard at § 1926.502(b)(5). In that rule, OSHA explained that it chose the 150 pound strength test because it had determined that midrails need not be as strong as top rails to provide appropriate protection. OSHA also determined that a limit on deflection was not needed for midrails and other members.

Proposed paragraph (b)(6) requires guardrail systems to be surfaced to prevent injury to an employee from punctures or lacerations and to prevent snagging of clothing. The provision is based on existing § 1910.23(e)(1) and (e)(3)(v)(a) and OSHA’s construction industry standard at § 1926.502(b)(6).

Proposed paragraph (b)(7) requires employers to ensure that the ends of all top rails and midrails do not overhang the terminal posts, except where such overhang does not constitute a projection hazard. The proposed provision is essentially the same as existing § 1910.23(e)(1) and OSHA’s construction industry standard at § 1926.502(b)(7).

Proposed paragraph (b)(8) prohibits steel banding and plastic banding from being used as top rails or midrails. While this banding can often withstand a 200-pound load, it can tear easily if twisted. In addition, banding often has sharp edges which can cut a hand if seized. This proposed requirement is similar to a requirement found in OSHA’s construction industry standard at § 1926.502(b)(8).

Proposed paragraph (b)(9) requires top rails and midrails of guardrail systems to have at least a 0.25-inch (0.6 cm) diameter or thickness. OSHA believes that the minimum thickness requirement is needed to prevent the use of rope that could cause cuts or lacerations. This requirement is based on the construction industry standard at § 1926.502(b)(9). The proposed requirement supplements the strength

requirement proposed in (b)(3), (4), and (5) of this section. The purpose of this requirement is to assure that top rails and midrails made of high strength materials are not so thin that a worker grabbing a rail is injured by cuts or lacerations because of the small size of the rail.

Proposed paragraph (b)(10) requires that when guardrail systems are used at hoisting areas, a chain gate or removable guardrail section must be placed across the access opening between guardrail sections when hoisting operations are not taking place. The proposed requirement simply clarifies the requirements of existing § 1910.23(a)(3)(ii) and (b)(1)(i). It is identical to OSHA's construction industry standard at § 1926.502(b)(10).

Proposed paragraph (b)(11) requires that when guardrail systems are used at holes, they must be erected on all unprotected sides or edges of the hole. This requirement is identical to OSHA's construction industry standard at § 1926.502(b)(11).

Proposed paragraph (b)(12) requires that when guardrail systems are used around floor holes used for the passage of materials, the hole must have not more than two sides provided with removable guardrail sections to allow for the passage of materials. When the hole is not in use, it must either be closed over with a cover, or a guardrail system must be provided along all unprotected sides or edges. This requirement is based on existing § 1910.23(a)(8)(ii) and is the same as the construction industry standard at § 1926.502(b)(12). It is intended to prevent employees from falling into the hole.

Proposed paragraph (b)(13) requires that when guardrail systems are used around holes used as points of access (such as ladderway openings), they must either be provided with a gate, or be offset so that a person cannot walk directly into the hole. This requirement is essentially the same as the existing standard at § 1910.23(a)(2), the construction industry standard at § 1926.502(b)(13), and the national consensus standard, ANSI A1264.1–2007, American National Standard—Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Roof Openings; Stairs and Guardrail Systems.

Proposed paragraph (b)(14) requires that guardrail systems used on ramps and runways be erected along *each* unprotected side or edge. This requirement is essentially the same as the construction industry standard at

§ 1926.502(b)(14) for ramps and runways.

Proposed paragraph (b)(15) requires manila, plastic, or synthetic rope being used for top rails or midrails to be inspected as frequently as necessary to ensure that it continues to meet the strength requirements of proposed paragraph (b)(3) of this section. OSHA believes frequent inspection is necessary for ropes made of these materials to ensure that they do not deteriorate and lose strength. This requirement is the same as OSHA's construction industry standard at § 1926.502(b)(15).

Proposed paragraph (b)(16) requires guardrail systems used on scaffolds to meet the applicable requirements set forth in part 1926 of this chapter. As discussed above in proposed § 1910.27, Scaffolds and rope descent systems, OSHA is proposing to remove the general industry requirements for scaffolds, and instead require compliance with the construction industry requirements for scaffolds. The construction industry requirements specifying the criteria for guardrails used on scaffolds differ from the requirements proposed for guardrails used on other surfaces. Therefore, OSHA proposes to add new paragraph (b)(16) for consistency, and to promote compliance and eliminate confusion since many employers who use scaffolds perform both general industry and construction work.

#### Paragraph (c)—Safety Net Systems

Proposed paragraph (c) requires safety net systems used in general industry to meet the criteria and use requirements for safety net systems already promulgated for the construction industry at § 1926.502(c). There are no requirements in existing subpart D or elsewhere in part 1910 (the general industry standards) that address safety net systems. OSHA believes, however, that there are situations, especially in maintenance work, where, due to the unsuitability of guardrail systems or personal fall protection systems, the use of a safety net system is an appropriate means of employee protection. OSHA believes that safety net systems used in general industry should be subject to the same requirements already promulgated for the construction industry. Those requirements were based on the national consensus standard for safety nets (*i.e.*, ANSI A10.11–1989). Rather than repeating all of those requirements here, OSHA proposes to simply require that where safety net systems are used, they meet the requirement of § 1926.502(c). A complete discussion of each of the requirements and an explanation of

their meaning can be found in the preamble to the construction fall protection rule of August 9, 1994, at 59 FR 40699 to 40702.

OSHA requests comment on whether requiring compliance with the construction rule is appropriate or whether OSHA should repeat each of those requirements in the general industry standard. OSHA believes safety net systems will not be used in general industry as often as other fall protection systems and, therefore, it would not be an inconvenience to require employers to follow the construction industry rules in part 1926 without repeating them here. This is the same approach OSHA is proposing for scaffolds used in general industry; *see* the discussion at § 1910.27 above. OSHA notes that the requirements for safety net systems codified in part 1926 are essentially the same as those prescribed in the most current version of ANSI A10.11–1989 (R1998), American National Standard for Construction and Demolition Operations—Personal and Debris Nets.

#### Paragraph (d)—Designated Areas

OSHA is proposing new requirements in paragraph (d) regarding the use of “designated areas.” OSHA is proposing to allow the use of designated areas, in some instances, as an alternative to providing conventional fall protection. A designated area, defined in proposed § 1910.21, is a section of a walking-working surface around which a perimeter line has been erected so that employees within the area are warned, when they *see* or contact the line, that they are approaching a fall hazard. As required by proposed § 1910.30(a)(2)(iii), employees working in designated areas must be trained in how to work safely inside those areas.

Designated areas may only be used for temporary, relatively infrequent work; for instance, when employees are sent to the center of the roof of a structure to perform maintenance on machinery, such as air conditioning equipment. The Agency anticipates that setting up and maintaining a warning line system, as specified in this proposed paragraph, around a designated area will ensure that affected employees can perform their work free from fall hazards. The construction industry standard, § 1926.501(b)(10), provides for use of a warning line system (in conjunction with other protection) when employees are performing roofing work on low-sloped roofs, and §§ 1926.501(b)(9) and 1926.502(k), permit the use of “controlled access zones” in other situations. To ensure OSHA standards regulate comparable work situations consistently, the Agency is basing

proposed paragraph (d) on the construction industry standards for warning line systems. The Agency requests comments and supporting rationale on the appropriateness of using the construction industry requirements for controlled access zones (found at § 1926.502(g)) in lieu of its use of the construction industry requirements for warning lines. Among other differences, warning line systems require the line between stanchions to have a 500-pound tensile strength, whereas the controlled access zone only requires a 200-pound tensile strength.

Proposed paragraph (d)(1) sets conditions for the use of designated areas, requiring that employers ensure that employees remain in the designated area during work operations, that the work be of a temporary nature, that the slope of the surface be 10 degrees or less from the horizontal, and that the designated area be surrounded by a rope, wire, or chain supported by stanchions meeting the criteria in proposed paragraphs (d)(2) through (d)(4). The 10 degree slope limitation reflects OSHA's belief that the designated area approach is only appropriate for surfaces that have a slight slope (pitch) or unevenness. In particular, OSHA is concerned that a warning line system would not work on a surface that has a slope of more than 10 degrees because visibility and the employee's ability to stop when the warning line is contacted could not be ensured.

Proposed paragraph (d)(2), which is consistent with §§ 1926.502(f)(2) and 1926.502(g)(3), provides criteria for the materials used to establish designated areas. Proposed paragraph (d)(2)(i) requires that stanchions with rope, wire, or chain attached be capable of resisting, without tipping over, a force of at least 16 pounds (71 N) applied horizontally against the stanchion at a height of 30 inches (76 cm) above the working surface, perpendicular to the designated area line, and in the direction of the exposed edge. OSHA believes that the ability to resist a force of 16 pounds (71 N) ensures that an employee is adequately warned that the edge of the designated area has been reached.

Proposed paragraph (d)(2)(ii) requires that the rope, wire, or chain used to demarcate designated areas have a minimum breaking or tensile strength of 500 pounds (2.2 kN). In addition, after being attached to the stanchions, the line must support, without breaking, the 16 pound (71 N) force applied to the stanchion. This performance requirement assures that the line is durable and capable of functioning as intended, regardless of how far apart the

stanchions are placed. In addition, the minimum tensile strength of 500 pounds (2.2 kN) assures that the line is made of material more substantial than string, such as wire, chain, rope, or heavy cord. OSHA believes that this minimum tensile strength is not an unreasonable burden on employers; however, comments are requested on the appropriateness of this requirement.

Proposed paragraph (d)(2)(iii) requires that the line be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before a stanchion tips over. To maximize the warning capabilities of the line demarcating the designated area, the proposal limits the amount of potential slack in the system. Slack in the line decreases its warning properties.

Proposed paragraph (d)(2)(iv), which is also consistent with §§ 1926.502(f)(2) and 1926.502(g)(3), requires that the height of the designated area line be no less than 34 inches (86 cm) nor more than 39 inches (99 cm) from the work surface. This height is low enough to warn a short employee while the worker is stooped over, and at the same time, it is high enough not to be a tripping hazard for taller workers.

Proposed paragraph (d)(2)(v) requires the perimeter of the designated area to be readily visible from a distance up to 25 feet (7.6 m) away, or at the maximum distance a worker may be positioned away from the line, whichever is less. This criterion is provided so that the lines will be readily apparent and can effectively warn employees to stay away from fall hazards. OSHA does not believe that flagging, as required in §§ 1926.502(f)(2)(i) and 1926.502(g)(3)(i), is necessary for a designated area. In general industry, work is usually performed at a fixed location, while in construction there is a greater need for aids to visibility (such as flagging) because the work location, including the fall hazard, shifts from one part of the roof to another.

Proposed paragraph (d)(3) sets forth how the designated area is to be established. Proposed paragraph (d)(3)(i) requires that stanchions be erected as close around the work area as permitted by the work task. This criterion is included to make the stanchions as obvious as possible without interfering with the work.

Proposed paragraph (d)(3)(ii), which is consistent with §§ 1926.502(f)(1)(i) and 1926.502(g)(1), requires that the perimeter of the designated area be erected at least 6 feet (1.8 m) from the exposed edge of the fall hazard. OSHA believes that the 6-foot (1.8 m) distance

is sufficient to allow an employee to stop moving toward the fall hazard after realizing that the perimeter line has been contacted. This distance would also provide an adequate safety zone should an employee trip and fall at the edge of the designated area.

Proposed paragraph (d)(3)(iii), which is consistent with § 1926.502(f)(1)(ii), requires that when mobile mechanical equipment is being used, the line be erected not less than 6 feet (1.8 m) from the unprotected side or edge which is parallel to the direction of mechanical equipment operation, and not less than 10 feet (3 m) from the unprotected side or edge perpendicular to the direction of mechanical equipment operation. The proposed criterion provides additional distance for the employee to stop moving towards the hazard, taking into account the extra momentum of the equipment being used.

Proposed paragraph (d)(4) requires that access to the designated area be made by a clear path formed by two warning lines attached to stanchions that meet the strength, height, and visibility requirements of proposed (d)(2) above. This proposed provision was adopted from the requirements in the construction industry standard at § 1926.502(f)(1)(iii). That standard requires access paths when warning line systems are used during roofing work performed on low sloped roofs. As discussed earlier, the concept of "designated areas" is based on the construction industry requirements for warning line systems and controlled access zones. OSHA requests comment on whether an access path is reasonably necessary to protect employees in general industry as they travel to and from designated areas. Specifically, should OSHA remove, keep, or alter this provision in the final rule?

#### Paragraph (e)—Covers

Proposed paragraph (e) sets requirements for covers used to protect employees from falling into holes in floors, roofs, roadways, and other walking-working surfaces. Except for proposed (e)(4), the proposed requirements are a consolidation and revision of existing requirements related to covers found in §§ 1910.23(a)(7), (8), and (9) and 1910.23(e)(7) and (8). They are consistent with the requirements for covers found in the construction industry standards at § 1926.502(i). The proposed requirements are written in performance language and replace the specification language of the existing standard.

Proposed paragraph (e)(1) requires that covers located in roadways and vehicular aisles be capable of

supporting, without failure, at least twice the maximum axle load of the largest vehicle expected to cross over the cover. The proposed requirement is a revision of the existing requirements in § 1910.23(e)(7)(i) and (e)(7)(ii) and has been rewritten in favor of the performance-oriented approach used in the construction industry standard at § 1926.502(i)(1).

Proposed paragraph (e)(2) requires that all other covers must be capable of supporting at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time. OSHA believes that compliance with the proposed paragraph would adequately protect employees who traverse covers. The provision is identical to the construction industry requirement at § 1926.502(i)(2). The Agency requests comment on whether the distinction made between (e)(1) and (e)(2) is useful, or if proposed paragraph (e)(1) should be removed because of the apparent redundancy between it and paragraph (e)(2).

Proposed paragraph (e)(3) requires that covers be secured when installed so as to prevent accidental displacement, e.g., by wind, equipment, or employees. This provision clarifies the requirement in existing § 1910.23(a)(9) that floor opening covers be held firmly in place and ensure that employers anticipate and take precautions against all possible causes of cover displacement. The proposed requirement is nearly identical to the construction industry standard at § 1926.502(i)(3).

Proposed paragraph (e)(4) requires that covers be color-coded or marked with the word "HOLE" or "COVER" to provide warning of the hazard. An exception to proposed paragraph (e)(4) states that the provision does not apply to cast iron manhole covers or steel grates such as those used on streets or roadways. This is a new requirement based on the construction industry standard at § 1926.502(i)(4). OSHA is proposing to add the requirement to the general industry standard for the same reason it was added to the construction industry standard. Many commenters to the construction industry standard noted that covers should be color-coded or marked because alerting employees that the cover is over a hole could prevent them from accidentally walking into the hole. OSHA requests comment on the need to include proposed (e)(4) in the final rule, and also for information on the extent to which employers are already marking or color-coding covers.

#### Paragraph (f)—Handrail and Stair Rail Systems

Proposed paragraph (f) would set requirements for handrail and stair rail systems to protect employees from falling. Proposed paragraph (f)(1) establishes height requirements for handrails and stair rail systems. Proposed paragraph (f)(1)(i) requires that the height of handrails be between 30 inches (76 cm) and 37 inches (94 cm), from the top of the handrail to the surface of the tread in line with the face of the riser at the forward edge of the tread. Existing § 1910.23(e)(5)(ii) requires that handrails be between 30 and 34 inches (76 and 86 cm) in height. The proposed requirement is consistent with the construction industry standard at § 1926.1052(c)(6). OSHA intends that the proposed change will not require any change to handrails that meet the existing standard.

Proposed paragraph (f)(1)(ii) is a revision of existing § 1910.23(e)(2) and requires the height of stair rails installed 90 days after the effective date of the final rule to be not less than 36 inches (91 cm). The existing standard sets a limit between 30 (76 cm) and 34 inches (86 cm), and the proposed rule would continue to allow stair rails installed before the new requirement takes effect to be at least 30 inches (76 cm) from the upper surface of the tread. The proposed paragraph raises the minimum height of new stair rails 6 inches (15 cm) and removes the existing maximum height requirement. The proposed requirement is consistent with the construction industry requirement at § 1926.1052(c)(3). Like the construction rule, it is based on a recommendation in a study conducted by the University of Michigan (OSHA-S041-2006-0666-0004). As discussed in the preamble to the construction industry final rule (55 FR 47668), that study showed that the minimum height for stair railings should be 42 inches (107 cm) and suggests that even 42 inches may be too low. Additionally, the applicable national consensus standard, ANSI A1264.1-2007, prescribes that the minimum height of stair rails be 34 inches (86 cm) and the upper height at 42 inches (107 cm). OSHA believes that setting the minimum height at 36 inches (91 cm) will afford a reasonable level of safety to employees. However, OSHA requests comment on whether it should raise the minimum height to 42 inches (107 cm) to be within the recommended range of the University of Michigan study.

OSHA also requests comment on whether it should set a maximum height for stair rail systems. OSHA is

proposing to delete the current upper height limit of 34 inches (86 cm) because an upper height limit serves no purpose. The purpose of the stair rail system is to prevent employees from falling over the edge of open-sided stairways. Eliminating the upper limit would allow employers flexibility to install safer systems.

Proposed paragraph (f)(1)(iii) is a new provision which permits a stair rail to serve as a handrail when the height of the top edge is not more than 37 inches (94 cm) nor less than 36 inches (91 cm) when measured at the forward edge of the tread surface. OSHA believes a single system may perform the function of both a stair rail and handrail provided the rail is at the appropriate height. The proposed requirement is consistent with a similar requirement in the construction industry standard at § 1926.1052(c)(7) and provides greater flexibility without reducing safety.

Proposed paragraph (f)(2) continues the existing requirement in § 1910.23(e)(6) that there be a minimum clearance of 3 inches (8 cm) between a handrail and any obstructions. The existing rule is consistent with the construction industry requirement at § 1926.1052(c)(11). In the earlier (1990) rulemaking, OSHA proposed that the requirement be revised to require 1.5 inches (4 cm) of clearance. OSHA's basis for the 1990 proposal was to be consistent with many local building codes; the applicable national consensus standard at the time, ANSI A12.1-1973; the draft revision to it, ANSI A1264.1; and ANSI A117.1-1986, Providing Accessibility and Usability for Physically Handicapped People (Ref. 52 in Docket S-041). However, the 2007 revision to the ANSI A1264.1 standard sets 2.25 inches (6 cm) rather than 1.5 inches (4 cm) as the appropriate clearance; no reason is provided. OSHA does not believe that  $\frac{3}{4}$  inch (2 cm) represents a significant difference and is of the opinion that consistency between the construction and general industry provisions will eliminate potential confusion and ease compliance. Nonetheless, OSHA requests comment on whether it should revise this provision to set the minimum clearance at 2.25-inch (6 cm) as does the national consensus standard.

In paragraph (f)(3), OSHA proposes a minor revision to existing § 1910.23(e)(1) for stair rails and § 1910.23(e)(5)(i) for handrails. The proposed provision, like the existing provisions, would require the rails to be smooth-surfaced to prevent injury from puncture, laceration, or snagging hazards. The revised provision is written in clearer language. A similar

provision has been proposed in § 1910.29(b)(6) for the top rail of guardrail systems. The proposed requirement is consistent with the construction industry standard at § 1926.1052(c)(8).

Proposed paragraph (f)(4), based on existing § 1910.23(e), requires that the openings in stair rail systems be a maximum of 19 inches (48 cm) in their least dimension. The proposed requirement is consistent with the requirement for openings in guardrail systems in proposed paragraph (b)(2)(iii) of this section, which in turn is based on a study by the former National Bureau of Standards (now known as the National Institute of Standards and Technology) (Ref. 11 to Docket S-041). It is also consistent with the construction industry standards at § 1926.1052(c)(4) for openings in stair rails and with § 1926.502(b)(2)(iii) and (iv) pertaining to the size of openings in construction guardrail systems.

Proposed paragraph (f)(5), which is based on existing § 1910.23(e)(5)(i), requires handrails to provide a firm handhold for employees. The proposed provision is consistent with the construction industry standard at § 1926.1052(c)(9).

Proposed paragraph (f)(6), which is also based on existing § 1910.23(e)(5)(i), requires stair rail systems to be designed and constructed so that their ends do not present a projection hazard into which employees may inadvertently walk. The proposed provision is consistent with the construction industry standard at § 1926.1052(c)(10).

Proposed paragraph (f)(7) requires handrails and the top rails of stair rail systems to be capable of withstanding, without permanent deformation or a loss of support, a force of at least 200 pounds (890 N) applied within two inches (5 cm) of the top edge, in any downward or outward direction, at any point along the top edge. This is a minor revision of existing § 1910.23(e)(3)(iv) and (e)(5)(iv), and clarifies the design criteria for handrails and stair rails. It is consistent with the construction industry standards for stair rail systems in § 1926.1052(c)(5).

#### Paragraph (g)—Cages, Wells, and Platforms Used With Fixed Ladders

Proposed paragraph (g) establishes criteria for cages, wells, and platforms used with fixed ladders. The proposed requirements are a revision of the existing criteria located at § 1910.27(d).

Proposed paragraph (g)(1) requires that where cages and wells are installed on fixed ladders, they must be designed to permit easy access to or egress from the ladders that they enclose. The cages

and wells must be continuous throughout the length of the fixed ladder except for access, egress, and other transfer points. Cages and wells must be designed and constructed to contain employees in the event of a fall and to direct them to a lower landing. The current standards, in § 1910.27(d), provide detailed specifications for the construction of cages and wells used on fixed ladders. OSHA has eliminated these specifications in this proposal in favor of performance requirements that address the necessary characteristics for providing proper cages and wells. OSHA believes that the existing specifications are too design restrictive, and that the use of performance language will allow employers the flexibility to install cages and wells that fit a particular situation, without compromising employee protection.

Proposed paragraph (g)(2) requires that the landing platforms on fixed ladders have a horizontal surface of at least 24 inches by 30 inches (61 cm by 76 cm). The criteria for the platform size in the proposed requirement is the same as existing § 1910.27(d)(2)(ii) and is also found in ANSI A14.3-2002. Platforms used on fixed ladders, like other platforms, must conform to the requirements set forth in proposed § 1910.22(b). That is, platforms must be strong enough to support the loads imposed on them.

#### Paragraph (h)—Qualified Climbers

Proposed paragraph (h) sets forth the criteria that employees must meet to be considered qualified climbers. The option to use a qualified climber in lieu of providing positive fall protection is *only* permitted in certain outdoor advertising operations, as established in proposed § 1910.28(b)(10). As provided in proposed § 1910.28(b)(10), upon reaching the platform, an employee must use fall protection. The criteria and performance requirements proposed here are based on the criteria requirements OSHA has enforced in the outdoor advertising industry as part of a variance originally granted to Gannett Outdoor Advertising on March 1, 1991 (56 FR 8801). The policy expressed in that variance was later extended to all employers engaged in outdoor advertising under a compliance directive (*i.e.*, STD 01-01-014) (Ex. 4).

Proposed paragraph (h)(1) requires that a qualified climber be physically capable of performing the duties that may be assigned, as demonstrated through observations of actual climbing activities or by a physical examination.

Proposed paragraph (h)(2) requires that a qualified climber have successfully completed a training or

apprenticeship program that included hands-on training for the safe climbing of ladders, and that the climber be retrained as necessary to ensure the critical skills are maintained. This requirement is in addition to the training requirements in proposed § 1910.30.

Proposed paragraph (h)(3) requires the employer to ensure, through performance observations and formal classroom or on-the-job training, that the qualified climber has the skill to safely perform the climb.

Proposed paragraph (h)(4) requires that qualified climbers have climbing duties as one of their routine work activities. This is necessary to assure that they maintain climbing proficiency.

#### Paragraph (i)—Ladder Safety Systems

Proposed paragraph (i) establishes system performance and use criteria applicable to ladder safety systems. Existing subpart D, at § 1910.27(d)(5), permits the use of ladder safety systems (formerly called ladder safety devices), but does not specify criteria for them. The criteria proposed are based on the requirements for ladder safety systems in the construction industry standard for fixed ladders at §§ 1926.1053(a)(22) and (23) and the applicable national consensus standard for fixed ladders, ANSI A14.3-2002, Safety Standards for Ladders—Fixed.

Proposed paragraph (i)(1) specifies that ladder safety systems must permit the employee using the system to ascend or descend without continually having to hold, push, or pull any part of the system, leaving both hands free for climbing. The proposed requirement is consistent with ANSI A14.3 and the construction industry standard at § 1926.1053(a)(22)(ii).

Proposed paragraph (i)(2) specifies that the connection between the carrier or lifeline and the point of attachment to the body belt or harness must not exceed 9 inches (23 cm) in length. The proposed requirement is consistent with ANSI A14.3 and the construction industry standard at § 1926.1053(a)(22)(iv).

Proposed paragraph (i)(3) specifies that mountings for rigid carriers must be attached at each end of the carrier, with intermediate mountings, as necessary, spaced along the entire length of the carrier to provide the strength necessary to stop employee falls. The proposed requirement is consistent with ANSI A14.3 and the construction industry standard at § 1926.1053(a)(23)(i). OSHA notes that the manufacturer's recommendations should indicate the need for, and number of, intermediate mountings; for that reason, OSHA uses

the phrase “as necessary” rather than the use of more specific terminology.

Proposed paragraph (i)(4) requires mountings for flexible carriers to be attached at each end of the carrier. It further requires that cable guides utilized with a flexible carrier be installed at a minimum spacing of 25 feet (7.6 m) and a maximum spacing of 40 feet (12.2 m) along the entire length of the carrier. The proposed requirement is consistent with ANSI A14.3 and the construction industry standard at § 1926.1053(a)(23)(ii).

Proposed paragraph (i)(5) specifies that the design and installation of mountings and cable guides must not reduce the design strength of the ladder. The proposed requirement is consistent with ANSI A14.3 and the construction industry standard at 1926.1053(a)(23)(iii).

Proposed paragraph (i)(6) sets the performance criteria for ladder safety systems, requiring that ladder safety systems and their support systems be capable of withstanding, without failure, a drop test consisting of an 18-inch (46 cm) drop of a 500-pound (227 kg) weight. The proposed requirement is consistent with ANSI A14.3 and the construction industry standard at § 1926.1053(a)(22)(i).

OSHA notes that where personal fall protection systems are used to protect employees from falls from ladders, those systems must meet the requirements of subpart I of this part.

#### Paragraph (j)—Personal Fall Protection Systems

Proposed paragraph (j) requires that body belts, body harnesses, and other components used in personal fall arrest systems, work positioning systems, travel restraint systems, or other fall protection systems meet the applicable requirements of subpart I of this part.

#### Paragraph (k)—Protection From Falling Objects

Proposed paragraph (k) sets forth the performance criteria for toeboards, guardrails, and canopies used to provide employee protection from falling objects. Paragraph (c) of § 1910.28 requires employers to protect employees from falling objects. The proposed requirements reflect existing criteria in § 1910.23(e)(4) for toeboards and other measures used to provide this protection and include new criteria that must be met when canopies are used to provide protection. The proposed requirements are identical to those in the construction standards at 29 CFR 1926.502(j).

Proposed paragraph (k)(1) requires that where toeboards are used, they

must be erected along the edge of overhead walking-working surfaces for a distance sufficient to protect any employee working below.

Proposed paragraph (k)(2) specifies that toeboards must be a minimum of 3.5 inches (9 cm) in vertical height from their top edge to the level of the walking-working surface. Additionally, toeboards must have a clearance of not more than 0.25 inch (0.5 cm) above the walking-working surface, and the toeboards must be solid or have no opening over 1 inch (3 cm) in the greatest dimension. An exception to this requirement applies when toeboards are used around repair, service, and assembly pits. In those cases, the toeboards must be at least 2.5 inches (6 cm) high. When employers can demonstrate that toeboards would prevent access to vehicles over pits, the toeboards may be omitted.

Proposed paragraph (k)(3) specifies that where tools, equipment, or materials are piled higher than the top edge of a toeboard, then paneling or screening must be erected from the walking-working surface or toeboard to the top of a guardrail system’s top rail or midrail for a distance sufficient to protect employees below.

Proposed paragraph (k)(4) specifies that toeboards must be capable of withstanding, without failure, a force of at least 50 pounds (222 N) applied in any downward or outward direction at any point along the toeboard.

Proposed paragraph (k)(5) requires that, when guardrails are used as falling object protection, openings must be small enough to prevent passage of potential falling objects that could injure workers below.

Proposed paragraph (k)(6) requires that when canopies are used, they must be strong enough to prevent collapse or penetration when struck by falling objects.

#### Paragraph (l)—Grab handles

In paragraph (l), OSHA proposes that where grab handles are used, they be at least 12 inches (30 cm) in length and be mounted to provide at least 3 inches (8 cm) of clearance from the side framing or the opening area. Grab handles must be capable of withstanding a maximum horizontal pull-out force equal to two times the intended load, or 200 pounds (890 N), whichever is greater. OSHA notes that it has proposed to require the use of grab handles in § 1910.28(b)(2), Hoist areas. The proposed requirement is essentially the same as the existing requirement in § 1910.23(e)(10). OSHA requests comment on whether it should further simplify this requirement by eliminating that portion of the

requirement that pertains to the length and the clearance space of grab handles, leaving only that portion of the proposed requirement concerned with pull-out force.

#### Section 1910.30 Training Requirements

In § 1910.30, OSHA proposes to add new requirements for employers to train, and where necessary, to retrain employees in the subject areas covered by revised subpart D. Specifically, employers will have to ensure that employees are trained to recognize fall hazards, know what do about the hazards, and how to use the equipment provided to them for protection. In addition, the new requirements call for employees to receive training about the hazards associated with certain equipment.

OSHA believes these new training requirements are necessary to ensure that employees are familiar with hazards, especially fall hazards, pertinent to the various walking-working surfaces in their workplace. Unlike OSHA’s construction industry standards, there is no “generic” training section in the general industry standards. OSHA believes that effective training is vital in preventing and reducing work-related injuries, especially those caused by falls. OSHA also believes that educating employees provides a proactive approach to injury prevention.

OSHA notes that existing § 1910.132(f) sets training requirements for employees using certain types of PPE. In proposed § 1910.140, OSHA specifies that existing § 1910.132(f) apply to PPE used for fall protection. As a result, some of the requirements in § 1910.132(f) may overlap with the training requirements in this paragraph. It is not OSHA’s intent, however, that employers provide duplicate training to meet their obligations under proposed subparts D and I.

#### Paragraph (a) Fall hazards.

Proposed paragraph (a) addresses fall hazards. Proposed paragraph (a)(1) requires the employer to provide training for each employee who uses personal fall protection equipment and those required to be trained as indicated elsewhere in this subpart. The training must enable each employee to recognize the hazards of falling and the procedures to be followed to minimize these hazards. The purpose of the training is to enable the employee to recognize fall hazards and to learn how to minimize these hazards. OSHA believes that it is important for employees to demonstrate the knowledge, skills, and ability to protect

themselves before they are exposed to a fall hazard.

The training required in proposed § 1910.30 is directed to employers whose employees use personal fall protection equipment and those who otherwise are required to be trained as specifically indicated in this subpart (e.g., employees working near unprotected sides and edges at loading docks).

Are there any other instances in this subpart where training under § 1910.30 should specifically be required? Should employees exposed to fall hazards over four feet (including those using ladders) be trained? Do employees who use portable guardrails (e.g., around floor holes or at hoist areas) need to be trained? Do employees who use portable ladders need to be trained on hazard recognition and proper use of the ladder? Do employees who use fixed ladders need to be trained in hazard recognition and proper climbing techniques? Since BLS data (<http://www.bls.gov/iif/oshcdnew.htm>) indicate falls to the same level (such as slips and trips resulting in a fall to the surface on which the employee was walking) are a significant source of injury, would additional training requirements for these hazards better protect employees? Are there circumstances where walking-working surfaces pose hazards, because of the nature of the work, which are infeasible to eliminate (e.g., a wet floor in a carwash bay) and training would help minimize the risk of slips, trips, or falls?

Proposed paragraph (a)(2) requires that each employee be trained by a qualified person, and identifies four specific areas that the training must cover, including:

- (i) The nature of fall hazards in the work area;
- (ii) The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used;
- (iii) The use and operation of guardrail systems, safety net systems, warning lines used in designated areas, and other protection; and
- (iv) The use, operation, and limitations of personal fall protection systems including proper hook-up, anchoring and tie-off techniques, methods of use, and proper methods of equipment inspection and storage as recommended by the manufacturer.

The performance-oriented approach to training proposed in paragraph (a)(2) provides flexibility for the employer in designing the training. While the proposed paragraph specifies topics that must be covered, it does not specify how the training is to be provided nor

does it specify any particular number of hours. The proposed paragraph is written to require training to be provided by a "qualified person." OSHA believes that the involvement of a qualified person who is knowledgeable in the subject area and industry hazards, in conjunction with the specific requirements of proposed paragraphs (a) and (c), provides appropriate assurance that employees will be adequately trained.

Paragraph (b) Equipment hazards.

Proposed paragraph (b) addresses training with regard to equipment regulated by proposed subpart D. Proposed paragraph (b)(1) requires employers to ensure that employees are trained in the proper care, use, and inspection of all equipment covered by this subpart before using it.

Proposed paragraph (b)(2) requires that employees be instructed in the proper placing and securing of dockboards to prevent unintentional movement. Compliance with this provision will help employers meet their obligations under proposed § 1910.26. The hazards associated with dockboards becoming dislodged are significant, and OSHA believes that proper employee training will help to reduce these hazards.

Proposed paragraph (b)(3) requires the employer to ensure that all employees who use rope descent systems are trained and retrained as necessary in the proper rigging and safe use of that equipment. Compliance with this provision will help employers meet their obligations under proposed § 1910.27 for rope descent systems. Improper use of rope descent system equipment can lead to serious injuries and fatalities. OSHA believes that training employees to use the equipment properly minimizes the risks of equipment failure and employee falls.

Paragraph (c) Retraining.

Proposed paragraph (c) requires employees to be retrained whenever the employer has reason to believe that the employee does not have the understanding and skill required by proposed paragraphs (a) and (b). Specifically, OSHA requires retraining whenever changes in the workplace or changes in the fall protection systems or equipment render previous training obsolete; or when an employee has not retained the understanding or skill required by proposed paragraphs (a) and (b) of this section. The training requirements in this section have been written to indicate clearly that employers have an ongoing responsibility to maintain employee proficiency in the use and care of fall

protection equipment, and to ensure employees are trained in safe work practices and can recognize hazards associated with certain equipment.

Paragraph (d) Training Must Be Understandable

Proposed paragraph (d) requires employers to provide information and training in a manner that is understandable to each employee. Differences in language, reading capabilities, and physical challenges may create communication issues in a workplace. It is essential that employers adapt their training methods so that all of their employees comprehend the information and training provided.

Other revisions to part 1910

The proposed changes to subparts D and I result in the need to make conforming changes to subparts F, N, and R in 1910. These changes, which are presented at the end of this proposal, are self-explanatory and do not substantially affect the requirements of these subparts.

References

- *Consumer Product Safety Commission Offers Safety Tips to Prevent Ladder Injuries, Ladder Safety Alert*; U.S. Consumer Product Safety Commission, Washington, DC 20207, undated (Web address: <http://www.cpsc.gov/CPSCPUB/PUBS/ladder.html>).
- *Injury Facts*; National Safety Council, 1121 Spring Lake Drive, Itasca, IL 60143-3201; 2005-2006 edition.
- Murphy, Patricia J. *Get a Leg Up on Ladder Safety; Family Safety & Health*, Spring 2001. Available through the National Safety Council at the following web address: <http://www.nsc.org/issues/firstaid/ladder.htm>.
- *Overview of BLS Statistics on Worker Safety and Health*, Bureau of Labor Statistics, Washington, DC (Web address: <http://www.bls.gov/bls/safety.htm>).
- *Preventing Slips, Trips, and Falls*, Professional Development Series, Participant's Guide (Kit Number 12466-0000). National Safety Council, 444 North Michigan Avenue, Chicago, Illinois 60611, 2006.
- *Portable Ladders*; Quick Card, Occupational Safety and Health Administration, Washington, DC, 2005.
- *Stairways and Ladders, A Guide to OSHA Rules*; Occupational Safety and Health Administration, Washington, DC, 2003.
- U.S. Department of Health and Human Services, Center for Disease Control and Prevention, National Institute for Occupational Safety and



Health, *Worker Deaths by Falls, A Summary of Surveillance Findings and Investigative Case Reports*, Cincinnati, Ohio 45226–1998, November 2000.

Useful Web sites providing information on safety include:

- OSHA's public page (contains many useful safety and health topics): <http://www.osha.gov/>.

- National Institute of Occupational Safety and Health: <http://www.cdc.gov/niosh/>.

- National Safety Council: <http://www.nsc.org/>.

- U.S. Consumer Product Safety Commission: <http://www.cpsc.gov/>.

The following industry codes and standards were used in the development of this proposed rule:

*Industry codes and standards for ladders:*

- ANSI<sup>3</sup> A14.1–2000, American National Standard for Ladders—Wood Safety Requirements.

- ANSI A14.2–2000, American National Standard for Ladders—Portable Metal—Safety Requirements.

- ANSI A14.3–2002, American National Standard for Ladders—Fixed—Safety Requirements.

- ANSI A14.4–2002, American National Standard Safety Requirements for Job-Made Wooden Ladders.

- ANSI A14.5–2000, American National Standard for Ladders—Portable Reinforced Plastic—Safety Requirements.

- ANSI A14.7–2006, American National Standard for Mobile Ladder Stands and Mobile Ladder Stand Platforms.

*Industry standards and codes for step bolts and manhole steps:*

- ASTM<sup>4</sup> C 478–07, American Society for Testing and Materials Standard Specification for Precast Reinforced Concrete Manhole Sections.

- ASTM A394–07, American Society for Testing and Materials Standard Specification for Steel Transmission Tower Bolts, Zinc-Coated and Bare.

- ASTM C 497–05, American Society for Testing and Materials Test Methods for Concrete Pipe, Manhole Sections, or Tile.

- IEEE<sup>5</sup> 1307–2004, IEEE Standard for Fall Protection for Utility Work.

- ANSI/TIA<sup>6</sup> –222–G–2005, Structural Standard for Antenna Supporting Structures and Antennas.

*Industry codes and standards for stairs and stairways:*

- ANSI A1264.1–1995 (R2002), American National Standard for Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems.

- ANSI A1264.1–2007, American National Standard Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Floor Openings; Stairs and Guardrail Systems.

- NFPA 101–2006, National Fire Protection Association Life Safety Code.
- ICG–2003, International Code Council International Building Code.

*Industry codes and standards for dockboards (bridgeplates):*

- ASME B56.1–2000, American Society of Mechanical Engineers, Safety Standard for Low Lift and High Lift Trucks.

- ASME B56.1–2004, American Society of Mechanical Engineers, Safety Standard for Low Lift and High Lift Trucks.

- ANSI/MH30.1–2000, American National Standard For the Safety Performance, and Testing of Dock Leveling Devices Specification.

- ANSI/MH30.2–2005, Portable Dock Loading Devices: Safety, Performance, and Testing.

*Industry codes and standards for scaffolds and rope descent systems:*

- ANSI/IWCA I–14.1–2001, Window Cleaning Safety.

- ANSI/ASCE 7–2005, American National Standard for Minimum Design Loads for Buildings and Other Structures.

- ANSI A1264.1–1995 (R2002), American National Standard for Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems.

- ANSI A1264.1–2007, American National Standard Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Floor Openings; Stairs and Guardrail Systems.

*Industry codes and standards for fall protection (duty, systems criteria, and practices) and training requirements:*

- ANSI A10.11–1989 (R1998), American National Standard for Construction and Demolition Operations—Personnel and Debris Nets.

- ANSI A14.3–2002, American National Standard for Ladders—Fixed—Safety Requirements.

- ANSI A14.7–2006, American National Standard for Mobile Ladder Stands and Mobile Ladder Stand Platforms.

- ANSI A1264.1–1995 (R2002), American National Standard for Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems.

- ANSI A1264.1–2007, American National Standard, Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Floor Openings; Stairs and Guardrail Systems.

- ANSI/IWCA I–14.1–2001, Window Cleaning Safety.

- ANSI Z359.0–2007, American National Standard, Definitions and Nomenclature Used for Fall Protection and Fall Arrest.

- ANSI Z359.1–2007, American National Standard, Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components.

- ANSI Z359.2–2007, American National Standard, Minimum Requirements for a Comprehensive Managed Fall Protection Program.

- ANSI Z359.3–2007, American National Standard, Safety Requirements for Positioning and Travel Restraint Systems.

- ANSI Z359.4–2007, American National Standard, Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components.

The following studies, cited in OSHA's April 10, 1990, proposed rulemaking (55 FR 13421), provide useful and relevant information, and are a valuable archival resource. These studies provide information that may be helpful in understanding and implementing the proposed standards for walking-working surfaces being proposed today.

#### I. General References

- *Accident Prevention Manual for Industrial Operations*; National Safety Council, 444 North Michigan Avenue, Chicago, Illinois 60611, 1980.

- *A History of Walkway Slip-Resistance Research at the National Bureau of Standards*, Special Publication 565; National Bureau of Standards, National Technical Information Service, Springfield, Virginia 22151, December 1979.

- *A New Portable Tester for the Evaluation of the Slip-Resistance of Walkway Surfaces*, Technical Note 953; National Bureau of Standards, National Technical Information Service, Springfield, Virginia 22151, July 1977.

- Miller, James *et al.* *Work Surface Friction: Definitions, Laboratory and Field Measurements, and a Comprehensive Bibliography*; The University of Michigan, Ann Arbor, Michigan 48109, February 1983. (NTIS \*PB 83–243634, PE 83–243626, PB 84–175926).

- Chaffin, Don B. *et al.* *An Ergonomic Basis for Recommendations Pertaining*

<sup>3</sup> ANSI: American National Standards Institute.

<sup>4</sup> ASTM: American Society for Testing and Materials.

<sup>5</sup> IEEE: Institute of Electrical and Electronics Engineers.

<sup>6</sup> TIA: Telecommunications Industry Association.

to Specific Sections of OSHA Standard, 29 CFR Part 1910, Subpart D—Walking and Working Surfaces; The University of Michigan, Ann Arbor, Michigan 48109, March 1978.

- Ayoub, M. and Gary M. Bakken. *An Ergonomic Analysis of Selected Sections in Subpart D, Walking/Working Surfaces*; Texas University, Lubbock, Texas 79409, August 1978.

- *An Overview of Floor-Slip-Resistance Research with Annotated Bibliography*, Technical Note 895; National Bureau of Standards, National Technical Information Service, Springfield, Virginia 22151, January 1976.

- *A Bibliography of Coefficient of Friction Literature Relating to Slip Type Accidents*; Department of Industrial and Operations Engineering, College of Engineering, University of Michigan, Ann Arbor, Michigan 48104, February 1983.

- *Falls from Elevations Resulting in Injuries*; U.S. Department of Labor, Bureau of Labor Statistics, National Technical Information Service, Springfield, Virginia 22151, June 1984.

- English, William. *Slips, Trips and Falls—Safety Engineering Guidelines for the Prevention of Slips, Trip and Fall Occurrences*; Hanrow Press, Inc., P.O. Box 847, Del Mar, California 92014, 1989. (Also, telephone 800-235-5588 or e-mail at [heg101@msn.com](mailto:heg101@msn.com).)

## II. Ladder References

- Chaffin, Don B. and Terrence J. Stobbe. *Ergonomic Considerations Related to Selected Fall Prevention Aspects of Scaffolds and Ladders as Presented in OSHA Standard 29 CFR Part 1910 Subpart D*; The University of Michigan, Ann Arbor, Michigan 48104, September 1979.

- *Ergonomics Considerations Related to Selected Fall Prevention Aspects of Scaffolds and Ladders as Presented in OSHA Standard 29 CFR Part 1910 Subpart D*; The University of Michigan, Ann Arbor, Michigan 48104.

## III. Stair References

- Archea, John *et al.* *Guidelines for Stair Safety*; NBS Building of Science Series 120, National Bureau of Standards, National Technical Information Service, Springfield, Virginia 22151.

- Carson, D. H. *et al.* *Safety on Stairs*; National Bureau of Standards, National Technical Information Service, Springfield, Virginia 22151.

- Nelson, Gary S. *Engineering—Human Factors Interface in Stairway Treadriser Design*; Texas A&M University of Texas, Agricultural

Extension Service, College Station, Texas 77843, May 1973.

## IV. Fall Protection References

- *Personnel Guardrails for the Prevention of Occupational Accidents*, NBSIR 76-1132; National Bureau of Standards, National Technical Information Service, Springfield, Virginia 22151, July 1976.

- *Investigation of Guardrails for the Protection of Employees from Occupational Hazards*, NBSIR 76-1139; National Bureau of Standards, National Technical Information Service, Springfield, Virginia 22151, July 1976.

- *A Model Performance Standard for Guardrails*, NBSIR 76-1131; National Bureau of Standards, National Technical Information Service, Springfield, Virginia 22151, July 1976.

- National Technical Information Services (NTIS), 5285 Port Royal Road, Springfield, VA 22161. (Telephone: (703) 605-6000; Web address: <http://www.ntis.gov/>.)

## C. Proposed Changes to Subpart I

OSHA is proposing to add a new section to existing subpart I, Personal Protective Equipment. The new section will be numbered § 1910.140 and titled: Personal fall protection equipment. It will contain five paragraphs, covering the following topics:

Paragraph (a) will contain the scope and application for the new section.

Paragraph (b) will contain terms and definitions applicable to personal fall protection systems.

Paragraph (c) will contain general requirements applicable to all types of personal fall protection systems covered and will contain inspection requirements and design criteria common to components used in all systems.

Paragraph (d) will contain additional, specific requirements for personal fall arrest systems and will address equipment such as body harnesses, lifelines, deceleration devices (i.e., rope grabs and rip-stitch lanyards), and lanyards.

Paragraph (e) will contain additional, specific requirements for positioning device systems. This is equipment, such as a window cleaner's belt, that is used to support an employee in a work position.

In addition, OSHA proposes to add two non-mandatory appendices (C and D) to proposed § 1910.140 to help employers select appropriate equipment and use it properly. (**Note:** Existing Appendices A and B to subpart I are not affected by this rule and remain unchanged.) Proposed Appendix C provides useful information and

guidance concerning the use of personal fall arrest systems. Proposed Appendix D provides examples of test methods for personal fall arrest and positioning device systems. The following discussion provides a more detailed explanation of the new provisions.

## Section 1910.140 Personal Fall Protection Systems

### Paragraph (a) Scope and Application

Proposed paragraph (a) explains that all personal fall protection systems used to comply with part 1910 must comply with the care and use criteria established by proposed § 1910.140.

Currently, there are a number of standards throughout part 1910 that require or permit the use of personal fall protection systems. In addition, the proposed revision of subpart D contains a number of new requirements allowing employers to choose to use personal fall protection systems in lieu of guardrail systems that are mandated under the existing rules. With few exceptions, the existing standards do not specify the criteria for the design, operation, performance, or use of fall protection systems. Without such criteria, OSHA believes there is risk that personal fall protection systems, especially personal fall *arrest* systems, will fail. Such failure may occur for a number of reasons, including: use of the wrong system (especially one that is not strong enough for its purpose); use of a system that was not inspected or tested before use; use of a system that is not rigged properly; use of a system with non-compatible components; or use of a system for which the employee is not properly trained. While the vast majority of fall protection systems currently in use meet national consensus standards, OSHA believes that, because of the absence of specific general industry standards, there is likely insufficient awareness of appropriate criteria for their use. When this rule is promulgated, employers who choose to use personal fall protection systems would have to ensure that those systems meet the criteria in this proposed provision.

### Paragraph (b) Definitions

Paragraph (b) defines key terms used in the proposed standard. Most of the terms are already used in existing OSHA fall protection standards, including Appendix C of § 1910.66, Powered platforms for building maintenance, of the general industry standards; § 1926.502, Fall protection systems criteria and practices, of the construction standards; and §§ 1915.159, Personal fall arrest systems (PFAS), and 1915.160, Positioning

device systems, of the shipyard employment standards.<sup>7</sup> OSHA believes that employee safety will be enhanced by having the terms and definitions applicable to personal fall protection systems substantially identical whenever possible. This is particularly important because the same employees may be engaged in both general industry and construction activities. Having different meanings for the same terms could lead to confusion by employers, employees, and OSHA compliance staff. When a proposed definition differs from a definition used in the construction and shipyard employment standards, the difference is identified and explained in the discussion below.

OSHA has also reviewed the terms and definitions used in national consensus standards that are applicable to personal fall protection systems covered by the proposed rule, including ANSI/ASSE Z359.0–2007, Definitions and Nomenclature Used for Fall Protection and Fall Arrest; and other standards in the Z359 series. All of the terms and definitions used in this proposed rulemaking are based on existing OSHA standards or have their source in national consensus standards.

The following terms are defined in the proposed rule: anchorage, belt terminal, body belt, body harness, buckle, carrier, competent person, connector, D-ring, deceleration device, deceleration distance, equivalent, free fall, free fall distance, lanyard, lifeline, personal fall arrest system, personal fall protection system, positioning system, qualified person, rope grab, self-retracting lifeline/lanyard, snaphook, travel restraint (tether) line, travel restraint system, window cleaner's belt, window cleaner's belt anchor, window cleaner's positioning system, and work positioning system. Each term is discussed below.

**Anchorage.** OSHA proposes to define "anchorage" to mean a secure point of attachment for lifelines, lanyards, or deceleration devices. The definition is nearly identical to the definition in OSHA's general industry, construction, and the shipyard employment standards on fall protection. One variation is that the definition used in the general industry standard on fall protection goes beyond just defining the term, and also includes a requirement that the anchorage must be "independent of the means of supporting or suspending the employee." OSHA did not include this latter language in the proposed definition, but did include similar

language in the appropriate requirement (see proposed § 1910.140(c)(12)).

The proposed definition is also consistent with the definitions in the national consensus standards, *i.e.*, ANSI/ASSE Z359.0–2007, Definitions and Nomenclature Used for Fall Protection and Fall Arrest; and ANSI/IWCA I–14.1–2001, Standard for Window Cleaning Safety; and it is identical to the definition used in ANSI/ASSE A10.32–2004, Fall Protection Systems.

**Belt terminal.** OSHA proposes to define "belt terminal" to mean an end attachment of a window cleaner's positioning system used for securing the belt or harness to a window cleaner's belt anchor. The term is used in the proposed requirements specific to fall protection for window cleaning operations. It is not currently defined in OSHA standards, nor is the term specifically defined in ANSI/IWCA I–14.1–2001, although its meaning is clear—that the belt terminal is the end part of a window cleaner's belt. OSHA is including the definition to clarify the intent of the requirements in proposed paragraph (e) relating to the attachment of belt terminals to window cleaner's belt anchors (window anchor). OSHA requests comment on whether this term and definition are needed to clarify the provision. That is, is the term's meaning in proposed paragraph (e) clear enough that a definition is not needed?

**Body belt.** OSHA proposes to define "body belt" to mean a strap with means both for securing about the waist and for attaching to other components such as a lanyard or lifeline, and that is used in positioning systems, travel restraint systems, and ladder safety systems. The definition is consistent with those in the OSHA general industry, construction, and shipyard employment standards on fall protection, as well as with the ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004 national consensus standards.

**Body harness.** OSHA proposes to define the term "body harness" to mean straps which may be secured about the employee in a manner to distribute the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of a personal fall arrest system. The definition is identical to the one in OSHA's general industry standards on fall protection, and nearly identical to that in the construction industry standard on fall protection. OSHA's shipyard employment standard on fall protection contains a similar definition, but that definition does not include the word "waist" in it.

The national consensus standard, ANSI/ASSE Z359.0–2007, has several definitions for various types of harnesses, including: harness, chest; harness, chest-waist; harness, evacuation; harness, full body; harness, positioning. The definition for full body harness (in section 2.74 of ANSI/ASSE Z359.0–2007) is essentially the same as the proposed subpart I definition. The proposed definition is also consistent with ANSI/IWCA I–14.1–2000, with one exception: the ANSI/IWCA consensus standard allows the use of body harnesses that permit the arresting forces to be distributed over *any combination* of the thighs, pelvis, waist, chest, and shoulders, rather than all combined. Including this phrase in the OSHA definition would allow the fall arrest forces to be distributed over the waist and chest only; therefore, OSHA has not adopted this aspect of the ANSI/IWCA consensus definition. OSHA believes the dangers of concentrating arresting forces in one anatomical area (for example, waist and chest only) are real and well documented. For example, Dr. Maurice Amphoux, *et. al.* (Ex. OSHA–S057–2006–0680–0070) conducted research into the use of thoracic harnesses for fall arrest. They concluded that these types of harnesses should not be used for fall arrest because the forces transmitted to the body during post-fall suspension constrict the rib cage and could cause asphyxiation. There is also an increased danger of falling out of the assembly.

OSHA solicits comments on this matter, as well as on whether there is a need to define other types of harnesses. For example, some types of body harnesses do not use a waist component but still distribute the forces over the torso. These harnesses have assemblies that prevent the shoulder straps from separating enough to allow the employee to fall out of the harness. OSHA does not intend to prohibit the use of this type of harness.

**Buckle.** OSHA proposes to define the term "buckle" to mean any device for holding the body belt or body harness closed around the employee's body. The definition is identical to the definition used in the general industry and construction standards on fall protection, and it is consistent with the ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004 national consensus standards on fall protection.

**Carrier.** OSHA proposes to define a "carrier" to mean the track of a ladder safety system consisting of a flexible cable or rigid rail which is secured to the ladder or structure by mountings. The definition is identical to ANSI/ALI

<sup>7</sup> Referred to hereafter as the "general industry, construction, and shipyard employment standards on fall protection."

A14.3–2002, American National Standards for Ladders—Fixed.

*Competent person.* OSHA proposes to define a “competent person” to mean a person who is capable of identifying hazardous or dangerous conditions in any personal fall protection system or any component thereof, as well as in their application and uses with related equipment. The definition is essentially the same as the one in OSHA’s general industry powered platform standard (§ 1910.66), but it differs from the definition of competent person in OSHA’s construction industry standard at § 1926.32. It also differs from both the ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004 national consensus standards in that the national consensus standards, like OSHA’s construction industry definition, define a competent person as one who has the “authority to take prompt corrective action” to eliminate the hazards in the surroundings or working conditions.

OSHA’s proposed definition does not require the competent person to have the authority to take prompt corrective action because the Agency believes that the competent person assigned to inspect personal fall protection systems serves a role different from that of the person that typically is designated as the competent person on construction jobs. In general industry the competent person will most likely be an outside contractor that specializes in fall protection, and which both designs the system, and provides training, usually at a remote location. It is unlikely that an outside contractor would be granted authority over work operations and, thus, OSHA believes the definition proposed allows the employer more flexibility in designating an appropriate competent person.

*Connector.* OSHA proposes to define “connector” to mean a device that is used to couple (connect) parts of the fall protection system together. The definition is essentially the same as OSHA’s general industry, construction, and shipyard employment standards on fall protection. The proposed definition is also consistent with national consensus standards, including ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004. These other definitions also include some explanatory language stating that connectors may be independent components of the system, such as a carabiner; or may be integral components or parts of the system, such as a buckle or D-ring sewn into a body support (a body belt or body harness), or a snaphook spliced or sewn into a lanyard. The proposed definition does not include such explanatory language

because OSHA believes it is not necessary.

*D-ring.* OSHA proposes to define a “D-ring” as a connector used integrally in a harness as an attachment element or fall arrest attachment, and in a lanyard, energy absorber, lifeline, and anchorage connector as an integral connector. Also, a D-ring means a connector used integrally in a positioning or travel restraint system as an attachment element. The term is not defined in existing OSHA standards but is defined, consistent with the proposed definition, in the national consensus standards ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004. ANSI/ASSE A10.32 also defines “integral” to mean not removable from the component, system, or subsystem without mutilating any element or without use of a special tool. This definition expresses OSHA’s intent in using the term “integral” in the proposed definition of D-ring.

*Deceleration device.* OSHA proposes to define “deceleration device” to mean any mechanism that serves to dissipate energy during a fall. The definition is identical to the national consensus standard ANSI/ASSE A10.32–2004, but differs from the definition in OSHA’s general industry, construction, and shipyard employment standard on fall protection. These OSHA standards expand on the definition by citing examples of devices that may be used to either dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during a fall. These devices include rope grabs, rip-stitch lanyards, specially woven lanyards, tearing and deforming lanyards, or automatic self-retracting lifelines/lanyards. ANSI/ASSE A10.32–2004 includes the same examples in its explanatory material, but not within the definition itself. ANSI/ASSE Z359.0–2007 does not define the term “deceleration device,” but does define the terms “energy (shock) absorber,” “fall arrester,” and “self-retracting lanyard.” OSHA notes that, in the preamble to the final rule for the construction industry fall protection standard (59 FR 40677), there is an extensive discussion about the definition of “deceleration device,” including a discussion of commenter suggestions requesting that instead of defining the term “deceleration device,” OSHA define the terms “shock absorber,” “fall arrester,” and “self-retracting lanyard.” One of those comments was from an ANSI Z359 Committee representative:

Comments were received on the definition of “deceleration device” [citations omitted]. It was suggested that this term be eliminated and replaced with three terms, “fall arrester,”

“energy absorber,” and “self-retracting lifeline/lanyard” because the examples listed by OSHA in its proposed definition of deceleration device serve varying combinations of the function of these three suggested components. In particular, it was pointed out that a rope grab may or may not serve to dissipate a substantial amount of energy in and of itself. The distinction that the commenter was making was that some components of the system were “fall arresters” (purpose to stop a fall), others were “energy absorbers” (purpose to brake a fall more comfortably), and others were “self-retracting lifeline/lanyards” (purpose to take slack out of the lifeline or lanyard to minimize free fall). OSHA notes, however, that it is difficult to clearly separate all components into these three suggested categories since fall arrest (stopping) and energy absorption (braking) are closely related. In addition, many self-retracting lifeline/lanyards serve all three functions very well (a condition which the commenter labels as a “subsystem” or “hybrid component”). OSHA believes that the only practical way to accomplish what is suggested would be to have test methods and criteria for each of the three component functions. However, at this time, there are no national consensus standards or other accepted criteria for any of the three which OSHA could propose to adopt.

In addition, OSHA’s approach in the final standard is to address personal fall arrest equipment on a system basis. Therefore, OSHA does not have separate requirements for “fall arresters,” “energy absorbers,” and “self-retracting lifeline/lanyards” because it is the performance of the complete system, as assembled, which is regulated by the OSHA standard. OSHA’s final standard does not preclude the voluntary standards writing bodies from developing design standards for all of the various components and is supportive of this undertaking.

OSHA invites comment on whether the Agency should remove the term “deceleration device” from subpart I and instead define the terms “fall arrester” and “energy absorber.” The term “self-retracting lifeline/lanyard” is already defined in this proposed subpart I rule.

*Deceleration distance.* OSHA proposes to define the term “deceleration distance” to mean the vertical distance a falling employee travels before stopping, from the point at which the deceleration device begins to operate to the stopping point, excluding lifeline elongation and free fall distance. It is measured as the distance between the location of an employee’s body harness attachment point at the moment of activation of the deceleration device during a fall (*i.e.*, at the onset of fall arrest forces), and the location of that attachment point after the employee comes to a full stop.

The proposed definition is identical to the definition in OSHA’s general industry, construction, and shipyard employment standards on fall

protection, except that the reference to body belts has been removed. It is consistent with the ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004 consensus standards.

*Equivalent.* OSHA proposes to define “equivalent” to mean alternative designs, materials, or methods to protect against a hazard, which the employer can demonstrate will provide an equal or greater degree of safety for employees compared to the methods, materials, or designs specified in the standard. The proposed definition is identical to the definitions in OSHA’s general industry and construction standards on fall protection. It is essentially the same as the definition in the shipyard employment standard on fall protection. A crucial element of the definition is that it places the burden on the employer to demonstrate equivalence. The term is not defined in the national consensus standards pertinent to fall protection.

*Free fall.* OSHA proposes to define the term “free fall” to mean the act of falling before the personal fall protection system begins to apply force to arrest the fall. The proposed definition is essentially the same as the definition in OSHA’s general industry, construction, and shipyard employment standards on fall protection. It is also consistent with national consensus standards, including ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004. OSHA notes that it proposes to use the phrase personal fall *protection* system in this proposed rule, rather than personal fall *arrest* system which is used in some of the above-mentioned standards, to indicate clearly that the requirements, when the term is used, apply to both personal fall arrest systems and positioning systems.

*Free fall distance.* OSHA proposes to define the term “free fall distance” to mean the vertical displacement of the fall arrest attachment point on the employee’s body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance as well as lifeline and lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before the devices operate and fall arrest forces occur. The proposed definition is essentially the same as the definition in OSHA’s general industry, construction, and shipyard employment standards on fall protection. It is also consistent with the national consensus standards, ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004.

*Lanyard.* OSHA proposes to define the term “lanyard” to mean a flexible

line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage. The proposed definition is identical to the definition in OSHA’s construction and shipyard employment standards on fall protection, and is consistent with the general industry standard on fall protection. It is also essentially the same as the national consensus standards, ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004.

*Lifeline.* OSHA proposes to define a “lifeline” to mean a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall protection system to the anchorage(s). The proposed definition is essentially the same as OSHA’s general industry, construction, and shipyard employment standards on fall protection. Those standards use the words “fall arrest” rather than “fall protection” as used in this proposed rule because they were only applicable to fall arrest systems whereas this proposed rule has application to other personal fall protection systems. It is also essentially the same as the national consensus standards ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004.

*Personal fall arrest system.* OSHA proposes to define the term “personal fall arrest system” to mean a system used to arrest an employee in a fall from a work level. It consists of an anchorage, connector, and a body harness, and may include a lanyard, deceleration device, lifeline, or suitable combination of these. The definition proposed is identical to OSHA’s general industry, construction, and shipyard employment standards on fall protection, except that those standards included a body belt as a part of the definition of a personal fall arrest system. Body belts, which have been phased out due to safety reasons, were included in those definitions to allow their use until they were banned. The ban on body belts as part of a personal fall arrest system, took place on January 1, 1998, for the construction industry and shipyard employment. The proposed definition is also consistent with the national consensus standards, ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004. These consensus standards, like the existing OSHA standards and the proposed standard, require the use of body harnesses in personal fall arrest systems. OSHA notes

that a ladder safety system is not considered a *personal fall arrest* system within the meaning of this proposed definition even though it is designed to arrest a fall. Therefore, the use of a body belt in a ladder safety system is permitted.

*Personal fall protection system.* OSHA proposes to define the term “personal fall protection system” to mean a system used to protect an employee from falling, or that safely arrests an employee’s fall, should a fall occur. Examples include: a personal fall arrest system, a positioning system, or a travel restraint system. The term is not defined in either the existing OSHA standards or in the national consensus standards.

*Positioning system (sometimes called a work positioning system).* OSHA proposes to define the term “positioning system” to mean a system of equipment and connectors that, when used with its body belt or body harness, allows an employee to be supported on an elevated vertical surface, such as a wall or windowsill, and to work with both hands free. The proposed definition is essentially the same as the definition in OSHA’s construction and shipyard employment standards on fall protection. It is also essentially the same as the national consensus standards, ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004.

*Qualified.* The proposed definition of “qualified” describes a person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training,<sup>8</sup> and experience has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project. The proposed definition is consistent with the definition in the OSHA’s construction industry standards at § 1926.32(m), and the shipyard employment standard for PPE at § 1915.151(b). It is also consistent with the definition being proposed today for the general industry standards in subpart D, Walking-Working Surfaces. The definition differs from that used in the general industry standard at § 1910.66. Specifically, the definition in Appendix C of § 1910.66 requires that the qualified person have a degree, certification or professional standing *and* (as opposed to “or”) also have extensive knowledge, training, and experience. To meet the definition, a person would most likely need to be an engineer; this is not the case with the definition proposed in this standard. Like the definition in the construction

<sup>8</sup> “Training” may include informal, or on-the-job, training.

and the shipyard employment rules, OSHA is emphasizing the need to be qualified in the subject matter—personal fall protection systems—which, in some cases, may involve their design and use. As long as the individual meets the elements of the definition, he or she may be considered a qualified person for the purpose of subpart I. The proposed definition is also identical to that used in the national consensus standard, ANSI/ASSE A10.32, but differs from ANSI/ASSE Z359.0–2007 standard which also appears to require that the qualified person be an engineer. The language proposed here will ensure consistency with the definitions in OSHA's fall protection rules for construction and shipyard employment.

**Rope grab.** OSHA proposes to define the term “rope grab” to mean a deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/lever locking, or both. The definition proposed is the same as the definition in OSHA's general industry, construction, and shipyard employment standards on fall protection. It is also the same as the national consensus standard, ANSI/ASSE A10.32–2004. The term “rope grab” is not individually defined in ANSI/ASSE Z359.0–2007; however, that consensus standard defines the term “fall arrester” using essentially the same definition OSHA uses here. Additionally, the consensus standard identifies a “rope grab” as one example of a fall arrester.

**Self-retracting lifeline/lanyard.** OSHA proposes to define the term “self-retracting lifeline/lanyard” to mean a deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal movement by the employee, and after onset of a fall, automatically locks the drum and arrests the fall. The proposed definition is consistent with the definition in OSHA's general industry and construction standards on fall protection, and is also consistent with the national consensus standards, ANSI/ASSE Z359.0–2007 and ANSI/ASSE A10.32–2004. OSHA notes that the ANSI/ASSE Z359.0 standard defines the term “self-retracting lanyard” rather than “self-retracting lifeline/lanyard.”

**Snaphook.** OSHA proposes to define a “snaphook” to mean a connector comprised of a hook-shaped body with a normally closed gate or similar arrangement that may be manually opened to permit the hook to receive an object and that, when released,

automatically closes and locks to retain the object. Opening the snaphook requires two separate actions. The proposed definition includes a note explaining that there are two types of snaphooks—the *locking type* (also called self-locking, double-locking, or automatic-locking) and the *non-locking type* (or manual locking). The locking type snaphook is one with a self-closing and self-locking gate that remains closed and locked until intentionally unlocked and opened for connection or disconnection. The non-locking type has a self-closing gate that remains closed, but not locked (unless purposely locked by the user), until intentionally opened for connection or disconnection. This rule would not allow use of non-locking type snaphooks.

The proposed definition is consistent with OSHA's general industry and construction standards on fall protection, and is also consistent with the national consensus standards ANSI/ASSE Z359.1–2007 and ANSI/ASSE A10.32–2004. These other OSHA standards also only allow use of locking-type snaphooks.

**Travel restraint (tether) line.** The proposed definition of the term “travel restraint line” is a rope, wire rope, or lanyard used to transfer forces from a body support to an anchorage or anchorage connector in a travel restraint system. The proposed definition is new to general industry and is based on the ANSI/ASSE Z359.0–2007 standard, and is consistent with the similar term “restraint (tether) line” used in OSHA's shipyard employment standard on fall protection and in the national consensus standard, ANSI/ASSE A10.32–2004. The purpose of a travel restraint line is to prevent an employee from reaching a fall hazard. These lines need not be designed to withstand forces resulting from a fall. (See “travel restraint system.”)

**Travel restraint system.** OSHA proposes to define the term “travel restraint system” to mean a combination of an anchorage, anchorage connector, lanyard (or other means of connection), and body support intended to be used by an employee to limit travel in such a manner as to prevent exposure to a fall hazard. Travel restraint systems must be used such that they do not support any portion of the employee's weight. The proposed definition is new to the general industry standards, and is based on the ANSI/ASSE Z359.0–2007 standard, and is consistent with similar terms (*i.e.*, “restraint (tether) line”) used in OSHA's shipyard employment standard on fall protection and in the national consensus standard, ANSI/ASSE A10.32–2004. The term is not

defined in the OSHA's construction industry standard on fall protection.

**Window cleaner's positioning system.** OSHA proposes to define the term “window cleaner's positioning system” to mean a system consisting of a window cleaner's belt and window cleaner's belt anchors.

**Window cleaner's belt.** OSHA proposes to define the term “window cleaner's belt” to mean a belt that consists of a waist-belt, an integral terminal runner or strap, and belt terminals. The end terminals of the belt are attached to the window cleaner's belt anchors (window anchors).

**Window cleaner's belt anchors (window anchors).** OSHA proposes to define “window cleaner's belt anchors” to mean specifically designed fall-preventing attachment points, permanently affixed to a window frame or to a building part immediately adjacent to the window frame, for direct attachment of the terminal portion of a window cleaner's belt. The proposed definitions of terms related to window cleaner's fall protection systems are based on the national consensus standard for Window Cleaning Safety, IWCA I–14.1–2001. The term “belt terminal” which is also a part of the window cleaner's belt was discussed above. These terms are not used in existing OSHA standards because there are no standards specifically applicable to window cleaning operations.

#### Paragraph (c) General Requirements

Proposed paragraph (c) contains general provisions applicable to all personal fall protection systems. This proposed paragraph establishes criteria for the most generic, common components, such as belts, lanyards, and harnesses used in fall protection systems. More specific criteria are established in proposed paragraphs (d) and (e) of § 1910.140 for personal fall arrest and positioning systems. All of the provisions proposed in paragraph (c) are based on requirements in either existing OSHA standards pertinent to fall protection or national consensus standards. The OSHA standards used include Appendix C of § 1910.66, Powered platforms for building maintenance, of the general industry standards; § 1926.502, Fall protection systems criteria and practices, of the construction standards; and §§ 1915.159, Personal fall arrest systems (PFAS), and 1915.160, Positioning device systems, of the shipyard employment standards.<sup>9</sup> The national

<sup>9</sup> Referred to hereafter as the “general industry, construction, and shipyard employment standards on fall protection.”

consensus standards used in developing proposed paragraph (c) include ANSI/ASME Z359.1–2007, Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components; ANSI/ASME Z359.3, Safety Requirements for Positioning and Travel Restraint Systems; ANSI/ASME A10.32–2004, Fall Protection Systems (for Construction); and ANSI/IWCA I–14.1–2001, Window Cleaning Safety.

In paragraphs (c)(1) and (c)(2), OSHA is proposing that connectors used in personal fall protection systems be made of drop-forged, pressed, or formed steel or equivalent materials, and that the materials be protected from corrosion. In addition, the surfaces and edges of connectors are to be smooth. These requirements are intended to ensure that connectors retain the necessary strength characteristics for the life of the fall protection system under expected use conditions and that the surfaces and edges do not cause damage to the attached belt or lanyard. OSHA has already adopted this approach in paragraphs (c)(1) and (c)(2), section I, Appendix C of § 1910.66; paragraphs (d)(1), (d)(2), (e)(3), and (e)(4) of § 1926.502; and paragraphs (a)(1) and (a)(2) of § 1915.159. Similar requirements are also found in the national consensus standards, ANSI/ASSE Z359.1–1992 (R2002) and ANSI/ASSE A10.32–2004.

In paragraph (c)(3) OSHA is proposing that where vertical lifelines are used, each employee must be attached to a separate lifeline. OSHA believes that allowing more than one employee on the same vertical lifeline would create additional hazards. For example, if one employee fell, the other attached employee might be pulled off balance, causing him or her to fall. OSHA has already adopted this approach in paragraphs (c)(3) and (e)(5), section I, Appendix C of § 1910.66; paragraph (d)(10) of § 1926.502; and paragraph (b)(1) of § 1915.159. A similar requirement is also found in the national consensus standard, ANSI/ASSE A10.32–2004.

Proposed paragraphs (c)(4) through (c)(6) relate to the strength of lanyards and lifelines. In paragraph (c)(4) OSHA is proposing that lanyards and vertical lifelines have a minimum breaking strength of 5,000 pounds (22.2 kN). Paragraphs (c)(5) and (c)(6) address self-retracting lifelines and lanyards. In paragraph (c)(5) OSHA proposes that self-retracting lifelines and lanyards that limit free fall to 2 feet (0.61 m) or less be capable of sustaining a minimum tensile load of 3,000 pounds. In paragraph (c)(6) OSHA proposes that self-retracting lifelines and lanyards that

do not limit free fall to 2 feet (0.61 m) or less, as well as rip-stitch lanyards, and tearing and deforming lanyards must be capable of sustaining a minimum tensile load of 5,000 pounds. The different strengths are appropriate because the dynamic forces associated with falls increase with the distance of the free fall, and OSHA believes the proposed levels provide a reasonable factor of safety. OSHA has already adopted this approach in the general industry, construction, and shipyard employment standards on fall protection. The proposed requirements are also consistent with the requirements in ANSI/ASSE Z359.1–2007 and ANSI/ASSE A10.32–2004. However, neither of the consensus standards contain a separate provision (as OSHA does in proposed paragraph (c)(6)) directed to self-retracting lanyards and lifelines that *do not* limit free fall to 2 feet or less. OSHA requests specific comment on whether the requirement in paragraph proposed (c)(6) is necessary, since it is essentially the same as the requirement in proposed paragraph (c)(4). That is, if OSHA did not finalize the requirement proposed at paragraph (c)(6), would it be clear from (c)(4) that all lanyards and lifelines, except those that limit free fall to 2 feet or less, must have a breaking strength of 5,000 pounds?

One commenter to the 1990 proposal suggested that the high strength requirements for lanyards and lifelines would be hard to maintain. OSHA realizes some wear will occur during normal use of lanyards and lifelines in the workplace. Ultraviolet radiation, water, and dirt reduce the strength of lanyards and lifelines. However, wear must never be allowed to reach the point where equipment performance might be compromised. This is one reason why it is important to inspect equipment before each use (and, if necessary, remove it from use) as required in proposed paragraph (c)(18), and to protect certain components, including lanyards, from being cut, abraded, or melted, as required in proposed paragraph (c)(20).

Another concern related to strength reduction is the use of knots in lanyards and lifelines. OSHA is aware that the use of knots in lanyards and vertical lifelines can *sometimes* reduce breaking strength. For this reason, OSHA considered proposing a ban on knots, with the exception of knots at the ends of the components. Such a ban would be consistent with requirements in the national consensus standards. For example, ANSI/ASSE Z359.1–2007 (section 7.2.1) prohibits knots, stating, “No knots shall be tied in lanyards,

lifelines, or anchorage connectors. Sliding-hitch knots shall not be used in lieu of fall arresters.” Likewise, ANSI/ASSE A10.32–2004 (section 3.7.3) prohibits the use of knots, except as a “stop” at the end of a lifeline. Rather than proposing an outright ban on the use of knots, OSHA is requesting comments on whether it should prohibit knots or require that a competent person inspect all knots. Commenters should provide suggested language and rationale to support their positions.

Comments and testimony from the 1990 rulemaking on the use of knots both supported and objected to the use of knots. For example, some commenters (Exs. OSHA–S057–2006–0680–0048, –0083, and –0061) objected to the use of knots and suggested that OSHA require that ends of lanyards and lifelines be terminated in swedges or splices. These commenters felt that knots significantly reduced the strength of the line and that it is difficult for employees to learn to tie reliably.

Other commenters (Ex. OSHA–S057–2006–0680–0118) supported the use of knots, reasoning that some knots will retain up to 90 percent of the original rope strength. Commenters also noted that some ropes could lose more than 10 percent of their original breaking strength and still meet OSHA’s proposed 5,000 pound (22.2 kN) requirement. Testimony at the public hearing also supported the idea that knots could be used to terminate lifelines and lanyards safely (Ex. OSHA–S041–2006–0666–1252, p. 389–391, 416–419). The proposal reflects the information currently available to the Agency—that knots can be used safely in some circumstances, so employers should be allowed the flexibility to use knots as long as they verify that proposed strength requirements for the entire rope have been met.

Proposed paragraphs (c)(7) through (c)(10) establish criteria for D-rings and snaphooks. In paragraph (c)(7) OSHA is proposing that D-rings and snaphooks be capable of sustaining a minimum tensile load of 5,000 pounds (22.2 kN). In paragraph (c)(8), OSHA proposes that all D-rings and snaphooks be proof-tested to 3,600 pounds (16 kN) without cracking, breaking, or incurring permanent deformation. The 3,600 pounds (16 kN) criterion is based on the need to meet a 2:1 safety factor for the use of these components with body harnesses (which limit maximum arresting forces to 1,800 pounds (8 kN)). OSHA has already adopted this approach in the general industry, construction, and shipyard employment standards on fall protection. Similar requirements are also found in the

national consensus standards, ANSI/ASSE Z359.1–2007 and ANSI/ASSE A10.32–2004.

In paragraph (c)(9) OSHA proposes to require the use of locking snaphooks, thus prohibiting non-locking snaphooks for any personal fall protection systems. Locking snaphooks require two separate, consecutive actions to open, which reduces the likelihood of inadvertent opening. OSHA has already adopted this approach in the construction and shipyard employment standards on fall protection. The prohibition on the use of non-locking snaphooks in existing OSHA standards for the construction and shipyard employment sectors went into effect on January 1, 1998. In addition, national consensus standards, including ANSI/ASSE Z359.1–2007 and ANSI/ASSE A10.32–2004, only permit the use of locking snaphooks. Evidence in the 1990 rulemaking also showed widespread support for a prohibition on non-locking snaphooks, which is particularly significant in light of the fact that these comments were made more than 17 years ago. Therefore, OSHA believes that there is no reason to propose any type of extended or delayed effective date for this provision. If there are reasons for an extended or delayed effective date, they should be submitted to the record.

Paragraph (c)(10), like other existing OSHA standards, proposes to require that, unless the snaphook is designed for the following connections, it shall not be engaged directly to: webbing, rope, or wire rope; another snaphook; a D-ring to which another snaphook or connector is attached; a horizontal lifeline; or any object that is incompatibly shaped or dimensioned in relation to the snaphook such that unintentional disengagement could occur if the connected object depresses the snaphook gate and causes it to open. OSHA has already adopted this approach in the construction and shipyard employment standards on fall protection. Both ANSI/ASSE Z359.1–2007 and ANSI/ASSE A10.32–2004 consensus standards also contain a number of separate requirements prohibiting these connections. In addition, section 7.2 (Equipment Rigging and Use) of ANSI/ASSE Z359.1 addresses snaphook and carabiner connections and other concerns. Explanatory notes in that section contain additional, helpful material about connections.

In paragraph (c)(11) OSHA proposes to require that horizontal lifelines be designed, installed, and used under the supervision of a qualified person, and that they be part of a complete personal

fall arrest system that maintains a safety factor of two. OSHA believes the safety factor of two provides adequate protection and has already adopted this approach in the general industry, construction, and shipyard employment standards on fall protection. An essentially similar requirement is also found in the national consensus standard, ANSI/ASSE A10.32–2004. The other consensus standard pertinent to fall protection, ANSI/ASSE Z359.1–2007, does not include specific requirements for horizontal lifelines because the standard does not cover them. However, the Z359.1 standard (section 3.1.4) states, “A PFAS [personal fall protection system] which incorporates a horizontal lifeline (outside the scope of this standard) shall be evaluated in accordance with acceptable engineering practice to determine that such system will perform as intended.” OSHA notes that horizontal lifelines present special problems in application. For example, they allow a potentially longer fall distance than some other fall protection devices. In addition, forces applied in a perpendicular direction to a horizontal lifeline create much larger forces at the anchorages. These and other concerns relative to the use of horizontal lifelines support the need for proposed paragraph (c)(11). As a point of clarification, OSHA notes that there could be more than one qualified person involved in the process; *i.e.*, the qualified person who designs and installs the system may be different than the qualified person who supervises the use of the system.

In paragraph (c)(12) OSHA proposes to require that anchorages used for attachment to personal fall protection equipment be independent of any anchorage being used to support or suspend platforms. This requirement is intended to ensure that if the anchorage holding other equipment (such as a powered platform) fails, the employee will be still be protected by the separate, independent anchorage to which the fall protection system is secured.

In paragraph (c)(13), OSHA proposes that anchorages be capable of supporting at least 5,000 pounds (22.2 kN) for each employee attached or that they be designed, installed, and used under the supervision of a qualified person as part of a complete fall protection system maintaining a safety factor of two. The proposed provision does not apply to window cleaner’s belt anchors, addressed separately in proposed paragraph (e) of this section, because those positioning systems are unique. OSHA has already adopted the approach proposed here in the general

industry, construction, and shipyard employment standards for fall protection. Similar requirements are also found in the national consensus standards pertinent to fall protection, including ANSI/ASSE Z359.1–2007 and ANSI/ASSE A10.32–2004, as well as the ANSI/IWCA I–14.1–2001 standard for window-cleaning safety. In particular, section 7.2.3 of the Z359.1 standard states:

Anchorage selected for PFAS shall have a strength capable of sustaining static loads, applied in the directions permitted by the PFAS, of at least: (a) two times the maximum arrest force permitted on the system, or (b) 5,000 pounds (22.2kN) in the absence of certification. When more than one PFAS is attached to an anchorage, the anchorage strengths set forth in (a) and (b) above shall be multiplied by the number of personal fall arrest systems attached to the anchorage.

In the explanatory material for this provision, ANSI notes: “The 5,000 pound (22.2kN) anchorage referred to here is the same as that required by OSHA in § 1910.66—Powered platforms for building maintenance. An assumption is made that the 5,000 pound (22.2kN) strength level has been established and, therefore, certification is not required.”

The strength of fall protection anchorages has generated considerable comment in previous OSHA rulemakings. OSHA’s position at this time is the same as it was in the earlier rulemakings: the level of strength required by this proposal is necessary to provide a reasonable margin of safety for employees. For clarification, OSHA notes that it is not requiring a 5,000 pound (22.2 kN) anchorage point in every situation. If an employer cannot find or develop an anchor point capable of supporting a 5,000 pound (22.2 kN) load, then an anchor point of lesser strength may be used *only if* it is both part of a complete fall protection system maintaining a safety factor of at least two, and it is designed, installed, and used under the supervision of a qualified person. The Agency anticipates that employers who cannot achieve a 5,000 pound (22.2 kN) anchorage strength will be able to meet the two to one safety factor. As OSHA noted above with respect to proposed paragraph (c)(11), an employer may use more than one qualified person to comply with this requirement. For example, some employers may choose to have an outside firm design an appropriate system, and an in-house qualified person supervise its use.

In paragraph (c)(14) OSHA proposes that restraint lines used in travel restraint systems be capable of supporting at least a 5,000 pound (13.3



kN) tensile load. The Agency is proposing the 5,000 pound requirement to be consistent with other requirements in this section. (For example, see proposed paragraphs (c)(4), (c)(6), and (c)(7).) This requirement provides an important safety factor if a restraint line is ever used as a lifeline; for example, if it is not rigged properly and a fall occurs, the restraint line would effectively become a lifeline and would have to meet the 5,000 pound requirement. Existing OSHA standards pertinent to fall protection do not include specific requirements for travel restraint lines, but section 3.11 of the ANSI/ASSE A10.32–2004 standard specifies that component parts of travel restraint systems, including anchorages, be designed to meet the requirements of personal fall arrest equipment. The ANSI/ASSE Z359.3–2007 standard for positioning and travel restraint systems similarly requires that positioning and travel restraint lanyards have a minimum breaking strength of 5,000 pounds (22.2kN).

In paragraph (c)(15) OSHA proposes to require that lifelines and carriers be made of materials other than natural fiber rope. Additionally, proposed (c)(15) requires that where polypropylene rope is used, it must contain an ultraviolet (UV) light inhibitor. The proposed provision is consistent with OSHA's general industry standard on powered platforms and the shipyard employment standard. Both of these standards require that ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses be made from synthetic fibers or wire rope. OSHA's construction industry standard is the same except that it does not make reference to wire rope.

None of the existing OSHA standards, however, address carriers, nor do they require that the polypropylene rope contain a UV light inhibitor. The proposed provision is consistent with requirements in section 3.2.3 of ANSI/ASSE Z359.1–2007 and with section 3.8 of ANSI/ASSE A10.32–2004. Section 6.8 of the national consensus standard for window-cleaning safety, ANSI/IWCA I–14.1–2001, prohibits ropes made entirely of polypropylene. Also, section 14.2.3 of ANSI/IWCA I–14.1–2001 standard requires all rope and webbing used in suspending the seat board (of rope descent systems) be synthetic fiber, preferably nylon or polyester, with a rated strength of 5,000 pounds. For fall protection, the ANSI/IWCA I–14.1–2001 standard requires compliance with ANSI/ASSE Z359.1 standard.

The UV light inhibitor provision was added to this proposal in response to comments received in the 1990 proposed rulemaking (Ex. OSHA–S057–2006–0680–0083), pointing out that sunlight can cause severe deterioration in polypropylene rope. OSHA recognizes that ultraviolet degradation can be a serious problem, but also believes that polypropylene rope has some advantages over other synthetic materials. Polypropylene is strong, flexible, and may be less costly than ropes made of some other materials. Many of the newer polypropylene ropes are made with an UV light inhibitor which reduces the strength degradation problem. For these reasons, the Agency believes the proposed provision offers an appropriate level of safety without unnecessarily sacrificing flexibility.

In paragraph (c)(16), OSHA proposes that all personal fall protection systems and their components be used for employee fall protection only, and not for any other purpose, such as hoisting equipment or materials. This means that those systems or components may not be used as material or equipment hoist slings, bundle ties, or for other such purposes. OSHA has already adopted this approach in its general industry, construction, and shipyard employment standards on fall protection. In the powered platform standard, OSHA did not include the phrase “and not used to hoist materials,” which appears in the shipyard employment and construction standards. OSHA believes the added phrase clarifies the intent of the provision.

In paragraph (c)(17), OSHA proposes that all fall protection systems or any of their components that have been subjected to impact loading (as distinguished from static load testing) be removed from service immediately. A removed system or component may not be used again until a competent person inspects the equipment and determines that it is undamaged and suitable for reuse. By this proposed language, OSHA is recognizing that impact loading may adversely affect the integrity of a fall protection system, but that there are many factors that can affect a system's potential capacity for reuse as fall protection. These include the employee's weight and the type of deceleration device used, among others. This proposed provision is intended to ensure that employers will implement procedures for inspection and evaluation of equipment that will prevent the reuse of damaged equipment. OSHA has not, however, adopted the suggestion of one commenter in the 1990 proposed rulemaking (Ex. OSHA–S057–2006–

0680–0048) that the standard allow only the *manufacturer* to inspect systems to determine if they are suitable for reuse. OSHA believes that any competent person could inspect the system effectively because all competent persons must be capable of determining dangerous or hazardous conditions in any fall protection system or component. OSHA has already adopted the proposed approach in the general industry, construction, and shipyard employment standards on fall protection. The proposed requirement is also consistent with the ANSI/ASSE Z359.1–2007 (section 5.3.4) and ANSI/ASSE A10.32–2004 (section 3.4) consensus standards.

OSHA solicits comments on whether the proposed approach provides adequate protection, or whether the final standard should require the destruction of ropes, lanyards, belts, and harnesses once they have been subjected to impact loading. Impact loading can cause damage to fibers that cannot be easily discovered, and these components are relatively inexpensive. OSHA is therefore still considering revising the proposed requirement to require the destruction and removal of ropes, lanyards, belts, and harnesses once they have been subject to impact loading.

In paragraph (c)(18) OSHA proposes that fall protection equipment be inspected for mildew, wear, damage, and other deterioration before each use. Components showing such damage must be removed from service if their function or strength has been adversely affected. The intent of this requirement, like that of proposed paragraph (c)(17), is to ensure that defective or weakened equipment is removed from service if the equipment's performance could be adversely affected. OSHA has already adopted this approach in its general industry, construction, and shipyard employment standards on fall protection. The proposal is also consistent with the consensus standards, ANSI/ASSE Z359.1–2007 (section 6.1) and ANSI/ASSE A10.32–2004 (section 6.3).

In paragraph (c)(19), OSHA proposes that ropes, belts, lanyards, lifelines, and harnesses be compatible with all connectors used. OSHA is proposing this requirement because it believes the use of incompatible equipment leads to rollout. Rollout is a process by which a snaphook or carabiner unintentionally disengages from another connector or object to which it is coupled, possibly resulting in injury or death. OSHA has already adopted this approach in its shipyard employment standards on fall protection. Additionally, both the ANSI/

ASSE Z359.1–2007 and ANSI/ASSE A10.32–2004 consensus standards address the need for compatibility of equipment. For example, the explanatory material for section 3.2.6.2 of the Z359.1 standard states, “An effort should be made to encourage compatible connector couplings.” Requirements in sections 7.1 and 7.2 of that standard also address the issue of compatibility, as do requirements in the ANSI/ASSE A10.32–2004 standard (sections 4.1.1 and 4.4.2).

In paragraph (c)(20), OSHA proposes that ropes, belts, lanyards, and harnesses used for personal fall protection be protected from being cut, abraded, melted, or otherwise damaged. These types of damage could cause the components to lose strength and fail. OSHA has already partially adopted this approach in its construction and shipyard employment standards on fall protection. The general industry standard on fall protection for powered platforms provides guidelines (see Appendix C, section III, paragraph (f) of § 1910.66) for the inspection of personal fall arrest equipment, and emphasizes the need to remove equipment that has been subject to cuts, abrasion, and other damage. Similar provisions are found in ANSI/ASSE Z359.1–2007 (section 7) and ANSI/ASSE A10.32–2004 (section 3.7) standards pertinent to lifelines and lanyards. The existing OSHA requirements apply to lifelines and lanyards only, whereas the proposed requirement would apply to all ropes, belts, and harnesses because OSHA believes all of these components should be protected from being cut, abraded, melted or exposed to similar hazards.

Because an employee suspended after a fall may be exposed to serious injury, including suspension trauma, OSHA is proposing in paragraph(c)(21) to require the employer to provide for prompt rescue. To meet this requirement, the employer must evaluate the availability of rescue personnel, ladders, or other rescue equipment. In some situations, it may be appropriate to use equipment; for example, a mechanical device that has descent capability which allows employees to rescue themselves after a fall has been arrested. In other situations, a suspended employee may not be able to reach a work level independently, so the employer must ensure the ability to rescue the employee promptly.

In recognition of hazards confronting employees, OSHA developed a Safety and Health Information Bulletin (SHIB) addressing the hazards associated with suspension trauma/orthostatic intolerance (SHIB 03–24–2004, available at <http://www.osha.gov/dts/shib/>

*shib032404.html*). The SHIB states in part:

Orthostatic intolerance may be experienced by workers using fall arrest systems. Following a fall, a worker may remain suspended in a harness. The sustained immobility may lead to a state of unconsciousness. Depending on the length of time the suspended worker is unconscious/immobile and the level of venous pooling, the resulting orthostatic intolerance may lead to death. While not common, such fatalities often are referred to as “harness-induced pathology” or “suspension trauma.”

OSHA has already adopted this approach in the general industry, construction, and shipyard employment standards on fall protection. The proposal is also consistent with the national consensus standard, ANSI/ASSE A10.32–2004 (section 6.2.1). Additionally, section 7.3 of the ANSI/ASSE Z359.1–2007 standard addresses the need to be trained in rescue. Finally, the need for rescue is evident by the development of a new American National Standard entitled “Safety Requirements for Assisted-Rescue and Self-Rescue Systems, ANSI/ASSE Z359.4–2007.”

In paragraph (c)(22), OSHA proposes to require all personal fall protection systems to be worn with the attachment point in the center of the wearer’s back near the shoulder level or above the wearer’s head. An exception is provided that allows the attachment point to be located in the pre-sternal position if the free fall distance is limited to 2 feet (0.6 m) or less and the fall arrest forces are limited to 900 pounds (4 kN). OSHA has already adopted this approach in the general industry, construction, and shipyard employment standards on fall protection, except that none of these OSHA standards permit the attachment point to be located in the pre-sternal position. The exception for the pre-sternal position proposed in this standard reflects the new language in ANSI/ASSE Z359.1–2007 (section 3.2.2.5a). The proposal is also consistent with ANSI/IWCA I–14.1–2001.

OSHA believes the exception is necessary to allow flexibility to attach in front during certain activities (such as climbing or using rope descent systems for window washing) are underway to make self-rescue possible, as some commenters argued in the 1990 proposed rulemaking. One witness, Mr. Terry Schmidt, testified that European standards already allowed an attachment point in the pre-sternal position (Ex. OSHA–S041–2006–0666–1252, p. 216). Another witness, Mr. Weinel, commented:

I’m very much a believer in the front, I think the term used was “mid-sternal”

connection. This will keep me, as the person in trouble, oriented upright, facing the rope, where I can perform self-rescue. (Tr. 363.)

OSHA believes that an attachment point in the pre-sternal position (when the free fall distance is limited to 2 feet (0.6 m) or less) would have only a minimal effect on the distribution of arresting forces, yet would provide an overall advantage of easier self-rescue in some specialized applications such as confined spaces, window cleaning, and climbing activities. Again, the location of the attachment point in the pre-sternal position is limited to those situations in which the free fall distance is kept to 2 feet (0.6 m) or less and the maximum arresting forces are limited to 900 pounds (4 kN), thereby reducing risk of serious neck and back injury.

#### Paragraph (d) Personal Fall Arrest Systems

Proposed paragraph (d) establishes specific requirements applicable when personal *fall arrest* systems are used. These new, specific requirements are in addition to the general requirements in proposed paragraph (c) that apply to all types of personal fall protection equipment. The proposed requirements are consistent with the national consensus standards, ANSI/ASSE Z359.1–2007 (section 3) and ANSI/ASSE A10.32–2004.

Proposed paragraph (d)(1) establishes criteria for the *performance* of personal fall arrest systems. Proposed paragraph (d)(2) establishes criteria for the *use* of personal fall arrest systems. The requirements proposed in paragraph (d) are based on requirements in existing OSHA general industry, construction, and shipyard employment standards on fall protection, as well as national consensus standards, including ANSI/ASME Z359.1–2007, Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components; and ANSI/ASME A10.32–2004, Fall Protection Systems (for construction) standards.

The performance criteria proposed in paragraph (d)(1) are nearly identical to those that are already required by other OSHA fall protection standards. For the most part, they were first promulgated by OSHA in Appendix C to § 1910.66 (see 54 FR 31445, July 28, 1989). The preamble to that standard anticipated that those criteria would eventually be used in a more broadly applicable general industry standard:

The comments and data on fall arrest systems which were submitted to the record of the powered platforms rulemaking are also being used in the development of the generic rule. OSHA anticipates that the provisions on personal fall arrest systems in Appendix C,