



HORIZONTAL FALL PROTECTION - UNIRAIL

Email: info@hysafe.com

Provide horizontal fall protection system, including attachment carriage, attachment plates, joints, corners, system stops, rail, carriage stops and specialty components for exposed and concealed conditions as required.

1.1 SECTION INCLUDES

Fall Protection Horizontal Rail Systems

- A. Overhead Mounted Rail System. (DBI-SALA UniRail System)
- B. Wall Mounted Rail System. (DBI-SALA UniRail System)
- C. Floor Mounted Rail System. (DBI-SALA UniRail System)

- D. Application Type:
 - 1. Suspended Access
 - 2. Active Fall Arrest
 - 3. Travel Restraint

1.2 RELATED SECTIONS

CSI DIVISIONS:

- 1. DIVISION 05 > 05 52 17 - Rooftop Fall Protection
- 2. DIVISION 41 > 41 67 16 - Plant Fall Protection Equipment
- 3. DIVISION 11 > 11 24 00 - Fall Protection and Anchor Systems
- 4. DIVISION 11 > 11 81 29 - Facility Fall Protection
- 5. DIVISION 13 > 13 47 00 - Facility Protection

1.3 APPLICABLE REFERENCES

- A. ANSI A10.32 - Personal Fall Protection Used in Construction and Demolition Operations.
- B. ANSI Z359.1 - Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
- C. ANSI Z359.6-2016, "Specifications and Design Requirements for Active Fall Protection Systems
- D. CSA Z259.16 -15 Design of Active Fall Protection Systems.
- E. CSA W55.3- Certification of companies for resistance welding of steel and aluminum
- F. CSA W59- Welded steel Construction
- G. OSHA 1926.502 - Fall Prevention Systems and Criteria and Practices.
- H. OSHA 29 CFR 1910.29 General Industry
- I. ASTM A123 / A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- J. ASTM A747/A747M - Standard Specification for Steel Castings, Stainless, Precipitation

- K. Hardening.
- L. ASTM A36 - Standard Specification for Carbon Structural Steel.
- M. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- N. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless-Steel Sheet, Strip, Plate, and Flat Bar.
- N. AWS D1.1/D1.1M - Structural Welding Code - Steel.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's data and product information indicating the sizes, descriptions, capacities, test certifications, and other descriptive data showing in sufficient detail that the product complies with the contract requirements.
- B. Shop Drawings: For fabrication showing the complete fall protection system. Layout drawings of each system in relation to the supporting structure indicating the locations of properly labeled components.
- C. Installer's Certification: Furnish proof of installer's certification approval by manufacturer in the form of the installer's current certificate issued by the manufacture.
- D. Product Certificate: Containing the manufacturer's batch number on each individual component used in the systems.
- E. Qualifications Statement: For engineer performing delegated design.
- F. Systems Manual:
 1. Maintenance Procedures: Including parts list and maintenance requirements for all equipment.
 2. Operation Procedures: Indicating proper use of equipment for safe operation of the systems.
 3. 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.

**** NOTE TO SPECIFIER ** "Record Documents" and "Record Drawings" are legal terms defined by both AIA and EJCDC in their Contract Forms. These terms should be used rather than a colloquial term, such as "As Built." If using Contract Forms and General Conditions provided by another organization, use the same terminology as the documents that will govern the work for this project.**

4. Record Documents: Include a copy of Record Drawings in the systems manual.
5. Warranty: Submit manufacturer warranty and ensure that forms have been in Owner's name and registered with manufacturer.
6. Delegated-Design Submittal: For fall protection system, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5-year experience manufacturing similar products.
- B. Installer Qualifications: Minimum 2-year experience installing similar products, authorized, trained, and certified by manufacturer.
- C. Engineer for Delegated Design: Licensed in the jurisdiction and with a minimum of two years engineering fall protection systems.
- D. Coordination: Coordinate the installation of horizontal fall protection system with structural

supports and finish materials.

- E. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship is approved by Architect.
 - 3. Remodel mock-up area as required to produce acceptable work.

1.6 PRE-INSTALLATION MEETINGS

- A. Convene minimum two weeks prior to starting work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to a dedicated, safe, and secure location within the jobsite.
- B. Store materials in original protective packaging.
- C. Prevent soiling, physical damage, and moisture to all crates, and boxes.

1.8 PROJECT CONDITIONS

- A. Coordinate layout and installation of framing and reinforcements for fall protection system anchors.
- B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.9 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.10 WARRANTY

- A. Provide a copy of the manufacturer's 10-year minimum corrosion resistance and product warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: 3M Fall Protection USA, which is located at: 3833 Sala Way; Red Wing, MN 55066-5005; Toll Free Tel: 800-328-6146; Tel: 651-388-8282; Fax: 651-732-9244;
- B. Acceptable Manufacturer: 3M Fall Protection Canada, which is located at: 260 Export Blvd, Mississauga, ON, Toll Free Tel: 800-387-7484; Fax: 888-387-7484
- C. Substitutions: Not permitted.
- D. Requests for substitution: If the system proposed uses an article, device, material, equipment, form of construction, fixture, or item other than the Basis of Design; provide certification that the proposed item is equal in quality, performance, and appearance, to the

item specified.

E. Source Limitation: Obtain fall protection system and components from a single source.

G. Basis of Design: DBI-SALA UniRail System as manufactured by 3M Fall Protection. Horizontal fall protection system, including attachment carriage, attachment plates, joints, corners, system stops, rail, carriage stops and specialty components for exposed and concealed conditions as required.

H. Authorized Installer: Fall Protection Associates, Inc. dba HySafe, 960 Commerce Drive, Union Grove, WI 53182, info@hysafe.com, P: (800) 642-0775

2.2 SYSTEM DESCRIPTION

- A. Allow users to walk uninterrupted the entire length of the system and provide secure anchorage to arrest a fall. System to allow freedom of movement along the rail and allow carriages to run unhindered.
- B. System to be capable of being mounted at floor level, wall level, and overhead applications and provide protection for multiple users subject to confirmation through engineering analysis.
- C. Provides continuous hands-free access for the user of the fall protection system.

2.3 PERFORMANCE REQUIREMENTS

- A. Performance Requirements: Allow users to walk uninterrupted the entire length of the system and provide secure anchorage to arrest a fall. Rails form basis of anchoring system and allow carriages to run unhindered along it.
- B. Delegated Design: Engage a qualified professional engineer, as defined in Section 1.5.
- C. Structural Performance: Fall protection systems shall withstand the effects of loads and stresses within limits and under conditions required by:

**** NOTE TO SPECIFIER ** Delete reference standards options not required.**

- 1. CSA Z259.1
- 2. ANSI A10.32.
- 3. ANSI Z359.1.
- 4. OSHA 1926.502.
- 5. Allow for multiple users, based on required system calculations.
- 6. Number of Simultaneous Users: _____ maximum for system design.
- 7. Maximum allowable force on anchors: 2698 lbs (12 kN).

3. Components

A. Rail: Low profile, 1.25 inches by 1.25 inches (32 mm by 32 mm), aluminum extrusion, anodized finish

**** NOTE TO SPECIFIER ** Delete lengths options not required.**

- 1. Lengths: 9 feet -10 inches (3000 mm).
- 2. Lengths: 20 feet- 0 inches (6096 mm).

B. Rail Joint: Low profile, aluminum extrusion, anodized finish to connect to rail sections.

- 1. Concealed: Low profile, 2.11 x 6.06 inches (53.5 x 154 mm), aluminum extrusion, anodized finish shall be supported within 7.87 inches (200 mm) by fixing back to the structure.
- 2. Fixed: Low profile, 5.31 x 6.06 inches (135 x 154 mm), aluminum extrusion, anodized finished also serves as anchor and is not required to have additional supports.

C. Corners: Additional bends and forms available to a radius of 7.87 inches (200 mm).

**** NOTE TO SPECIFIER ** Delete bend options not required.**

1. Bend: 90 degree.
 2. Bend: 90 degree external.
 3. Bend: 90 degree internal.
 4. Bend: 45 degree.
 5. Bend: 45 degree external.
 6. Bend: 45 degree internal.
- D. System Stops: Manufacturer's standard stops which prevent rails from coming out of end anchorage bracket.
- E. Molded Ends: Manufacturer's standard molded ends which protect exposed edge of end rails.
- F. Tamper-Proof Carriage Stops: Manufacturer's standard tamper-proof, carriage stops which prevent carriages from coming off the end of the system.
- G. Removable Carriage Stops: Manufacturer's standard tamper-proof, carriage stops which prevent carriages from coming off the end of the system but can be removed to allow the carriages to be taken off.
- H. Attachment Carriages: Manufacturer's standard aluminum attachment carriage with aluminum, nylon coated wheels. A stainless-steel shackle with carabiner hook which pivots for any angle connection.
1. Minimum tensile strength: 3372 lbs (15 kN).
- I. Rail Fixing Components: Connections as follows:
- ** NOTE TO SPECIFIER ** Delete material not required.**
1. Material: Aluminum.
 2. Material: Stainless steel.
 3. End Anchors: Manufacturer's standard anchors which secure end of the rail to structure and controls rail movement in the event of a fall.
 4. Intermediate Anchors: Manufacturer's standard anchors which secure rail to structure at intervals to suit work site and structure.
 5. Concealed End Anchors: Manufacturer's standard anchors which secure end of the rail to structure and controls rail movement in the event of a fall.
 6. Concealed Intermediate Anchors: Manufacturer's standard anchors which secure rail to structure at intervals to suit work site and structure.
- ** NOTE TO SPECIFIER ** Tapped anchors are optional. Delete if not required.**
- a. Anchors are to be tapped.
- J. Fabricated supports: Carbon steel with corrosion resistant finish.
1. Steel Plates, Shapes, and Bars: ASTM A36.
 2. Steel Tubing: ASTM A500, cold formed.
 3. Welding rods and bare electrodes: Select according to AWS specifications for metal alloy welded.
- K. Materials:
1. Stainless steel: ASTM A666, Type 316.
- ** NOTE TO SPECIFIER ** 6061 Aluminum Alloy: Is a general-purpose aluminum alloy that contains magnesium and silicon. 6061 has is good welding properties. 6082 Aluminum Alloy: Is a medium strength aluminum alloy that contains large amount of manganese. 6082 has good structural properties and excellent corrosion resistance. Delete alloy not required.**
2. Aluminum: 6061 aluminum alloy.
 3. Aluminum: 6082 aluminum alloy.
 4. Connectors: Comply with OSHA regulation 1926.502.
- L. Fabrication:
1. Fabricate anchoring devices as recommended by the manufacturer to provide adequate support for intended use. Shop fabricate required anchorage posts using structural steel with material test certificates for full material traceability.
 2. Welding: AWS structural specification D1.1 by certified welders.
 3. Fabricate joints in a manner to discourage water accumulation.
- M. Finishes:
1. Stainless Steel: Electro-polished for corrosion resistance.

2. Structural Steel: Zinc Galvanized for corrosion resistance.

**** NOTE TO SPECIFIER ** Anodized is the standard finish available. Powder coating is available if needed to meet custom color requirements. Consult 3M Systems Specialist Safety for availability and costs. Delete finish not required.**

3. Aluminum: Anodized.
4. Aluminum: Powder coated

N. Accessories:

1. Fasteners: Designed to support a load on the system of 2 times the maximum design load without failure.
2. Signage: Provide signs and system identification tags.

**** NOTE TO SPECIFIER ** Select only those sections that apply. Insert roofing section number and section title if flashing is specified in the roofing section.**

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of fall protection equipment.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

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. Only 3M or Certified Installers authorized in writing by 3M Fall Protection may make installation/repairs to this equipment. If the 8mm HLL System has been subject to fall force or inspection reveals an unsafe or defective condition, remove the system from service and contact 3M Fall Protection or a 3M Certified Installer regarding replacement or repair.
- B. Install according to approved shop drawings and manufacturer's instructions. Coordinate with work of other trades.
- C. 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.
- D. Exposed work shall be true to line and level with accurate angles, surfaces and with straight square edges. Coordinate anchorage system with supporting structure.
- E. Do not load or stress system until materials and fasteners are properly installed and ready for service.

3.4 FIELD QUALITY CONTROL

- A. Provide manufacturer's certified installer to inspect installed fall protection system. 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 the systems metal components with a soft brush, warm water, and a mild soap solution if needed after initial installation.

- B. Ensure all components are thoroughly rinsed with clean water after cleaning.

3.7 CLOSEOUT ACTIVITIES

- A. Demonstration:

1. Demonstrate operation of system to Owner's personnel.
2. Briefly describe function, operation, and maintenance of each component.

- B. Training:

1. Train Owner's personnel on operation and maintenance of system.
2. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
3. Provide minimum of two hours of training.
4. Provide training at the lifeline installation site.
5. Training to take place at the completion of the installation.

- A. Do not use until trained in the use of the system.

END OF SECTION