

Section 11

Fall Protection Safety System

Part 1: GENERAL

1.01 Summary

- A. Section includes fall protection systems and related appurtenances.
- B. Related Sections
 - 1. General Conditions, Supplementary Conditions and Division 1 Sections apply to work of the Section.
 - 2. Section _____ Miscellaneous Metal.

1.02 References

- A. Occupational Safety and Health Administration (OSHA).
 - 1. Part 1910 Occupational Safety and Health Standards.
 - 2. Part 1926 Safety and Health Regulations for Construction.
- B. American Society for Testing and Materials (ASTM).
- C. American National Standards Institute, Inc. (ANSI).
 - 1. A 10.32 Fall Protection Systems – American National Standard for Construction and Demolition Operations.
 - 2. Z 359 Fall Protection Code – American National Standard for General Industry

1.03 System Description

- A. The fall protection 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 as part of the above referenced system, though not specifically stated in the following Specifications, so as to provide a complete and fully operational system.

1.04 Submittals

- A. Submit the following in accordance with Section _____
1. Product Data: Manufacturers' data and product information for manufactured materials and products.
 2. Shop Drawings: For fabrication and erection. Include plans, member profiles, sizes, elevations and details for anchorages and connections.
 3. Operations and Maintenance Manual: Indicating parts list and maintenance requirements for all equipment, indicating proper procedures and equipment for safe operations of the system.
 4. Experience Information: Including type of fall protection system, location and date of installation and Owner's name and address.
 5. Certificate: Indicating completion of certification on installed system.

1.05 Quality Assurance

- A. In order to assure uniform quality, ease of maintenance and minimal parts storage, it is the intent of these Specifications that all equipment called for under this Section shall be supplied by a single source. The equipment supplier shall, in addition to the installer, assume the responsibility for proper and complete installation.

- B. Manufacturer and installer shall have specific liability insurance (products and completed operations) in an amount of not less than \$9,000,000.

- C. Manufacturer and Installer Qualifications: Firm specializing in design and fabrication and installation of fall protection systems for structures with minimum 15 years' experience.

- D. Design of the horizontal lifeline system shall be performed by an Engineer with experience in designing not less than 5 installations of similar size and scope.

- E. No equipment shall be supplied by any manufacturer not regularly engaged in the manufacturing and production of fall protection systems. The manufacturer must have installed and had in satisfactory use for a period of not less than two (2) years a minimum of ten (10) installations of the size and type comparable to the unit specified.

1.06 Delivery, Storage and Handling

- A. Deliver materials in manufacturer's original, unopened protective packaging.
- B. Store materials in original protective packaging. Prevent soiling, physical damage or wetting.

1.07 Project Conditions

- A. Field Measurements: Perform prior to preparation of Shop Drawings and fabrication drawings to ensure required fit and dimensions.

Part 2: PRODUCTS

2.01 Manufacturers

- A. Fall Protection System: **Xenon Overhead Fall Arrest System** as manufactured by **Honeywell Safety Products USA, Inc.**, 1345 15th Street, Franklin, PA 16323, telephone 1-800-325-6746, fax 814-437-6711 and engineered and installed by an approved authorized Xenon representative.

2.02 Materials

- A. All materials shall be new, and the complete Xenon Fall Arrest System, except for accessory equipment, shall be essentially the product of one manufacturer regularly engaged in the production of such equipment.

B. Stainless Steel Plates and Bars: ASTM A666, Type 304, 314 or 316.

C. Fasteners

1. The Xenon Fall Arrest System shall be attached to the supporting structure with appropriate fasteners. The fasteners shall be designed to support a load on the fall protection system of _____ times the maximum design load without failure.
2. Where through-bolting is not possible, practical or desirable, the listed fastening systems are acceptable:
 - a. Hilti Fastening Systems
 - b. Lindapter Connection Systems
 - c. Approved Others

2.03 Fabrication

A. General

1. System components shall be of the same material unless otherwise indicated.
2. Exposed work shall be true to line and level with accurate angles, surfaces and with straight square edges.
3. Coordinate anchorage system with supporting structure. Fabricate and locate anchoring devices as recommended by anchor manufacturer to provide adequate support for intended use.

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

2.04 System Design

- A. The Fall Arrest System shall be designed to allow users to walk uninterrupted the entire length of the system without having to unhook from the system to pass through intermediate support points. The system shall be designed to support _____ users in case of a fall and to prevent the users from free falling more than six (6) feet. All components shall be designed by the fall protection system supplier and shall meet the applicable requirements of ANSI A10.14 and applicable OSHA regulations.
- B. Description
 1. The Fall Arrest System shall consist of a stainless steel safety cable attached to the structure. The cable shall be continuous or shall have swaged splices, which allow the user to pass without unhooking from the system.
 2. The cable shall have a stainless steel swaged end, swaged to the cable, at each end of the cable.
 3. A multifunction Absorber will be provided at one or both ends. Provide steel end brackets to attach the cable to the structure.
 4. Support cable at ____ foot (30 foot nominal intervals) with stainless

steel intermediate cable supports designed to allow the user to pass without unhooking from the cable.

5. Provide ____ (__) stainless steel lanyard coupler devices (Glider – Wheeled Trolley) with connector eye. The coupler device shall be able to be hooked and unhooked at any point on the cable and be able to pass intermediate cable supports and splices without having to be detached.
 6. Brackets and supports shall be attached to the structure with appropriate anchors of proper size and embedment, as per 2.02 C., to adequately support the intended loaded.
- C. Lanyard: Provide ____ (__), self-retracting lanyards/lifelines, adjustable length, or fixed length (6') tear out shock absorbing nylon lanyards with double locking snap assemblies at each end meeting OSHA 1926.500 and ANSI A10.32 and Z359.1 and as recommended by the fall protection system supplier.
- D. Support Harness: Provide _____ (__) nylon ANSI A10.14 Type 1 full body harnesses with back “D” ring meeting OSHA 1926.500 and ANSI A10.32 and Z359.1 and as recommended by the fall protection system supplier.

Part 3: EXECUTION

3.01 Installation

- A. Install in accordance with approved shop drawings and manufacturer's instructions.

B. The Xenon Overhead Fall Arrest System shall be installed under the direction of manufacturer's authorized trained personnel.

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

1. Do not load or stress the Xenon Fall Arrest System until all materials and fasteners are properly installed and ready for service.

2. Anchorages Drilled into Concrete

a. Follow manufacturer's recommendations

b. Do not cut or damage reinforcement

c. Clean drill hole and remove debris and contaminants in accordance with manufacturer's instructions.

d. Install anchorages at indicated locations, clearances and embedment depth.

e. When clearance and spacing of anchorage is not indicated on drawings, install at location recommended by manufacturer to obtain maximum working loads and in accordance with the following:

1. Anchorage clearance to Edge of Concrete: Not less than 7 bolt diameters.

2. Anchorage Spacing Center to Center: Not less than 10 bolt diameters.

f. When embedment length is not indicated on drawings, install with embedment depth not less than 6 bolt diameters.

3.02 Field Quality Control

A. After the Xenon Fall Arrest System is installed and properly tensioned, the safety system manufacturer's approved authorized representative shall inspect and operate the system and shall make all final adjustments for proper operation.

B. After the system has been placed into operation, the manufacturer's authorized representative shall perform proof testing and issue a certificate attesting to the system's ability to withstand the proof load.

3.03 Operator Training

A. Provide operator training after the system has been installed and proof tested. Training is to take the form of a single class conducted at the installation site.

3.04 Cleaning

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