

American National Standards Institute, ANSI Z359 Fall Protection Code Update

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Introduction



- ANSI approved several new standards that make the Fall Protection Code
 - The Code is national in scope
 - Contains best industry practices and applications of FP systems and equipment
 - Improved performance of the equipment, and
 - Manufactured new equipment

Background



- **ANSI Z359.1 Standard is based on complete personal fall arrest system**
- **In order to harmonize the national FP Standards with ISO, Canada, Europe and Australia, ANSI Z359 Committee decided to change from system to product/equipment standards**
- **Eventually, there will be 18 FP Standards**
 - **ANSI Z359.1 will wither away and will become a historic document**

ANSI Z359 FP Standards approved in (Published November 2007)



- **ANSI Z359.0 Definitions and Nomenclature Used for Fall Protection and Fall Arrest**
- **ANSI Z359.1 Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components**
- **ANSI Z359.2 Minimum Requirements for a Comprehensive Managed Fall Protection Program**
- **ANSI Z359.3 Safety Requirements for Positioning and Travel Restraint Systems**
- **ANSI Z359.4 Safety Requirements for Assisted-Rescue and Self Rescue Systems, Subsystems and Components**

ANSI Z359 Standards approved in (Published November 2009)



- **ANSI Z359.06 Design Specifications for Active Fall Protection Systems**
- **ANSI Z359.12 Safety Requirements for Connecting Components for FPAS**
- **ANSI Z359.13 Requirements for Lanyards and Energy Absorbers**



- **ANSI Z359.5 Safety Requirements for PFAS**
- **ANSI Z359.7 Certification Testing of Fall Protection Products**
- **ANSI Z359.8 Requirements for Rope Access**
- **ANSI Z359.9 Descender Devices**
- **ANSI Z359.10 Not selected**
- **ANSI Z359.11 Requirements for Full Body Harness for PFAS**



- **ANSI Z359.14 Requirements for Self-Retracting Devices for PFAS**
- **ANSI Z359.15 Requirements for Vertical Lifelines for PFAS**
- **ANSI Z359.16 Safety requirements for Fall Arresters for PFAS**
- **ANSI Z359.17 Requirements for Horizontal Lifelines for PFAS**
- **ANSI Z359.18 Requirements for Anchorage Connectors for PFAS**

Contract Fall Protection Requirements



- **UFGS 01 35 26 – Government Safety Requirements**

- **Section 3.4 Fall Hazard Protection and Prevention Program**

- **Fall protection must comply with 29 CFR 1926.500, Subpart M, USACE EM 385-1-1 and ASSE/SAFE A10.32.**

- **EM 385-1-1**

- **Fall protection threshold height requirements is 6' for ALL WORK covered under EM 385-1-1.**

- **Options: standard guardrails, work platforms, temporary floors, safety nets, engineered fall protection systems, personal fall arrest systems, or the equivalent.**

Standard Specific Updates

ANSI Z359.0 Definitions and Nomenclature Used for FP and Fall Arrest



- The standard contains all the definitions and terminology used in fall protection and fall arrest.
- There are over 200 terms defined in this standard.
- Definitions can be downloaded from ANSI/ASSE Web Site

<http://www.asse.org/shoponline/products/Z359-0-2007.php>

ANSI Z359.1: Personal Fall Arrest Systems, Subsystems and Components



- Most important changes:
- Increased the gate strength requirement for the new manufactured snaphooks and carabiners to **3,600** pounds in all directions
- Previously the gate was designed and tested for **220** lbs against the face and **350** lbs against the side of the gate



ANSI Z359.1 (2007)
Marking

ANSI Z359.1 Changes (Continued)

- Permitted use of **frontal D-ring** attachment point located at the **sternum** for fall arrest (i.e. used for ladder climbing device) **only** if:
 - Free fall distance is less than **2 feet**
 - Maximum arrest force on the body shall not exceed **900 lbs**

- (Previously the standard limited the fall arrest attachment point to the dorsal D-ring)

- Criteria for Dorsal D-ring attachment point used for fall arrest is still valid (same as before)

ANSI Z359.1 Changes (Continued)



- The minimum anchorage strength requirement of 3,600 lbs (if designed and selected by a qualified person) was deleted
- The new anchorage requirement: **“Twice the maximum arrest force when certification exists”**.
- If the maximum arrest force is 900 lbs, the anchorage strength can be designed for 1,800 lbs (which is twice the maximum arrest force)

ANSI Z359.1 (Continued)



- The 5,000 lbs anchorage strength requirement, if selected by a competent person is still valid
 - The capacity is still between **130-310 lbs**
 - Force factor changed from **1.4** to **1.1**
- Test weight of the equipment has increased from 220 to 282 pounds
- Previously the assumption was that sled weight is equivalent to 1.4 times the human body weight

ANSI Z359.1 (Continued) “Y” Lanyard



Included new testing requirement for the “Y” lanyard

Joint between the legs shall withstand a force of 5,000 lbs

Included warning

Not to attach the unused leg of the “Y” lanyard to any part of the harness except to attachment points specifically designated by the manufacturer



ANSI Z359.2: Minimum Requirements for a Comprehensive Managed FP Program



This standard is directed for user organizations (employers) and safety professionals (not for manufacturers of equipment)



ANSI Z359.2 FP Program Components



- Policy
- Duties and Responsibilities
- Training and Evaluations
- Fall Protection Procedures
- Fall Hazards Surveys and Assessment
- Minimum requirements for FP Procedures
- Eliminating and Controlling Fall Hazards
- FP systems
- Anchorages

ANSI Z359.2 FP Program Components (Continued)



- ❖ Design requirements for FP systems in new facilities
- ❖ Inspection, maintenance, and storage of FP and Rescue Equipment
- ❖ Rescue Procedures
- ❖ Incident Investigation
- ❖ Evaluation program Effectiveness

Comparison between EM 385-1-1 and ANSI Z359.2 FP Program Requirements



EM 385-1-1

Site Specific Fall Protection and Prevention Plan -----
Duties and Responsibilities -----
Project or task performed -----
Training to include safe use of FP equipment -----
Anticipated hazards and fall hazard prevention and control -----
Rescue plan and Procedures -----
Design of anchorages, fall arrest and horizontal lifeline systems -----
Inspection, Maintenance, and Storage of fall protection equipment -----
Incident investigation procedures -----
Evaluation of program effectiveness -----
Inspection and oversight methods employed

ANSI Z359.2

Policies and written Fall Protection Procedures
Duties and Responsibilities
Fall Hazard Surveys
Training and Evaluations

Elimination and Controlling Fall Hazards
Rescue Procedures
Specific ANSI Z359 standards for individual systems
Inspection, Maintenance, and Storage of fall protection equipment
Incident Investigation
Evaluation Program Effectiveness

ANSI Z359.2: Refresher/Update Training



Administrator/Manager	(0.8 units/year)*
Qualified Person	(0.8 units/year)*
Competent Person	(every 2 years)**
Authorized Person	(every 2 years)**
Competent Rescuer	(every year)**
Authorized Rescuer	(every 2 years)**
Competent Person Trainer	(1.6 units/year)*
Qualified Person Trainer	(1.6 units/year)*
Competent Rescue Trainer	(1.6 units/year)*

- * **Recommended refresher/update training**
- ** **Required refresher/update training**

ANSI Z359.2: (Continued)



Fall Protection Procedures:

- Fall Protection Hierarchy
- Surveying fall hazards and preparing survey report
- Preparation of written fall protection procedures

Navy uses the terminology “Fall Protection and Prevention Plan”

ANSI Z359.2: (Continued)



- Fall Protection Hierarchy
 - Elimination or substitution
 - Passive Fall protection
 - Fall restraint
 - Fall arrest
 - Administrative controls



Fall Hazard Control Comparison between EM 385-1-1 and ANSI Requirements



EM 385-1-1

Hierarchy of Controls

Elimination

Prevention

Work platforms

Personal Protective
Systems and Equipment

Administrative controls

ANSI Z359.2

Fall Protection Hierarchy

Elimination or Substitution

Passive Fall Protection

Restraint

Fall arrest

Administrative controls

ANSI Z359.2: (Continued)



Requirements for new buildings and facilities.

- Guidelines provided for architects and engineers to eliminate, or control fall hazards early in the planning and design stage to protect personnel conducting maintenance work and when the cost of doing so is more economical.

ANSI Z359.3: Safety Requirements for Positioning and Travel Restraint Systems



- Standard establishes minimum requirements for equipment used in positioning and restraint systems
 - Positioning: When a fall hazard is present, positioning system must be used in conjunction with fall arrest system
 - Body belt is not allowed in positioning system unless incorporated in a full body harness

ANSI Z359.3 (Continued)



Positioning



Restraint

ANSI Z359.4: Assisted Rescue and Self Rescue systems, Subsystems and Components



❖ Standard establishes minimum design requirements, performance, test criteria, markings, qualifications, instruction, training, use and maintenance for equipment and systems used for

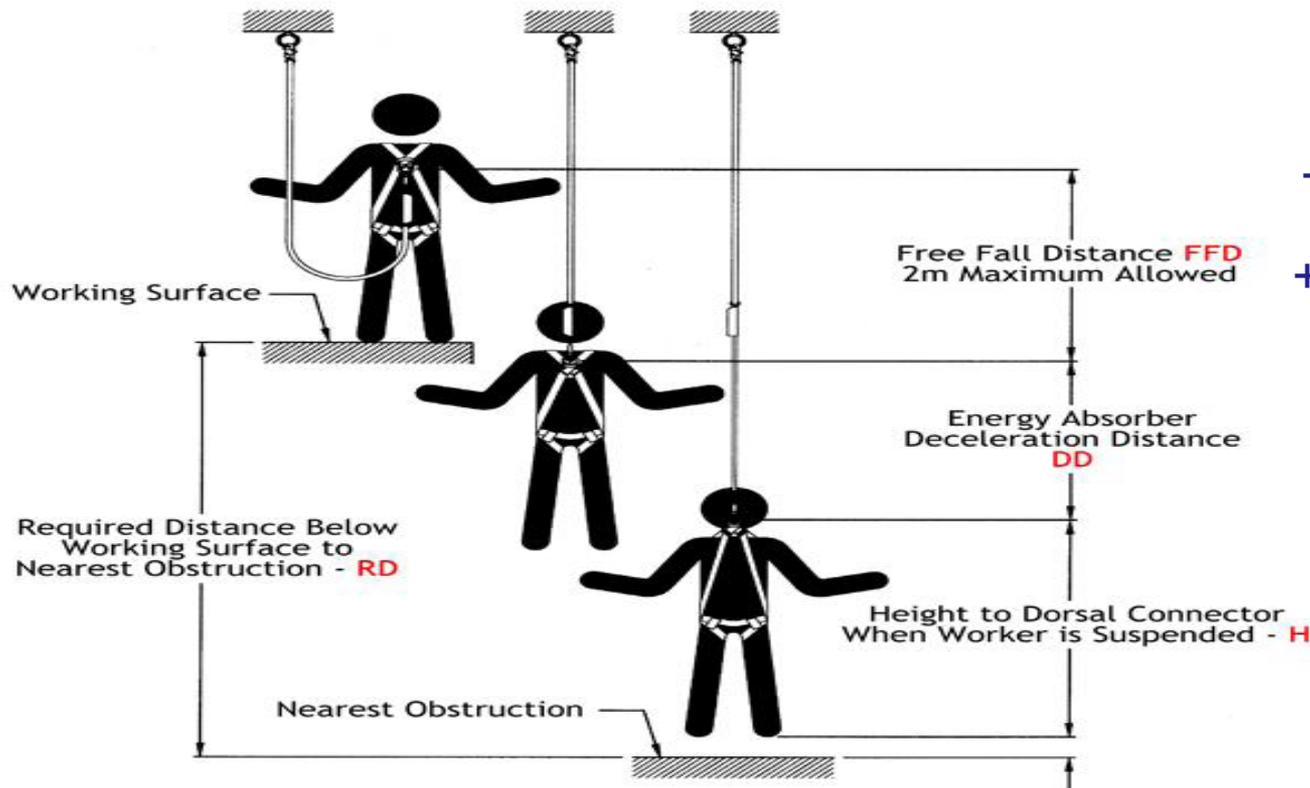
- ❖ Self-rescue
- ❖ Assisted-rescue



Total Fall Distance Considerations



TFD = Free Fall Distance + Deceleration Distance + Harness Effect



Lanyard length = 6'
+ Shock absorber = 3'
+ Height of worker = 6'
Safety Factor = 3
Minimum height of anchorage point = 18'

Conclusion



- Where more stringent safety and occupational health standards are set forth in government requirements and regulations, the more stringent standards shall apply.
- Anticipate the EM 385 (2013) release next year and should include many of the changes specified in both the ANSI Z359 and ANSI A10.32.

Questions?