

AMERICAN NATIONAL STANDARD

ANSI/ASSE Z359.0-2012 Definitions and Nomenclature Used for Fall Protection and Fall Arrest

Part of the Fall Protection Code

VERSION **3**



AMERICAN SOCIETY OF
SAFETY ENGINEERS



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American National Standard

**Definitions and Nomenclature Used
for Fall Protection and Fall Arrest**

Secretariat

American Society of Safety Engineers
1800 East Oakton Street
Des Plaines, Illinois 60018-2187

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American National Standard

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Foreword (This Foreword is not a part of American National Standard Z359.0-2012.)

This standard, national in scope, was developed by an Accredited Standards Committee functioning under the procedures of the American National Standards Institute, with the American Society of Safety Engineers (ASSE) as secretariat.

It is intended that every employer whose operations fall within the scope and purpose of the standard will adopt the guidelines and requirements detailed in this standard.

The need for this standards activity grew out of the continuing development of a series of fall protection-related standards. The focus is to tie the elements of those standards together and provide the tools with which employers may develop the programs that incorporate those elements. This standard also brings together the administrative requirements of those fall protection standards. It should be noted, as in all Z359-series standards, that this standard applies to occupational activities. It does not apply to sports activities such as mountaineering.

Neither the standards committee, nor the secretariat, states that this standard is perfect or in its ultimate form. It is recognized that new developments are to be expected, and that revisions of the standard will be necessary as the state-of-the-art progresses and further experience is gained. It is felt, however, that uniform guidelines for fall protection programs are very much needed and that the standard in its present form provides for the minimum criteria necessary to develop and implement a comprehensive managed fall protection program.

The Z359 Committee acknowledges the critical role of design in influencing the use of proper fall protection equipment. Designs which eliminate fall hazards through the proper application of the hierarchy of safety controls are the preferred method for fall protection. Design deficiencies often increase the risk for employees who may be exposed to fall hazards: examples are (1) lack of rail systems to prevent falls from machines, equipment and structures; (2) failure to provide engineered anchorages where use of personal fall arrest systems are anticipated; (3) no provision for safe access to elevated work areas; (4) installation of machines or equipment at heights, rather than floor/ground level to preclude access to elevated areas; (5) failure to plan for the use of travel restriction or work positioning devices. To that end, this series of standards also provides guidance for design considerations for new buildings and facilities.

Basic fall safety principles have been incorporated into these standards, including hazard survey, hazard elimination and control, and education and training. The primary intent is to ensure a proactive approach to fall protection. However, the reactive process of accident investigation is also addressed to ensure that adequate attention is given to causation of falls.

The Z359 Committee solicits public input that may suggest the need for revisions to this standard. Such input should be sent to the Secretariat, ASC Z359, American Society of Safety Engineers, 1800 E. Oakton Street, Des Plaines, IL 60018-2187.

This standard was developed and approved for submittal to ANSI by the American National Standards Committee on Standards for Fall Protection, Z359. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard, the Z359 Committee had the following members:

Randall Wingfield, Chairman
 Basil Tominna, P.E., Vice Chairman
 Timothy R. Fisher, CSP, CHMM, ARM, CPEA, Secretary
 Jennie Dalesandro, Administrative Technical Support

Organization Represented	Name of Representative
3M	Raymond Mann Kurt Dietrich, P.E.
American Airlines	Dean Carlisle Len Bradley
American Society of Safety Engineers	Jubal D. Hamernik, Ph.D., P.E. John Stephen Frost, CSP, CSM
Bashlin Industries, Inc.	Bradley S. McGill Roderick A. Paul
Boeing Company	Chuck Orebaugh Joey R. Junio
Buckingham Mfg. Co., Inc.	James Rullo DeForest Canfield
Capital Safety Group	J. Thomas Wolner, P.E. Judd Perner
Chevron	Craig Berkenmeier Stephanie Alvarez
Elk River, Inc	Kevin Whaley Paul Doepel
Ellis Fall Safety Solutions, LLC	J. Nigel Ellis, Ph.D., P.E., CSP, CPE John T. Whitty, P.E.
Flexible Lifeline Systems	Hugh Armstrong David Lee
General Motors	Ken Mahnick Kyle Sullivan
Gravitec Systems, Inc.	Randall Wingfield Dave Lough
Hartford Steam Boiler Inspection & Insurance Co.	Timothy Healey Jerome Kucharski, CFPS
High Engineering Corp.	Greg Small, P.Eng., M.Eng. Doug Myette
Honeywell Safety Products	Preston Anderson Parul Patel
Hy-Safe Technology	Frank Anzaldi Ron Larkin
ISEA – International Safety Equipment Association	Dan Henn Dan Shipp
Indianapolis Power and Light INSPEC International Ltd.	David H. Pate, CUSA Paul Clarke Andrew Diamond
LJB Inc.	Thomas Kramer, P.E., CSP Rupert Noton, CEng, MStructE
Latchways PLC	Tim Bissett, BEng (Hons) CEng, MIMechE Tim Fletcher

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Cal Sparks
John Corriveau
Robert Apel
John Giovengo
Robert Kling, P.E., CSP
Adam Chapin
Bob Golz
Greg Pilgrim
Gordon Lyman
Don Doty
Hongwei Hsiao, Ph.D.
Pamela Huck, CSP
Tim Accursi
Gabe Fusco
Keith Smith
W. Joe Shaw
Gary Choate

Loui McCurley
Jim Frank
Clint Honeycutt, Sr.
Janice Honeycutt
Steve Sanders
Michael C. Wright, P.E., CPE, CSP
Mark Williams
Kenneth Lemke
Chris Tsakiridis
Steven Kim Biggs
Joe B. George
Mark Conover
Kurani Seyhan
Arnie Galpin, P.E.
George Nolan
Richard Griffith
Tyler Griffith
Joseph R. Parks
Spencer Colbert
Doug Knapp
Joseph Kabis
Jerry Yates
James Mark
Scott H. Richert, CSP, ARM, ALCM
John Seto
Craig Siciliani
Tom Kinman
John Rupp, Jr.
Mark S. Kantorowicz
Andrew E. Salas

U.S. Bureau of Reclamation

U.S. Department of Interior – BOEMRE

U.S. Department of the Navy

Vertical Access LLC

Western Area Power Administration

Shawn Smith
Shaun Reed
John M. Cushing, Jr.
Sara Corman
Basil Tominna, P.E.
Shawn Smith
Kelly Streeter, P.E.
Kent Diebolt
Jeff Wild

Subgroup Z359.0 had the following members:

Basil Tominna, P.E. (Chair)
Frank Anzaldi
Pamela Huck, CSP
Tom Kinman
David H. Pate, CUSA
Randall Wingfield
Mike C. Wright, P.E., CPE, CSP

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STANDARD REQUIREMENTS

1. SCOPE, PURPOSE, APPLICATION, EXCEPTIONS AND INTERPRETATIONS

1.1 Scope. This standard establishes the definitions and nomenclature used for the Z359 Fall Protection Code.

1.2 Purpose and Application.

1.2.1 This standard addresses definitions and nomenclature for the Z359 Fall Protection Code.

1.3 Exceptions.

1.3.1 The scope of these standards does not include window cleaner belts or sports-related activities.

1.3.2 Body belts, window cleaner belts, chest-waist harnesses and chest harnesses, even when referred to as body supports, are not addressed by the provisions of these standards.

1.3.3 Systems that incorporate horizontal lifelines and personal protective systems for activities such as climbing, man riding, work positioning, rescue and evacuation may suitably incorporate components or subsystems specified herein. When incorporated into such systems, however, those systems, subsystems and components are not within the scope of these standards.

1.3.4 Variance from the requirements of these standards are permissible in isolated instances of practical difficulties when applying it at the user level, but only when it is clearly evident that an equivalent degree of protection is implemented.

1.4 Interpretations. Requests for interpretations of this standard shall be in writing and addressed to the Secretariat of this standard.

2. DEFINITIONS

2.1 Activation Distance. The distance traveled by a fall arrester or the amount of line laid out by a self-retracting lanyard (SRL) from the point of onset of a fall to the point where the fall arrester or

EXPLANATORY INFORMATION

(Not part of American National Standard Z359.0)

E1.3.2 Chest-waist harnesses refer to harnesses consisting of separate waist and chest components that are not integral as defined by these standards and that form a full body harness when combined.

E1.3.3 This section recognizes that some fall protection equipment meeting the requirements of these standards may have multiple uses, making the equipment suitable for other uses. In such cases, the equipment must be evaluated according to its use, and the requirements of these standards are not applicable.

E2.1 Activation distance is part of the free fall distance. The activation point is the point where the fall arrester engages the lifeline or, in the case of an SRL, where an internal brake begins to engage.

self-retracting lifeline begins to apply a braking or stopping force.

2.2 Active Fall Protection Systems. A fall protection system that requires authorized persons to wear or use fall protection equipment and that requires fall protection training.

2.3 Adjuster. A component that provides a means to vary the length of a strap, webbing or rope.

2.4 Administrative Controls. Employer mandated safe work practices or procedures that are designed to prevent exposure to a fall by signaling or warning an authorized person to avoid approaching a fall hazard.

2.5 Anchorage. A secure connecting point or a terminating component of a fall protection system or rescue system capable of safely supporting the impact forces applied by a fall protection system or anchorage subsystem.

2.6 Anchorage Connector. A component or subsystem that functions as an interface between the

E2.2 Active fall protection systems include any fall restraint, fall arrest, travel restriction or administrative controls used to protect authorized persons at height.

E2.3 Adjusters may be used in lanyards made of rope and strap to provide means of varying the length to suit the user's needs. Webbing adjusters may be used in lieu of buckles in harnesses to adjust the harness fit if the webbing adjuster meets the requirements for buckles set forth in these standards.

E2.4 Administrative controls can include training, warning signs, lights, audible alarms or other methods that warn an authorized person to avoid approaching a fall hazard. Administrative controls are distinguished from work procedures implemented for the purpose of protecting a person who is already located near the fall hazard. Work procedures implemented to protect a person who is near the fall hazard are not covered by these standards.

E2.5 An anchorage meeting the requirements of these standards can safely withstand the foreseeable forces that might be exerted on the fall protection or rescue system. Care must be taken to distinguish between an anchorage and an anchorage connector as those terms are used in these standards. An anchorage is typically a fixed structural member such as a post, stanchion, beam, girder, column, floor or wall required for the stability and other purposes of the structure itself. Examples include a beam, girder, column or floor. An anchorage connector, on the other hand, is a component that provides an interface to which the fall protection or rescue subsystem may be attached when the anchorage itself does not have a compatible connection point. Window cleaner anchors are outside the scope of the Z359 standards. A fall arrest or restraint anchorage has a separate attachment location of any anchorage used to support or suspend workers or work platforms.

E2.6 Anchorage connectors are typically installed temporarily or permanently on anchorages such

anchorage and a fall protection, work positioning, rope access or rescue system for the purpose of coupling the system to the anchorage.

2.7 Anchorage Subsystem. A subsystem of a complete active fall protection system to which workers connect their personal equipment.

2.8 Arrest Distance. The total vertical distance required to arrest a fall. The arrest distance includes the deceleration distance and activation distance.

2.9 Assisted Rescue. A rescue requiring the assistance of others.

2.10 Attachment Element. A connector integral to the body support that provides a point on the body harness to which other components or connecting subsystems may be attached.

2.11 Authorized Person. For purposes of the Z359 standards, a person assigned by the employer to perform duties at a location where the person will be exposed to a fall hazard.

2.12 Authorized Rescuer. A person assigned by the employer to perform rescue from fall protection.

2.13 Automatic Descent Control Device. A load lowering device or mechanism that automatically

as a beam, girder, column or floor. An anchorage connector may be moveable or portable, such as a tripod or davit arm. An anchorage connector meeting the requirements of these standards can safely withstand the foreseeable forces that might be exerted on the fall protection or rescue system.

E2.7 Examples of anchorage subsystems include fixed anchorages, VLLs, HLLs, rigid rails and ladder-climbing systems. An anchorage subsystem may allow one or more workers to be attached to it, depending on its design. Anchorage subsystems are separated into two classes in these standards: flexible and rigid.

E2.10 The D-Ring is the most common attachment element. Attachment elements are typically incorporated into the body support for purposes such as fall arrest, work positioning travel restriction, lifting, lowering and controlled descent.

E2.11 A person is authorized under these standards, if granted the authority by the employer, to perform duties at a location where the person is exposed to a fall hazard. Any employee with proper authority to be at a location where they are exposed to one or more fall hazards is considered an authorized person. To comply with Z359 standards, an authorized person is required to receive training and to periodically demonstrate the ability to safely use the appropriate fall protection equipment. An authorized person may also be qualified for other positions such as a competent person, qualified person or authorized rescuer.

E2.12 To comply with these standards, an authorized rescuer is required to receive training and to periodically demonstrate the ability to perform rescue from fall protection.

controls pay-out speed of line or descent speed under load once it has been engaged.

2.14 Available Clearance. The distance from a reference point, such as the working platform, to the nearest obstruction that an authorized person might contact during a fall which, if struck, could cause injury.

2.15 Ballasted Anchor. An anchorage that rests on, but is not mechanically connected to, an underlying structure.

2.16 Belt, Body. A body support comprised of a strap with means for securing it about the waist.

2.17 Body Support. An assembly of webbing arranged to support the human body for fall protection purposes, including during and after fall arrest.

2.18 Buckle. A connector for attaching a strap or webbing segment to either another strap or webbing segment or back to itself.

2.19 Capacity. The maximum weight that a component, system or subsystem is designed to hold.

2.20 Carabiner. A connector generally comprised of a trapezoidal or oval shaped body with a closed gate or similar arrangement that may be opened to attach another object and, when released, automatically closes to retain the object.

E2.15 A ballasted anchor uses its own weight and/or the lateral friction it develops with the underlying structure to resist the imposed forces.

E2.16 A body belt is sometimes referred to as a waist belt or safety belt. Body belts are not suitable for fall arrest and are not intended for use as a body support in the arrest of a worker's fall. Body belts are not addressed by ANSI/ASSE Z359.3 standard for work positioning or travel restraint, unless incorporated into a work positioning harness or full body harness. Window cleaner belts are addressed in IWCA I14.1 standard.

E2.17 The term "body support" is generally used to refer to a full body harness, chest harness, chest-waist harness or a body belt. It generally includes adjustable means for fastening it about the body and attachment points suitable for fall protection applications.

E2.19 The combined weight of the user and all clothing, tools and other objects borne or carried by the user is considered in determining whether the capacity has been exceeded.

E2.20 In addition, carabiner may also be spelled karabiner. There are generally three types of carabiners: (i) the automatic or self-locking type (required by these standards) with a self-closing, self-locking gate that remains closed and locked until intentionally unlocked and opened for connection or disconnection; (ii) the manual locking type (not permitted by these standards) with a self-closing gate that must be manually locked by the user, and that remains closed and locked until intentionally

unlocked and opened by the user for connection or disconnection; or (iii) the non-locking type (not permitted by these standards) with a self-closing gate that cannot be locked.

2.21 Certification. The act of attesting in writing that the criteria established by these standards or some other designated standard have been met.

2.22 Certified. An act or process resulting in documentation that determines and attests to criteria that meet the requirement of an American National Standard. Such act or process may be carried out by testing or applying proven analytical methods, or both, under the supervision of a qualified person or entity.

2.23 Certified Anchorage. An anchorage for fall arrest, positioning, restraint or rescue systems that a qualified person certifies to be capable of supporting the potential fall forces that could be encountered during a fall or that meet the criteria for a certified anchorage prescribed in these standards.

2.24 Chest Harness. See “Harness, Chest”.

2.25 Chest-Waist Harness. See “Harness, Chest-Waist”.

2.26 Clearance. The distance from a specified reference point, such as the working platform or anchorage of a fall arrest system, to the lower level that a worker might encounter during a fall

2.27 Clearance Requirement. The distance below an authorized person that must remain clear of obstructions in order to ensure that the authorized person does not make contact with any objects that would cause injury in the event of a fall.

2.28 Compatibility. The quality or power of being compatible.

***E2.27** The clearance requirement includes total fall distance; the deflection of anchorage and anchorage connectors, the length and elongation of the full body harness and the body; the vertical component of any swing fall and a clearance safety factor. The clearance requirement accounts for performance of the system, the number of authorized persons allowed on the system and their body position (kneeling or standing).*

***E2.28** See “Compatible”. It is possible to have compatibility between or among components or elements when used in a prescribed manner, but for those same elements or components to be incompatible when configured and/or used in a different manner.*

2.29 Compatible. Capable of orderly, efficient integration and operation with other elements or components in a system, without the need of special modification or conversion, such that the connection will not fail when used in the manner intended.

2.30 Competent Person. An individual designated by the employer to be responsible for the immediate supervision, implementation and monitoring of the employer's managed fall protection program who, through training and knowledge, is capable of identifying, evaluating and addressing existing and potential fall hazards, and who has the employer's authority to take prompt corrective action with regard to such hazards.

2.31 Competent Person Trainer. An individual who by training, knowledge and experience is capable of conducting competent person training.

2.32 Competent Rescuer. An individual designated by the employer who by training, knowledge and experience is capable of the implementation, supervision and monitoring of the employer's fall protection rescue program.

2.33 Competent Rescue Trainer. An individual who by training, knowledge and experience specific to fall protection rescue is capable of conducting rescue training.

2.34 Component. An element or integral assembly of interconnected elements intended to perform one function in the system.

E2.29 Determining whether two or more pieces of equipment are compatible requires consideration of the configuration in which the resulting system or subsystem will be used. It is possible for two components to be compatible with each other when properly configured and used, but to be incompatible when configured and/or used in a different manner. For example, certain connectors may be compatible with a particular anchorage connector if the anchorage connector is located overhead, but not if the anchorage connector is located at the user's feet.

E2.30 The knowledge and training requirements for an individual to be considered a Competent Person are provided in various sections of the ANSI/ASSE Z359 standards. An individual who does not possess training and knowledge in the areas required by these standards are not considered to be capable of identifying, evaluating and addressing existing and potential fall hazards nor capable of taking the necessary corrective measures.

E2.31 The requirements for a person to be considered a Competent Person Trainer are provided in ANSI/ASSE Z359.2.

E2.32 The requirements for a person to be considered a Competent Rescuer are provided in ANSI/ASSE Z359.2.

E2.33 The requirements for a person to be considered a Competent Rescue Trainer are provided in ANSI/ASSE Z359.2.

E2.34 Components may be acquired from different sources as long as the components as assembled and used are compatible and the resulting system meets the requirements of the Z359 standards.

Some examples of what is meant by the phrase "intended to perform one function in the system" are as follows: A full body harness (FBH) performs a body supporting function; a lanyard (L) performs a tethering function; a carabiner (CAR) performs a connecting function; a fall arrester (FA) performs

2.35 Connecting Subsystem. An assembly, including the necessary connectors, comprised of all components, subsystems, or both, between the anchorage or anchorage connector and the harness attachment point.

2.36 Connector. A component or element that is used to couple parts of the system together.

2.37 Constituent. An integral component of a larger assembly.

2.38 Continuous Fall Protection. One or more fall protection systems that provide fall protection without interruption

2.39 Cusp Sag. The sag that an HLL attains before it begins to provide significant deceleration force to stop a fall.

2.40 Deceleration Distance. The vertical distance between the user's fall arrest attachment at the on-

a stopping function and an energy absorber (EA) performs a braking function.

E2.35 *Connecting subsystems serve to prevent or arrest a fall. In the case of personal fall arrest systems, connecting subsystems serve to maintain forces on the body below required levels (absorb free-fall energy) and provide the means of post-fall suspension of the fallen person.*

E2.36 *A connector may be an independent component (such as a carabiner) of a system or it may be an integral element of a component, hybrid component, subsystem or system (such as a buckle or D-Ring sewn into a body support or a snaphook spliced or sewn into a lanyard or self-retracting lanyard). Connectors are sometimes referred to as hardware.*

E2.37 *A component is said to be a constituent if it is integral to its next higher level of assembly (component, subsystem or system).*

For example, a snaphook is a constituent of the lifeline that pays out from and retracts into a Self Retracting Lanyard (SRL) because the snaphook is a component that cannot be removed from the line without the use of special tools. The lifeline is a constituent of the SRL because it is a component (i.e. assembly of wire rope, swaged fittings, thimble and snaphook) that cannot be removed from the SRL without the aid of special tools.

E2.38 *Providing continuous fall protection may require more than one fall protection system or a combination of prevention or protection measures.*

E2.39 *Cusp sag is the state where the initial length of cable, at essentially its pretension force, has been pulled into two essentially straight lines extending from one anchorage, to the point of fall arrest load application, to the next adjacent anchorage. During the arrest of a fall, there is no appreciable deceleration force on the falling worker, nor is there an appreciable increase in HLL cable tension until the sag exceeds the cusp sag.*

E2.40 *The deceleration distance is determined by the response and interaction of all of the compo-*

set of fall arrest forces during a fall, and after the fall arrest attachment comes to a complete stop.

2.41 D-Ring. An integral “D” shaped connector typically used in harnesses, lanyards, energy absorbers, lifelines and anchorage connectors as an integral connector as an attachment point.

2.42 Descent Controller. A device designed to be used by one worker for personal descent or to lower another worker from an elevation.

2.43 Dynamic Analysis. A method for predicting the performance of an active fall protection system by calculating the velocity of a moving or falling body at selected time or distance intervals. The method takes into consideration both the arresting force from the system and the gravitational pull on the falling body to determine how much the body speeds up or slows down over the selected interval.

2.44 Element. An integral part of a constituent, component, hybrid component, subsystem or system.

2.45 Employer. Any corporation, partnership, proprietorship, government agency or other organization that has employees.

2.46 Energy (Shock) Absorber. A component whose primary function is to dissipate energy and limit deceleration forces which the system imposes on the body during fall arrest.

2.47 Energy Absorber, Horizontal Lifeline. An energy absorber that is attached to one of the end anchorages or anchorage connectors of a horizontal lifeline subsystem.

ments of the fall arrest system (including deployment of PEAs, stretching of lanyards and lifelines, sagging of HLLs, etc.). Deceleration distance does not include the dynamic elongation of the system. This dynamic elongation is proportional to the length of the connecting subsystem or lifeline and temporarily reaches maximum elongation when maximum arresting force is applied.

E2.42 *A descent controller may be used for egress, work positioning, or both.*

E2.44 *Examples include rope, strap, thread, thimble, buckle, D-Ring or snaphook.*

E2.46 *Such devices may employ various principles such as deformation, friction, tearing of materials or breaking of stitches to accomplish energy absorption. An energy absorber causes an increase in the deceleration distance. An energy absorber may be borne by the user (personal) or be a part of a horizontal lifeline subsystem or a vertical lifeline subsystem.*

2.48 Energy Absorber, Personal. An energy absorber that is attached to a harness.

2.49 Energy Absorber, Vertical Lifeline. An energy absorber that is attached to the top anchorage or anchorage connector of a vertical lifeline subsystem.

2.50 Energy Analysis. A method for predicting the performance of an active fall protection system by calculating the energy produced by a moving or falling body and determining how this energy is absorbed or dissipated by the components of the fall protection system.

2.51 Equipment. A general term referring to components, subsystems or systems, in any combination, singular or plural.

2.52 Evacuation. Self-rescue affected by the rescue subject alone.

2.53 Eye, Formed. A loop or eye, with or without a thimble, formed in the end of a rope, wire rope or strap and secured by means of a splice, swaged fitting or stitched joint.

2.54 Eye, Return. A loop or eye in the end of a rope or wire rope formed by lapping the rope or wire rope back on itself and securing it by using swaged fittings.

2.55 Eye, Spliced. A loop or eye in the end of a rope or a wire rope formed by tucking the strand ends into the rope or wire rope.

2.56 Eye, Stitched. A loop or eye in the end of a strap formed by lapping the strap back on itself and securing it by means of a stitched joint.

2.57 Fall Arrest. The action or event of stopping a free fall or the instant where the downward free fall has been stopped.

2.58 Fall Arrest Attachment. A connector integral to the body support specifically designated as a point for connecting the fall arrest system.

E2.48 Energy absorber reduces the MAF experienced by the worker but increases the fall arrest distance.

E2.55 Spliced eyes may include swaged fittings.

E2.57 For the purposes of these standards, fall arrest is the instant when a falling body is first stopped. Fall arrest coincides with the greatest forces and deflections of the fall arrest system.

2.59 Fall Arrest System. The collection of equipment components that are configured to arrest a free fall.

2.60 Fall Arrester. A device that travels on a lifeline and will automatically engage or lock onto the lifeline in the event of a fall.

2.61 Fall Arrester Connecting Subsystem. The portion of a vertical lifeline fall protection system that is attached between the anchorage or anchorage connector and the fall arrest attachment on the harness.

2.62 Fall Edge. The unprotected edge of a walking/working surface or an unprotected opening from which a person could fall to a lower surface or into a hazard.

2.63 Fall Hazard. Any location where a person is exposed to a potential free fall.

2.64 Fall Hazard Survey Report. A written document that contains information about existing or potential fall hazards and a method or methods for eliminating or controlling those hazards.

2.65 Fall Hazard Zone. An area of fall exposure on a roof or slope.

E2.59 A fall arrest system is typically comprised of components such as full body harnesses, lanyards, deceleration devices, horizontal lifelines, vertical lifelines, anchorages and anchorage connectors. Configured and used properly, a free fall will be arrested without exceeding the strength requirements of these standards.

E2.60 A fall arrester usually employs the principle of inertial locking, cam lever locking, or both. A rope grab is one example of a fall arrester.

E2.61 A fall arrester connecting subsystem may incorporate integral subsystems or may be comprised of independent components. The term refers to the entire assembly, including the necessary connectors, and is typically comprised of either: (i) a fall arrester and vertical lifeline or fall arrester and vertical lifeline subsystem; (ii) a fall arrester, lanyard and vertical lifeline or vertical lifeline subsystem; (iii) a fall arrester, energy absorber and vertical lifeline or vertical lifeline subsystem; or (iv) a fall arrester, lanyard, energy absorber and vertical lifeline or vertical lifeline subsystem.

E2.62 A fall edge is also known as an unprotected edge or an exposed edge.

E2.63 In addition to a fall to a lower level, a fall hazard may exist, even on the same level, where the fall results in exposure to a hazard, such as contact with a high temperature process, unguarded machinery or a hazardous liquid in an open tank. Such hazards may be eliminated by guardrails or other fall protection techniques. The elevation at which a potential fall becomes a fall hazard is often prescribed by laws or regulations and may depend upon the type of work being performed or the work environment.

E2.65 Fall hazard zones for different surfaces are specified within these standards.

2.66 Fallout. The action of a person or test torso being unintentionally separated from the body support component during or after fall arrest.

2.67 Fall Protection. Any equipment, device or system that prevents an accidental fall from elevation or that mitigates the effect of such a fall.

2.68 Fall Protection System. Any secondary system that prevents workers from falling or, if a fall occurs, arrests the fall.

2.69 Fall Protection Procedure. A written series of logical steps that describes in detail the specific practices, equipment and methods to be used to protect authorized persons from falling when exposed to fall hazards.

2.70 Fall Restraint. See “Restraint or “Travel Restraint”.

2.71 Fall Restraint System. See “Travel Restraint System”.

2.72 Force Factor. The ratio of peak arresting force of a rigid mass to a human body of the same weight, both falling under identical conditions.

2.73 Free Fall. The act of falling before a fall protection system begins to apply forces to arrest the fall.

2.74 Free Fall Distance. The vertical distance traveled during a fall, measured from the onset of a fall from a walking working surface to the point at which the fall protection system begins to arrest the fall.

E2.67 Fall protection includes eliminating or controlling hazards, passive fall protection, travel restraint, fall arrest and administrative controls.

E2.68 Examples include guardrail, travel restraint, safety net and fall arrest systems.

E2.69 Also see the definition for “Procedure”.

E2.74 This distance excludes deceleration distance and the elongation of a lifeline or lanyard, but includes any distance that a deceleration device slides before engaging or the distance that a self-retracting lifeline or lanyard extends before fall arrest forces are applied.

The distance is measured using a common reference point, typically the fall arrest attachment point of the full body harness (D-Ring).

The term free fall distance has applicability beyond just personal fall arrest systems. For example, as used in the context of a positioning system, free fall distance refers to the slack in the system, which will convert to travel distance during a fall event.

2.75 Frontal D-Ring Attachment. An attachment element affixed to the full body harness within the vertical seven-inch sternum (breastbone) area that is designed to withstand dynamic fall arrest, restraint and post-fall suspension forces.

2.76 Full Body Harness. See “Harness, Full Body”.

2.77 Gate. The element of a connector that opens to receive an object and closes when released to retain the object.

2.78 Guardrail System. A passive system of horizontal rails and vertical posts that prevent a person from reaching a fall edge.

2.79 Hardware. A rigid component or element that is used to couple parts of the system together.

2.80 Harness, Chest. A component comprised of chest and shoulder straps with means for fastening it about the torso and for attaching it to other components or subsystems.

2.81 Harness, Chest-Waist. A body support consisting of separate chest and waist components that can be combined to form a full body harness. Chest-waist harnesses are excluded from these standards for purposes of fall arrest.

2.82 Harness, Evacuation. A body support designed and constructed so the rescue subject is securely held and suspended during the rescue process.

2.83 Harness, Full Body. A body support designed to contain the torso and distribute the fall arrest forces over at least the upper thighs, pelvis, chest and shoulders.

2.84 Harness, Positioning. A body support that

E2.75 The sternum is a flat, dagger shaped vertical bone located in the middle of the chest. Along with the ribs, the sternum forms the rib cage that protects the heart, lungs and major blood vessels from damage.

E2.77 Formerly known as a keeper. The performance and design specifications for connector gates are found within these standards.

E2.78 Guardrail systems typically have a top rail, a mid rail and posts. See ANSI/ASSE A1264.1, Safety Requirements for Workplace Floor And Wall Openings, Stair and Railing Systems.

E2.79 The term hardware may refer to an independent component of the system, such as a carabiner. It may also refer to an integral element of a component, hybrid component, subsystem or system (such as a buckle or D-Ring sewn into a body support or a snaphook spliced or sewn into a lanyard). The term hardware sometimes refers to connectors.

E2.80 Systems and subsystems incorporating chest harnesses are excluded from these standards.

E2.81 According to the requirements of these standards, a chest-waist harness does not meet the requirements of these standards for fall arrest because the chest and waist components are not integral. See definition of “Integral.”

E2.83 Wherever the word harness is used alone in these standards it refers to full body harness.

encircles and closes around the waist and legs with attachment elements appropriate for positioning.

2.85 Hazard Elimination. Changing the task, process, controls or other means so as to remove the need for an authorized person to be exposed to a fall hazard.

2.86 Horizontal Lifeline. A component of a horizontal lifeline subsystem, consisting of a flexible line with connectors or other coupling means at both ends for securing it horizontally between two anchorages or anchorage connectors.

2.87 Horizontal Lifeline Subsystem. An assembly, including the necessary connectors, comprised of a horizontal lifeline component and, optionally, of: a) An energy absorber component or, b) A lifeline tensioner component, or both. This subsystem is normally attached at each end to an anchorage or anchorage connector and may also contain one or more intermediate anchorages. The end anchorages have the same elevation.

2.88 Horizontal Track System. A form of rigid rail system that typically encloses a trolley inside a formed channel or track.

2.89 Hybrid Component. An integral assembly of elements or components, or both, intended to perform more than one function in the system.

2.90 Initial Sag. The initial mid-span deflection of an HLL due to static equilibrium between gravitational forces and pretension.

2.91 Inspection. An examination of equipment or systems to assess conformance to particular standard.

2.92 Instructions, Manufacturer. Printed infor-

E2.86 A horizontal lifeline is a means to which one or more connecting subsystems may be attached. It is sometimes referred to as a horizontal anchorage line, monkey line, static line or trolley line. Intermediate anchorages may be used on long HLL systems to reduce the sags.

E2.87 An HLL may be used as part of a travel-restraint system but more commonly is part of a fall arrest system. An HLL allows horizontal movement parallel to the HLL but may also allow protected vertical movement below the HLL if an SRL is used as the connecting means.

E2.88 Horizontal track systems are usually mounted overhead in fall arrest systems but may be mounted at lower heights as anchorages for travel-restraint systems.

E2.89 Hybrid components may usually be acquired from many sources and may be interchangeably incorporated into a system according to the manufacturer's instructions provided that the resulting system meets the requirements of these standards. A hybrid component may also be referred to as an integral subsystem. Examples include a self-retracting lanyard, or a lanyard with energy absorber, or a lanyard with energy absorber and fall arrester.

E2.90 The initial sag is the state when the HLL system is at rest due to the weight of the line and its components only.

mational documents supplied with equipment.

2.93 Integral. Not removable from the component, subsystem or system without destroying or mutilating any element or without use of a special tool.

2.94 Lanyard. A component consisting of a flexible rope, wire rope or strap, which typically has a connector at each end for connecting to the body support and to a fall arrester, energy absorber, anchorage connector or anchorage.

2.95 Lanyard Connecting Subsystem. An assembly, including the necessary connectors, comprised of a lanyard only, or a lanyard and energy absorber.

2.96 Lifeline. A component of a fall protection system consisting of a flexible line designed to hang either vertically (vertical lifeline), or for connection to anchorages or anchorage connectors at both ends to span horizontally (horizontal lifeline).

2.97 Lifeline Subsystem. An assembly, including the necessary connectors, comprised of at least a lifeline, and which may also have means for pretensioning the lifeline or for energy absorption, or both.

2.98 Lifeline Tensioner. A device, such as a turnbuckle, to tauten a horizontal lifeline or a weight to tension a vertical lifeline.

2.99 Maintenance. A process for keeping the product, component or system usable and safe from degradation.

2.100 Manual Descent Control Device. A load lowering device or mechanism that, once engaged, requires manual attention to control pay-out speed of line or descent speed under load.

2.101 Manual Fall Arrester. A fall arrester that will remain locked where it has been positioned on a VLL until deliberately repositioned by a worker.

E2.94 Lanyards perform a tethering function that restricts movement and can arrest a fall.

E2.95 A lanyard connecting subsystem is normally attached between an anchorage or anchorage connector and the fall arrest attachment and may be an integral subsystem or may be comprised of independent components.

E2.96 A lifeline serves to extend the range of the user through the slidable connection of a fall arrester in the case of a vertical lifeline or a connector or other device in the case of a horizontal lifeline.

E2.98 The lifeline tensioner of a horizontal lifeline subsystem is usually placed between an anchorage or anchorage connector at one end of the horizontal lifeline and the horizontal lifeline itself. The lifeline tensioner of a vertical lifeline subsystem is usually placed near the bottom of the vertical lifeline.

2.102 Manual Rope Grab. See “Manual Fall Arrester”.

2.103 Manufacturer. Any producer of fall protection equipment with written product labels and instructions meeting the requirements of these standards.

2.104 Marking. Any sign, label, stencil, plate or the like containing information or guidance.

2.105 Maximum Anchorage System Deflection (MASD). The dynamic displacement of the anchorage system to the position at fall arrest after all slack has been removed.

2.106 Maximum Arrest Force. The peak force measured by the test instrumentation during arrest of the test weight in the dynamic tests set forth in these standards.

2.107 Maximum Arrest Load (MAL). The peak force applied to an anchorage by an active fall protection system when arresting a fall.

2.108 Maximum Sag. The peak sag of an HLL at the instant of fall arrest.

2.109 Model. A specific type or design of a product.

2.110 Non-Certified Fall Arrest Anchorage. A fall arrest anchorage that a competent person can judge to be capable of supporting the predetermined anchorage forces as prescribed in these standards.

2.111 O-Ring. A circular shaped ring.

2.112 Oval Ring. An oval shaped ring.

2.113 Passive Fall Protection System. Fall protection that does not require the wearing or use of personal fall protection equipment.

E2.103 If a positioning or travel restraint system is produced by the authorized person’s employer representative or the authorized person, then professional labels and instructions are essential to be provided for proper use, inspection and maintenance.

E2.105 In HLLs, the maximum anchorage system deflection is the change in sag from the cusp sag to the peak sag at fall arrest. In VLLs, it is the stretch of the lifeline.

E2.107 The MAL is a force vector that is co-linear with the cable in an HLL. The MAL equals MAF in a vertical system.

E2.110 Non-certified anchorages are an exception to the requirement that anchorages are designed, certified, specified and selected by a qualified person. If the requirements within these standards for a non-certified anchorage are met, the selection and use of a non-certified anchorage may be supervised by a competent person. Non-certified anchorages typically consist of unquestionably strong elements of a structure.

E2.113 Examples of passive fall protection systems include safety nets, guardrail systems, or other means that protect an authorized person from a fall hazard.

2.114 Personal Energy Absorber. See “Energy Absorber”.

2.115 Personal Fall Arrest System (PFAS). An assembly of components and subsystems used to arrest a person in a free fall.

2.116 Plan. An orderly arrangement of parts of an overall design or objective. A systematic arrangement of elements or important parts.

2.117 Positioning. The act of supporting the body with a positioning system for the purpose of working with hands free.

2.118 Positioning Lanyard. A lanyard used to transfer forces from a body support to an anchorage or anchorage connector in a positioning system.

2.119 Positioning Line. A vertical, horizontal or angled rope or wire rope used to transfer forces from a body support to an anchorage or anchorage connector in a positioning system.

2.120 Positioning System. A full body harness system or a body belt incorporated into a full body harness or work positioning harness configured to allow an authorized person to be supported on an elevated vertical or inclined surface, such as a wall, and work with both hands free from body support.

2.121 Pretension. The initial force (tension) in an HLL cable immediately before a fall occurs. Pretension of the HLL balances the weight of the cable, holding it to its initial sag.

E2.115 A system must always include a full body harness and connecting means between the harness and an anchorage or anchorage connector. Such connecting means may consist of a lanyard, energy absorber, fall arrester, lifeline, self-retracting, lanyard or suitable combinations of these. These standards deal only with PFAS incorporating a full body harness. Whenever the term system is used in these standards it refers to a personal fall arrest system.

E2.116 A plan may vary in its level of specificity, but is more general than detailed. A plan differs from a procedure in that a plan sets out a general course of action, but does not provide the specific steps by which an action is initiated, performed, controlled and/or finalized. See “Procedure”. A plan is more specific than a program, and more general than a procedure.

E2.118 Positioning lanyards may be fixed length or adjustable and are part of a positioning system.

E2.120 Although positioning systems may use the same equipment as a fall protection system (such as a harness), a positioning system used alone does not constitute fall protection. While positioning, a person is exposed to a fall hazard and is required under these standards to use a separate system that provides backup protection from a fall.

2.122 Primary System. In fall protection terminology, the main mechanism that allows a worker to maintain their desired position.

2.123 Procedure. A series of logical steps by which all repetitive action is initiated, performed, controlled and finalized. A procedure establishes the specific step-by-step action that is required; who is required to act; and when the action is to take place.

2.124 Product. A component, subsystem or system inclusive of all packaging, markings and instructions at the point of sale by the manufacturer.

2.125 Professional Engineer. A person who holds an engineering registration in the state or other jurisdiction in which they are applying these standards.

2.126 Program. An organized, directed effort that uses specified resources to achieve desired objectives. A broad framework of goals to be achieved, serving as a basis to define and plan more specific requirements for meeting those goals.

2.127 Program Administrator. A person authorized by their employer to be responsible for managing the employer's fall protection program.

2.128 Proof Load Testing. A type of verification testing performed on equipment or elements thereof by applying to the specimen a static load of a specified amount below the design breaking strength of the specimen.

2.129 Proof Test. A test to prove the structural integrity of a component or system.

2.130 Qualified Person. A person with a recognized degree or professional certificate and with extensive knowledge, training and experience in the fall protection and rescue field who is capable

E2.122 Primary systems are typically considered to comprise the worker's balance, their climbing skills and the safety of the platform, surface or structure that supports them. Fall protection is a secondary form of protection in case the primary system fails.

E2.123 A procedure differs from a plan in that a procedure provides specific steps to be followed in performing a task or addressing a particular situation, while a plan sets out a general course of action.

E2.128 Proof load testing is performed to assure the strength of critical parts, which may have weaknesses which are not detectable by visual inspection and which may be caused by manufacturing processes. Proof load testing may be performed on all (100%) of the parts in a production lot or on a lesser percentage according to a sampling plan. Z359 standards require that all D-Rings, O-Rings, carabiners and snaphooks be subjected to 100% proof load testing.

E2.130 Many jurisdictions require that individuals who design or evaluate physical structures be registered with the jurisdiction as a professional engineer.

of designing, analyzing, evaluating and specifying fall protection and rescue systems to the extent required by these standards.

The extent to which qualified persons are required to have specific knowledge, training and experience is governed by the substantive requirements of these standards as they apply to the duties and responsibilities of various personnel. For example, this definition does not imply that a qualified person is required to design, evaluate and/or specify rescue equipment, systems or procedures for emergency response teams and rescuers meeting the requirements of these standards.

2.131 Qualified Person Trainer. A qualified person who meets the requirements of these standards and who is also qualified to provide fall protection training.

2.132 Rated Working Load. The manufacturer's specified maximum and minimum loads for which the component is designed to be used.

2.133 Required Clearance Below the Anchorage. The minimum distance between the anchorage of a fall arrest system and the highest lower level a worker might encounter during a fall.

2.134 Required Clearance Below the Platform. The minimum distance between the working platform and the highest lower level a worker might encounter during a fall.

2.135 Rescue. The process of removing a person from danger, harm or confinement to a safe location.

2.136 Rescue Plan. A written process that describes in a general manner how rescue is to be approached under the specified parameters, such as location or circumstances.

2.137 Rescue Procedure. A written series of logical steps that describes the specific manner in which rescue is to be accomplished.

E2.137 A rescue procedure establishes the specific step-by-step action that is required to be followed to accomplish rescue, including who is required to act and when the action is to take place.

2.138 Rescue Subject. The person being rescued or in need of rescue.

2.139 Rescue System. An assembly of components and subsystems used for rescue.

E2.139 A rescue system typically consists of components, which are addressed in ANSI/ASSE Z359.4.



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2.140 Rescue System, One Person. A rescue system intended to bear only the weight of a single person at one time.

2.141 Rescue System, Two Person. A rescue system intended to bear the weight of up to two persons simultaneously.

2.142 Rescuer. Person or persons other than the rescue subject acting to perform an assisted rescue by operation of a rescue system.

2.143 Restraint. The technique of securing an authorized person to an anchorage using a lanyard short enough to prevent the person's center of gravity from reaching the fall hazard.

2.144 Rigging. The process of building a system to move or stabilize a load or the system itself.

2.145 Rigid Anchorage Subsystem. An anchorage system, such as a rigid rail system or a single point of attachment that does not appreciably deflect, deform or stretch when a fall arrest impact occurs. For the purposes of these standards, a rigid anchorage subsystem is one where the deflection or stretch is not more than 4 inches (100mm) when the peak impact force from the worst-case fall protection loading is applied to the subsystem.

2.146 Rigid Rail System. A fall protection system that uses one or more trolleys on a horizontal track (often an I-beam or slotted tube).

2.147 Ring. A generally hoop-shaped connector (hardware) element or component.

2.148 Rollout. A process by which a snaphook or carabiner unintentionally disengages from another connector or object to which it is coupled.

2.149 Rope Access. A technique using safety ropes, normally incorporating two separately secured systems, one as a means of access and the other as a secondary system, used with a harness in combination with other devices, for access to and

E2.146 In a rigid rail system, a connecting means is attached between the worker's full body harness and the trolley. Rigid rail systems allow horizontal movement parallel to the rigid rail, but may also allow vertical movement if an SRL is used as the connecting means.

E2.149 Rope access is different from fall arrest, fall restraint and other fall protection techniques in that the authorized person is generally fully suspended by the rope system during work. The safe use of rope access systems requires specific competence

from as well as suspension at the place of work.

2.150 Rope (or Strap) Adjuster. A mechanical means of readily moving a vertical line attachment or changing the position of an intermediate anchorage device between an anchorage (connector) and a body support while loaded with the authorized person's weight or partial weight while leaning.

2.151 Rope Grab. See "Fall Arrestor".

2.152 Rope, Synthetic. A construction of bundled man-made yarns, fibers or filaments forming a strong flexible line.

2.153 Rope, Wire. A plurality of drawn wires forming strands laid helically over an axis or core.

2.154 Routine. Of a commonplace or repetitious character or of, relating to or being in accordance with established procedure.

2.155 Safety Margin. A clearance factor of safety defined as the distance between the lowest extremity of the worker's body at fall arrest and the highest obstruction the worker might otherwise make contact with during a fall.

2.156 Safety Net System. A horizontal or semi-horizontal, cantilever-style barrier that uses netting system to stop falling workers before they make contact with a lower level or obstruction.

2.157 Secondary Fall Protection System. One or more means of fall protection, as defined by these standards, configured as a supplement or as back-up to protect a worker from a potential fall if the primary system fails.

2.158 Self-Retracting Device (SRD). A device that contains a drum wound line that automatically locks at the onset of a fall to arrest the user, but

in rope access techniques acquired by training and experience, confirmed with independent assessment and certification by one competent to assess and certify rope access skills and knowledge.

E2.150 *A rope adjuster may be a manual rope grab type device or a descent control device, which provides an adjustment feature. An automatic rope grab is typically used as a fall arrester for a vertical lifeline, which can act as back-up fall protection to a work positioning system or travel restraint system in fall hazard zone.*

E2.157 *Fall protection is defined in these standards as "any equipment, device or system that prevents an accidental fall from elevation or that mitigates the effect of such a fall." See "Fall Protection". A frontal D-Ring attachment providing limited fall arrest meets this requirement. Secondary systems include guardrail, travel restraint, positioning and fall arrest systems.*

that pays out from and automatically retracts onto the drum during normal movement of the person to whom the line is attached. After onset of a fall, the device automatically locks the drum and arrests the fall. Self-retracting devices include self-retracting lanyards (SRL's), self-retracting lanyards with integral rescue capability (SRL-R's), and self-retracting lanyards with leading edge capability (SRL-LE's) and, hybrid combinations of these.

2.159 Self-Retracting Lanyard (SRL). A self-retracting device suitable for applications where during use the device is mounted or anchored such that possible free fall is limited to 2 feet (.6m) or less.

2.160 Self-Retracting Lanyard Connecting Subsystem (SRLCSS). An assembly, including the necessary connectors, comprised of a self-retracting lanyard or a self-retracting lanyard/energy absorber combination.

2.161 Self-Retracting Lanyard With Integral Rescue Capability (SRL-R). An SRL that includes an integral means for assisted rescue via raising or lowering the rescue subject.

2.162 Self-Retracting Lanyard With Leading Edge Capability (SRL-LE). A self-retracting device suitable for applications where during use the device is not necessarily mounted or anchored overhead. The device may be at foot level and where the possible free fall is up to 5 feet (1.5m) that includes integral means to withstand impact loading of the line constituent with a sharp or abrasive edge during fall arrest and for controlling fall arrest forces on the user.

2.163 Sequential Fall. A multiple-worker fall where the impacts from each worker occur at different times in a cascading manner.

2.164 Shall. The word shall is to be understood as denoting a mandatory requirement.

2.165 Shock Absorber. See definition of "Energy Absorber".

2.166 Should. The word should denotes a recommendation.

E2.160 This connecting subsystem is attached between an anchorage or anchorage connector and the fall arrest attachment of the body support.

2.167 Simultaneous Fall. A multiple-worker fall where the impacts from each worker occur at the same instant.

2.168 Snaphook. A connector comprised of a hook-shaped body with a normally closed gate or similar arrangement that may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object.

2.169 Span. The portion of the system between any pair of adjacent supports on fall protection systems such as rigid rails and HLLs.

2.170 Splice. A means of terminating a rope or wire rope by an appropriate tucking of the strand ends into the rope.

2.171 Stable Surface. A walking working surface that has the strength and structural integrity to support an authorized person(s).

2.172 Static Analysis. A method to predict the performance of an active fall protection system based on applying static loadings specified by these standards.

2.173 Stitch Pattern. The particular configuration of threads used to form terminations or joints of webbing.

2.174 Strap. A length of webbing that may be incorporated in a harness, lanyard or other component or subsystem.

2.175 Strap, Chest. A harness strap passing generally horizontally across the chest or around the body at chest level with adjustable means for fastening.

2.176 Strap, Shoulder. A harness strap that passes from the waist, up the chest, over the shoulder and down the back to the waist. It is connected to the waist strap or thigh straps or sub-pelvic strap or combinations thereof.

E2.168 Snaphooks are generally one of two types, namely: (i) Automatic-locking type (required by these standards) with a self-closing and self-locking gate which remains closed and locked until intentionally unlocked and opened for connection or disconnection. (ii) Non-locking type (not permitted by these standards) with a self-closing gate which remains closed, but not locked, until intentionally opened for connection or disconnection.

E2.169 The number of spans in a system is typically one less than the number of supports.

E2.170 Two rope or wire rope segments should not be spliced together to, for example, lengthen or repair the line.

E2.174 Also see definition of "Webbing".

2.177 Strap, Shoulder Retainer. A means of connecting the harness shoulder straps for the purpose of retaining them on the shoulders.

2.178 Strap, Sub-Pelvic. A full body harness strap, which passes under the buttocks without passing through the crotch and is designed to transmit, to the sub-pelvic part of the body, forces applied during fall arrest and post-fall suspension.

2.179 Strap, Thigh. A full body harness strap with adjustable means for fastening it about the thigh.

2.180 Strap, Waist. A harness strap passing around the body at the waist with adjustable fastening means.

2.181 Stretch Out. The change in distance between the worker's D-Ring and toes during a fall arrest.

2.182 Subsystem. A multi-function assembly comprised of either: a) independent components, including the necessary connectors, interconnected by the user; or b) integrally interconnected components (also referred to as hybrid components or integral subsystems).

2.183 Subsystem Assembly. An assembly of components used as part of a system.

2.184 Supporting Subsystem. An integral assembly of a body support component with another component or connecting subsystem.

2.185 Suspended Equipment. Machines, platforms or other equipment suspended by support lines.

2.186 Suspension. The act of supporting 100% of a user's body weight, including equipment, for the purpose of accessing a work location with one or two points of contact.

2.187 Suspension Seat. An arrangement of straps in a harness used to provide a body support and permit leaning or sitting while working.

E2.181 Stretch out accounts for stretching of the body-holding device, sliding of the D-Ring and the reaction of the worker's body to the deceleration forces, sometimes including lengthening of the body if starting from a kneeling or lying position.

E2.184 Examples include a full body harness with integral lanyard or integral energy absorber, or both.

E2.186 This definition is outside the scope of the Z359 standards, but has been included as guidance for users with interest in this issue.

E2.187 These standards do not cover boatswain chairs that incorporate rigid boards or chair seats as defined in ANSI/ASSE A10.8, Scaffolding Safety Requirements.

2.188 Swaged Fitting. A mechanically pressed sleeve at the termination of a rope or wire rope used to form a loop or terminate a line.

2.189 Swing-Drop Distance. The vertical drop in height experienced by the worker using a fall arrest system from the onset of the swinging motion to the point where the user can initially make contact with a structure.

2.190 Swing Fall. A pendulum-like motion that occurs during and/or after a vertical fall. A swing fall results when an authorized person begins a fall from a position that is located horizontally away from a fixed anchorage.

2.191 Swing Fall Distance. The vertical drop in height experienced by the worker using a fall arrest system from the onset of the swinging motion to the lowest point reached during the swing.

2.192 Synthetic Rope Tackle Block. A load lifting and/or lowering device that does not include a winding or traction drum, but uses pulleys to achieve a mechanical lifting advantage.

2.193 System. See definition of “Personal Fall Arrest System (PFAS)”.

2.194 Testing. The controlled application of test conditions to a product (system, subsystem, component or element) and the recording of observed effects. When the terms “testing” or “tests” are used in these standards, those terms shall denote qualification testing or qualification test(s), not developmental or verification testing or test(s), unless otherwise specified.

2.195 Testing, Developmental. The controlled application of test conditions to a pre-production prototype of a product in the developmental stage, and the recording of observed effects, for the purpose of determining and evaluating the developmental product’s performance and design characteristics.

2.196 Testing and Interpolation Analysis. A method for determining the performance of an active fall protection system through direct testing of the system and mathematical interpolation of test

E2.188 Also see definition of “Eye, Formed”.

E2.189 Swing-drop distance is measured by following the D-Ring of the harness.

E2.191 Swing fall distance is measured by following the D-Ring of the harness.

results for similar systems.

2.197 Testing, Qualification. The controlled application of test conditions to a product specimen randomly selected from the initial production lot, and the recording of observed effects, for the purpose of determining the product's compliance with the requirements of these standards. When the terms "testing" or "tests" are used in the Z359 standards, those terms shall denote qualification testing or qualification test(s), not developmental or verification testing or test(s) unless otherwise specified.

2.198 Testing, Verification. The controlled application of test conditions to a product specimen sampled from ongoing production lots (after qualification testing), and the recording of observed effects, for the purpose of confirming the product's continuing compliance with the requirements of these standards. Proof load testing is a type of verification testing.

2.199 Thimble. A grooved metal or plastic piece about which a rope is bent and spliced or swaged to the main body of the rope to form an eye.

2.200 Thread. A group of synthetic filaments twisted together to form a strong strand.

2.201 Total Fall Distance (TFD). The total vertical distance a person falls, measured from the onset of a fall to the point where the person comes to rest after the fall is stopped.

2.202 Travel Restraint Lanyard. A lanyard used to transfer forces from a body support to an anchorage or anchorage connector in a travel restraint system.

2.203 Travel Restraint Line. A rope, or wire rope, used to transfer forces from a body support to an anchorage or anchorage connector in a travel restraint system.

2.204 Travel Restraint System. A combination of anchorage, anchorage connector, lanyard (or other

E2.200 Thread is used to sew stitch patterns into webbing.

E2.201 Total fall distance includes free fall distance and deceleration distance, but excludes dynamic elongation. Total fall distance is often determined as the displacement of the dorsal D-Ring on the full body harness and is the sum of the free fall and the deceleration distance. It also includes any applicable swing fall distance

E2.203 The purpose of a travel restraint line is to prevent an authorized user from reaching a fall hazard.

E2.204 A travel restraint system allows a person to approach the edge, but eliminates the possibility of

means of connection) and body support that limits travel in such a manner that the user is not exposed to a fall hazard.

2.205 Trolley. A mobile anchorage device that travels along a track (horizontal track system), structural beam (rigid rail system), or cable (HLL system).

2.206 User. A person who performs activities at heights while protected by a personal fall protection system.

2.207 Variance. A change in, or effect to, a characteristic, function, design or element of a product that is different from the original.

2.208 Vertical Lifeline. A component, element or constituent of a lifeline subsystem consisting of a vertically suspended flexible line and along which a fall arrester travels.

2.209 Vertical Lifeline Subsystem. An assembly, including the necessary connectors, comprised of a vertical lifeline component and, optionally, an energy absorber and a lifeline tensioner component.

2.210 Webbing. A narrow woven fabric with selvedge edges and continuous filament yarns made from light and heat resistant fibers.

2.211 Winch/Hoist. A load lifting and/or lowering device that incorporates a traction drum and a means for controlling pay-out and take-up of the line from the drum. Device relies on reduction gearing and/or lever principles to achieve a mechanical lifting advantage.

2.212 Wire. A single, continuous length of metal with a circular cross-section that is cold-drawn from rod.

2.213 Wire Rope. See "Rope, Wire".

2.214 Work Positioning. See "Positioning".

2.215 Work Positioning System. See: "Positioning System".

going over the edge. An active fall protection system couples the workers' body-holding device(s) to an anchorage using a suitable means such as restraint lanyards.

E2.206 A user is sometimes referred to as an employee or worker in other documents dealing with fall protection.

E2.208 A vertical lifeline is also referred to as vertical anchorage line or dropline.

E2.209 This subsystem is normally attached at one end to an overhead anchorage or anchorage connector and may also be attached to a bottom anchorage.

E2.210 Also see definition of "Strap".

2.216 Work Restraint System. See “Travel Restraint System”.

2.217 Working Line. A flexible line used for positioning or travel restraint.

3. LIST OF ACRONYMS

ACRONYM	TERM
A	Anchorage
AC	Anchorage Connector
ACTD	Activation Distance
AD	Arrest Distance
AE	Attachment Element
AJ	Adjuster
BB	Body Belt
BSU	Body Support
BU	Buckle
CAP	Capacity
CAR	Carabiner
CH	Chest Harness
COM	Component
CON	Connector
CSS	Connecting Subsystem
CST	Constituent
CWH	Chest-Waist Harness
DD	Deceleration Distance
DDV	Deceleration Device
DR	D-Ring
EA	Energy Absorber
EAHLL	Horizontal Lifeline Energy Absorber
EAP	Personal Energy Absorber
EAVLL	Vertical Lifeline Energy Absorber
EF	Formed Eye
EL	Element
ER	Return Eye
ESPL	Spliced Eye
EST	Stitched Eye
F	Fitting
FA	Fall Arrestor
FAA	Fall Arrest Attachment
FACSS	Fall Arrestor Connecting Subsystem
FAS	Fall Arrest System
FBH	Full Body Harness
FF	Free Fall
FFD	Free Fall Distance
HC	Hybrid Component
HLL	Horizontal Lifeline
HLLSS	Horizontal Lifeline Subsystem
HW	Hardware
I	Integral
ISS	Integral Subsystem
L	Lanyard
LCSS	Lanyard Connecting Subsystem

ACRONYM	TERM
LL	Lifeline
LLSS	Lifeline Subsystem
LT	Lifeline Tensioner
M	Marking
MAF	Maximum Arrest Force
MAL	Maximum Arrest Load
MASD	Maximum Anchorage System Deflection
mm	Millimeter
OR	O-Ring
OVR	Oval Ring
P	Personal
PEA	Personal Energy Absorber
PFAS	Personal Fall Arrest System
PLT	Proof Load Testing
PPE	Personal Protective Equipment
R	Rope
RG	Rope Grab
RS	Synthetic Rope
RW	Wire Rope
S	System
SA	Shock Absorber
SF	Swaged Fitting
SH	Snaphook
SP	Stitch Pattern
SPL	Splice
SRD	Self-Retracting Device
SRL	Self-Retracting Lanyard
SRLCSS	Self-Retracting Lanyard Connecting Subsystem
SRL-R	Self-Retracting Lanyard With Integral Rescue Capability
SRL-LE	Self-Retracting Lanyard With Leading Edge Capability
SS	Subsystem
SUSS	Supporting Subsystem
STR	Strap
TBL	Thimble
TD	Developmental Testing
TFD	Total Fall Distance
TH	Thread
TQ	Qualification Testing
TRS	Travel Restriction System
TV	Verification Testing
U	User
VLL	Vertical Lifeline
VLLSS	Vertical Lifeline Subsystem
W	Webbing
WPS	Work Positioning System

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