

## SECTION 07227 - FALL PROTECTION DEVICES

### PART 1 – GENERAL

#### 1.01 SUMMARY

- A. Section Includes: Roof tie-down system of fall restraint and fall arrest for worker safety.
- B. Related Sections:
  - a. Section 03300 – Cast-In-Place Concrete
  - b. Section 03400 – Pre-Cast Concrete
  - c. Section 05100 – Structural Metal Framing
  - d. Section 05310 – Metal Decking
  - e. Section 05400 – Cold Formed Metal Framing
  - f. Section 06100 – Rough Carpentry
  - g. Section 07510 – Built-Up Roofing
  - h. Section 07700 – Roof Specialties and Accessories

#### 1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
- B. American National Standard Institute (ANSI)
  - a. ANSI Z359.1-2007 – Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
  - b. ANSI Z359.6-2009 – Specifications and Design Requirements for Active Fall Protection Systems
- C. Occupational Health And Safety Administration (OSHA)
  - a. OSHA 1926.502 – Fall Prevention Systems Criteria and Practices

#### 1.03 SYSTEM DESCRIPTION

- A. General: Provide structural fall restraint and fall arrest system capable of withstanding loads and stresses within limits and under conditions specified in OSHA and other applicable safety codes. Provide fall protection anchors permanently attached to roof structure.
- B. Design Requirements: Anchors and accessories comprising system of following types:
  - a. Guardian 4-Way Plate Anchors, spaced as indicated by manufacturer, for safety snap connection by individual workers capable of withstanding a 5,000 pound load or safety factor of 2 meeting the requirements of OSHA 1926.502(d)(8).
- C. Performance Requirements: System and components tested for the resistance of the following loads:
  - a. Fall Arrest: 1 User in the directions permitted by the system.
  - b. Fall Restraint: 2 Users in the directions permitted by the system.
  - c. When used in combination with horizontal lifeline systems, it may support a maximum of 2 users in fall arrest or 4 users in fall restraint. The maximum end anchor loads must be limited to 2,500 lbs. or less to maintain a 2:1 factor of safety.
  - d. Capacity range is 130-310 lbs., or up to 420 lbs. if used in combination with equipment explicitly certified for such use.

#### 1.04 SUBMITTALS

- A. Product Data: For each type of device specified, including manufacturer's standard fabrication details and installation instructions.

- B. Shop Drawings: Show layout, profiles, and anchorage details. Submit engineering calculations demonstrating compliance with the references of Section 1.02.
- C. Maintenance Data: Written instructions for maintenance of fall prevention safety devices to be included in the operation and maintenance manual.
- D. In-house Test Reports: Indicate anchor fabrication compliance with performance requirements.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm having at least 10 years continuous experience in manufacturing fall safety equipment similar to systems specified and exhibiting records of successful in-service acceptability and performance. Firm must employ personnel dedicated to provide regularly scheduled Authorized and Competent Person Training courses as mandated by OSHA 1926 and 1910 for owner's authorized safety personnel.
- B. OSHA Standards: Comply with Occupational Safety and Health Administration Standards for the Construction Industry 29 CFR § 1926.500 Subpart M (Fall Protection), and with applicable State Administrative Code safety standards for Fall Restraint and Fall Arrest.
- C. Source Limitations: Obtain all roof anchors through one source from a single manufacturer.

#### 1.06 COORDINATION

- A. Contractor to coordinate installation of structural deck to meet requirements of roof anchor manufacturer.
  - a. Concrete Deck: Minimum concrete strength,  $F_c = 2,000$  psi. Minimum 6" thickness.
  - b. Metal Deck: Minimum 24 gauge thickness, or provided with additional deck reinforcing per manufacturer's instructions.
  - c. Wood Deck: Minimum 5/8" CDX plywood, or provided with additional deck reinforcing per manufacturer's instructions.
  - d. Other structural decks not listed above shall be approved by a Qualified Person.
- B. Contractor to coordinate installation of structural deck reinforcements and anchorages to receive fall protection anchors.
- C. Contractor to coordinate placement of roofing system, insulation and flashing to ensure water-tight integrity to roof.

#### 1.07 WARRANTY

- A. Provide manufacturer's standard warranty to guarantee products will be free from defects for a period of 12 months. Warranty period shall become effective on date of substantial completion.

### **PART 2 – PRODUCTS**

#### 2.01 MANUFACTURER

- A. Provide fall protection system manufactured by Guardian Fall Protection Inc., 6305 South 231<sup>st</sup> Street Kent, WA, phone 800-466-6385, fax 800-670-7892, or equal.

#### 2.02 MATERIALS

- A. 100% 1/4" HRS (powder coated)
- B. Recommended fasteners:
  - a. Wood: (20) #14-10 2" wood screws, Guardian Part #00668

- b. Metal: (20) #14-10 2" metal screws, Guardian Part #00669
- c. Concrete: (4) 1/2" threaded rod assemblies, or (4) compatible fasteners; must be selected and approved for use by a Competent Person.

### **PART 3 – EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine framing and substrate and verify conditions comply with structural requirements for proper system performance.
- B. Proceed with installation of roof anchors only after verifying conditions are satisfactory.

#### **3.02 INSTALLATION**

- A. General: Installation of anchors to be performed by contractor according to manufacturer's instructions and recommendations.