

SECTION 11 24 29  
FACILITY FALL PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Fall protection equipment including:
  - 1. Axis anchors.
  - 2. Linear access systems.
  - 3. Guardrail systems.

1.2 ACTION SUBMITTALS

- A. Product Data: Technical data for indicating descriptions, material, dimensions, capacities, and test certifications for fall protection equipment.
- B. Shop Drawings: Submit plans, elevations, sections, and mounting and attachment details.
  - 1. Include details of equipment assemblies.
  - 2. Include layout drawings for each system in relation to the supporting structure. Indicate locations of components.
- C. Product Schedule: Submit for fall protection equipment. Use same designations indicated on Drawings.
- D. Delegated Design Submittal: Submit data for fall protection equipment indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Submit data for Installer.
  - 1. Provide certified proof of Installer's approval by manufacturer.
- B. Welding certificates.
- C. Product Certificates: Submit certificates for each type of fall protection equipment indicating manufacturer's batch number on each individual component used in systems specified.
- D. Material Test Reports: Submit reports for each fall protection item, by a qualified testing agency.

- E. Product Test Reports: Submit report for each product type and material, for tests performed by manufacturer and witnessed by a qualified testing agency or a qualified testing agency.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit data for fall protection equipment including the following:
  - 1. Parts lists and maintenance requirements.
  - 2. Proper use of equipment for safe operation.
  - 3. Manufacturer's catalog data indicating sizes, descriptions, capacities, and test certifications.
- B. Record Documentation: Include Record Drawings in the operation and maintenance manual.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Entity having minimum 10 years documented experience in the design and fabrication of fall protection equipment.
- B. Installer Qualifications: An entity having minimum 10 years documented experience that employs installers and supervisors who are authorized, trained, and certified by manufacturer.
- C. Engineer for Delegated Design Qualifications: Structural engineer licensed in the jurisdiction and experienced in engineering fall protection systems.
- D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M Structural Welding Code - Steel. D1.2/D1.2M Structural Welding Code - Aluminum.
- E. Source Limitations: Obtain each type of fall protection equipment from single source from single manufacturer.
- F. Mockups: Provide a mockup for evaluation to set quality standards for fabrication and installation.
  - 1. Build mockup of typical fall protection shown on Drawings.
  - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  - 3. Subject to compliance with requirements, approved mockups may become part of the completed work if undisturbed at time of Substantial Completion.
- G. Preinstallation Conference: Conduct conference at project site.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original unopened packaging.
- B. Store materials in original protective packaging.
- C. Protect from soiling, moisture, and physical damage.

1.7 FIELD CONDITIONS

- A. Coordinate layout and installation of framing and reinforcements for fall-protection equipment.
- B. Maintain environmental conditions within limits recommended by manufacturer. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 WARRANTY

- A. Written warranty signed by manufacturer's in which manufacturer agrees to repair or replace components of fall protection equipment that fail(s) in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Five year(s) from date of Substantial Completion minimum.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design fall protection system, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria and complying with governing regulations.
- B. Structural Performance: Fall protection equipment and systems shall withstand the effects of loads and stresses within limits and under conditions required by CSA Z259.16, ANSI A10.32, ANSI Z359.1, and OSHA 1926.502.
  - 1. Allow for multiple users, based on required system calculations.
  - 2. System designed for two simultaneous users maximum.
  - 3. System capable of spanning 39 feet (12 m) between intermediate supports.
  - 4. Maximum allowable force on anchors: 1348 lbs. (6 kN).
- C. Capacities and Characteristics: Capable of sustaining a maximum fall arresting force of 1800 lbf (8007 N) when wearing a body harness with a factor of two without any permanent deformation and to 5000 lbf (22 241 N) against fracture or detachment.
- D. Fall protection Equipment: Comply with OSHA and ASME A 120.1 tested and certified by professional engineer.

## 2.2 AXIS ANCHOR DEVICES

### A. Stanchion Anchors:

1. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
  - a. Blue Water Manufacturing.
  - b. DBI SALA Fall Protection.
  - c. Guardian Fall Protection.
  - d. Honeywell Miller, Honeywell Industrial Safety.
  - e. Rooftop Anchor, Inc.
2. Attachment Method: Beam wrap or Bolt through with backup plating.
3. Rooftop Anchor Height: 8 inches (203 mm) minimum above finished roof level.
4. Wall Anchor Bolt Quantity: Two minimum, configured to meet Performance Requirements.
5. Cast in Place Wall Anchor Type: Nonrecessed.
6. Working Load: 1250 lb (5560 N).
7. Ultimate Load: 5000 lb (22 241 N).
8. Reinforcement: Open web steel joist "H" frame reinforcement with added stiffeners and other components to meet the Performance Requirements.

## 2.3 FABRICATION

- A. Shop Assembly: Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Supports, bracing and other reinforcements shall be fabricated to meet all Performance Requirements and in accordance with Section 05 50 00 Miscellaneous Metal Fabrications.
- C. Tolerances: comply with Section 05 50 00 Miscellaneous Metal Fabrications for supports, bracing and other reinforcements.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and conditions for compliance with requirements for installation tolerances and conditions affecting performance of the work.
- B. Proceed with installation after correcting unsatisfactory conditions.

### 3.2 PREPARATION

- A. Coordinate location of fall protection equipment indicated to be attached to structural substrate or surface of roofing system and furnish anchoring devices with templates and diagrams.

### 3.3 INSTALLATION

- A. Install according to approved Shop Drawings and manufacturer's instructions. Coordinate with work of other trades.
- B. 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.
- C. Exposed work shall be true to line and level with accurate angles, surfaces, and with straight square edges. Coordinate anchorage system with supporting structure.
- D. Do not load or stress system until materials and fasteners are properly installed and ready for service.

### 3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory certified installer to inspect components, assemblies, and equipment installations, including connections.
- B. Ensure that system components operate as specified.

### 3.5 ADJUSTING

- A. Adjust fall protection components to function smoothly and safely.

### 3.6 CLEANING

- A. Clean components of any deleterious coatings or compounds. Remove loose materials, crating, and packing materials from site.

### 3.7 DEMONSTRATION AND TRAINING

- A. Engage a factory authorized service representative to demonstrate operation of system to Owner's maintenance personnel.
  - 1. Describe function, operation, and maintenance of each component.

### 3.8 TRAINING

- A. Engage a factory authorized service representative to train Owner's maintenance personnel on operation and maintenance of system.
  - 1. Provide minimum of two hours of training.

2. Provide training at fall protection installation site.
3. Training to take place at the completion of the installation.

### 3.9 MAINTENANCE

- A. OSHA and ANSI/IWCA I 14.1 require that anchors first be certified and subsequently inspected on an annual basis. Coordinate with the manufacturer and local inspectors as required to maintain compliance.

END OF SECTION