

SECTION 13999

FALL PREVENTION SYSTEM GENERAL SPECIFICATION  
03/01

PART 1 GENERAL

The Contractor shall design and build fall prevention systems that shall serve as both fall prevention systems and for fall arresting systems as defined by OSHA.

1.1 REFERENCES

The publications listed below form a part of this section to the extent referenced:

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

AMERICAN NATIONAL STANDARD INSTITUTE (ANSI)

ANSI Z 359.1 American National Standard Safety Requirements for Personal Fall Arrest Systems and Components

OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION (OSHA)

OSHA 1926.502 Fall Prevention Systems and Criteria and Practices

1.2 SYSTEM DESCRIPTION

The Fall Prevention System shall allow the user to walk uninterrupted the entire length of the system and provide secure anchorage to arrest a fall by the user. All essential components shall be included, so as to provide a complete and fully operational system.

100 liner feet of guardrails shall be installed on South East corner of building 200 and 20 liner feet on North side of building 203, per COTR's direction.

1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01330, "Submittals," in sufficient detail to show full compliance with the specification:

Preconstruction Submittals

Material, Equipment, and Fixture Lists shall be submitted for approval

Product Data: Manufacturer's data and product information for manufactured materials and products. Manufacturer's Catalog Data indicating the sizes, descriptions, capacities, test certifications, and other descriptive data showing in sufficient detail that the product complies with the contract requirements shall be submitted. Equipment and Performance Data shall be submitted for approval in accordance with Section 01330:

Stanchions  
Constant force posts  
Energy absorbing devices  
Body harnesses  
Cable  
Guardrail system

Shop Drawings: For fabrication showing the complete fall Prevention system. Layout drawings of each system in relation to the supporting structure indicating the locations of all components in the system properly labeled for identification. System Layout, Design Analysis, and Calculations prepared and certified by a Professional Engineer.

Systems Manual: Contractor shall furnish a manual including the following:

- a. Maintenance Procedures: Including parts list and maintenance requirements for all equipment.
- b. Operation Procedures: Indicating proper use of equipment for safe operation of the systems.
- c. Test Certificate: Indicating completion of proof load testing on installed systems.
- d. Product Certificate: Containing the manufacturer's serial number, name and part number of each individual component used in the systems. Manufacturer's catalog data indicating the sizes, descriptions, capacities, test certifications, and other descriptive data showing sufficient detail that the product complies with the contract requirements shall be submitted for approval in accordance with Section 01330, "Submittals".
- e. As-Built Drawings: A copy of as-built drawings shall also be included in the systems manual.

Manufacturer's Instructions

Manufacturer's Instructions indicating the manufacturer's recommended method and sequence of installation shall be submitted for the following:

Stanchions  
Constant force posts  
Energy absorbing devices  
Body harnesses  
Cable  
Guardrail system

#### 1.4 DELIVERY STORAGE AND HANDLING

Deliver materials in manufacturer's original unopened packaging.

Store materials in original protective packaging at location specified by COTR. Prevent soiling, physical damage or wetting.

## 1.5 PROJECT CONDITIONS

Field Measurements: Perform prior to preparation of drawings to ensure required fit and dimensions.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

Fall Prevention System: Mansafe Fall Arrest System as manufactured by Latchways, Ltd. and installed by Flexible Lifeline Systems or approved equals.

Guardrail system: no recommendation

### 2.2 MATERIALS

All materials shall be new, and completed Fall Prevention System shall be essentially the product of one manufacturer regularly engaged in the production of such equipment.

Fall Prevention System and Components: All system connectors, cables and bolts shall be manufactured from stainless steel: ASTM A 666, Type 316. All connectors shall comply with OSHA regulation 1926.502. Fabricated supports required for additional support shall be carbon steel with a corrosion resistant finish.

Fasteners: The Fall Prevention System shall be attached to the supporting structure with appropriate fasteners. The fasteners shall be designed to support a load on the Fall Prevention System of 2 times the maximum design load without failure.

Guardrails shall be comply with OSHA regulations.

### 2.3 FABRICATION

System components shall be of same material unless otherwise indicated.

Exposed work shall be true to line and level with accurate angles, surfaces and with straight square edges.

Coordinate anchorage system with supporting structure. Fabricate anchoring devices as recommended by the manufacturer to provide adequate support for intended use.

Fabricate Joints in a manner to discourage water accumulation. Provide weep holes to drain any water, which could accumulate in the exposed joints.

The guardrails shall be manufactured of tubular steel with an 1 ½" outer diameter. The guardrail system must be capable of withstanding a force of at least 200 pounds applied within 2 inches of the top edge in any outward or downward direction. When the 200 pounds test is applied in a downward direction, the top edge of the guardrail must not deflect to a height less than 39 inches above the roof level.

The top edge height of guardrails must be 42 inches plus or minus 3 inches above the roof level. Midrails must be installed to a height midway between

the top edge of the guardrail system and the roof level. The midrails shall be installed so that there are no openings in the guardrail system more than 19 inches.

Midrails shall be capable of withstanding a force of at least 150 pounds applied in any downward or outward direction at any point along the midrail or other member.

The guardrail system shall be surfaced to protect workers from punctures or lacerations and to prevent clothing from snagging.

## 2.4 SYSTEM DESIGN

The Fall Prevention System shall be designed to fully protect the user at all times while in the area of potential fall hazard. The system must be designed to allow the user to be tied-off prior to entering the potential fall hazard. The Fall Prevention System shall serve as both fall prevention system and fall arresting system as defined by OSHA.

The Fall Prevention System shall be designed for 3 simultaneous users.

### System Description:

**Horizontal Lifeline Cable:** Marine grade stainless steel wire rope with a minimum breaking strength of 10,000 pounds.

**Swaging:** The cable shall be swaged in-line with the anchor point and have a slip indicator.

**Shock Absorber:** Load limiting in-line shock absorber to 3,000 pounds for multispan systems and 4,500 pounds for single span systems. The shock absorber must visually display deployment in the event a load such as a fall has occurred on the system.

**End Anchors:** 316S stainless steel end anchors with minimum breaking strength of 10,000 pounds.

**Transfastener/Trolley:** 316S stainless steel with a minimum tensile load of 3600 pounds. The transfastener shall allow for easy pass-thru of support points without disconnecting from the system.

**Tension Indicator:** The system shall include a tension indicator that will allow the user to physically inspect that the correct cable tension is achieved.

**Other Components:** Corner Assemblies, Turnbuckles and other components shall be 316S stainless steel.

**Deceleration Device:** Provide 3 appropriate length lanyards of self-retracting lifelines that meet or exceed applicable standards of ANSI Z 359.1 and OSHA 1926.104.

**Harnesses:** Provide 3 full body harnesses with single back D-ring that meet or exceed applicable standards of ANSI Z 359.1 and OSHA 1926.04.

Material Control: All system components shall contain serial numbers, permanently stamped or engraved, identifying the specific job and system they are used for. These serial number shall be recorded in the system manual as described in 1.3-3 and forwarded to the owner upon completion of the project.

## PART 3 EXECUTION

### 3.1 INSTALLATION

Install according to the approved shop drawings and manufacturer's instructions.

Fall Prevention System shall be installed by manufacturer's authorized, trained and certified personnel.

Install anchorage and fasteners in accordance with manufacturer's recommendations to obtain the allowable working loads published in the product literature and in accordance with this specification.

Do not load or stress Fall Prevention System until all materials and fasteners are properly installed and ready for service.

Install all system components a minimum of 7 feet and maximum of 10 feet from the roof edge

Install Guardrails per drawings

### 3.2 OPERATOR TRAINING

Provide a maximum of 4 hours of operator training after system has been installed and proof tested. Training is to be for the users of the system conducted at the installation site.

### 3.3 CLEANING

Remove all loose materials, crating and packing materials from premises.

-- End of Section --