SECTION XXXXX

UNILINE'S UNIRAIL FALL PROTECTION SYSTEM

PART 1 GENERAL

1.1 SYSTEM DESCRIPTION

A. Type of system required: Unirail

B. System location: Roof/ Wall/ Tower/ Fixed Ladder, Misc. Structure, Etc.…

C. Maximum number of workers on system at one time: ##

D. Systems environmental exposure: What are the service conditions (indoors, outdoors, corrosive environment)? What materials will be required (steel, hot dip galvanizing, stainless steel, marine grade stainless etc…)?

E. Workers task while on the system: Workers will walk along edge. Occasionally, workers are required to look over the edge. While walking, workers need to carry heavy objects.

F. Type of fall protection required: Passive, Fall Restraint or Fall Arrest

G. Range of movement while on the system: Uninterrupted movement throughout the entire length of the system

H. Additional components: All attaching devices necessary for # workers.

I. Insurances required: Commercial Liability and Workers' Comp.

1.2 RELATED SECTIONS

A. Section 03300 - Cast-In-Place Concrete

B. Section 03400 - Pre-Cast Concrete

C. Section 05100 – Structural Metal Framing

D. Section 05400 – Cold Formed Metal Framing

E. Section 05310 - Metal Deck

F. Section 06100 – Rough Carpentry

G. Section 07510 - Built-Up Roofing

H. Section 07700 - Roof Specialties and Accessories

I. Section 11010 - Maintenance Equipment

1.3 REFERENCES

A. Occupational Safety & Health Administration (OSHA)

1. 29 CFR 1910.28 (b) (1) & 29 CFR 1926.501(b) (1) - Occupational Health and Safety Standards General Industry & Construction: Duty to have fall protection

2. 29 CFR 1910.140(c) (11) (i-ii) & 29 CFR 1926.502(d) (8) - Safety and Health Regulations for General Industry & Construction: Horizontal Lifeline Design Requirements.

3. 29 CFR 1910.140(c) (13) (i-ii) & 29 CFR 1926.502(d) (15) (i-ii) - Safety and Health Regulations for General Industry & Construction: Anchorage Design Requirements.

4. 29 CFR 1910.66 (e) (1) (i) - General Industry: Powered Platform Installations -Affected parts of buildings.

B. American National Standards Institute (ANSI)

1. Z359.1 [2016] – The Fall Protection Code

2. Z359.3 [2017] – Safety Requirements for Positioning and Travel Restraint Systems.

3. Z359.6 [2016] – Specifications and Design Requirements for Active Fall Protection Systems.

4. Z359.11 [2014] – Safety Requirements for Full Body Harnesses.

5. Z359.12 [2009] – Connecting Components for Personal Fall Arrest Systems.

6. Z359.13 [2013] – Personal Energy Absorbers and Energy Absorbing Lanyards.

7. Z359.14 [2014] – Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems.

8. Z359.15 [2014] – Safety Requirements for Single Anchor Lifelines and Fall Arrester for Personal Fall Arrest Systems.

9. Z359.18 [2017] – Safety Requirements for Anchorage Connectors for Active Fall Protection Systems.

C. Materials, Bolting, Finishing: American Society of Testing Materials (ASTM)

1. A36 - Standard Specification for Carbon Structural Steel.

2. A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

3. A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

4. F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105 KSI Yield Strength.

5. A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications

6. A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

7. A666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

8. A992 - Standard Specification for Structural Steel Shapes.

9. F3125 - Standard Specification for High Strength Structural Bolts, Steel and Alloy, Heat Treated, 120ksi and 150ksi Minimum Tensile Strength, Inch and Metric Dimensions.

D. American Welding Society (AWS) D1.1/D1 - Structural Welding Code – Steel

E. Design Standards

1. International Building Code (IBC) [20XX] – Building Design Manual

2. American Society of Civil Engineers (ASCE/SEI) 7-10 [20XX] – Minimum Design Loads for Buildings and Other Structures

3. American Institute of Steel Construction (AISC) 360-XX [XXth ed.] – Steel Construction Manual. In accordance with local building code and adopted standards.

4. American Concrete Institute (ACI) 318-11 Building Code Requirements for Structural Concrete.

5. National Design Specification (ANSI/NDS) [20XX] – Wood Construction Manual

F. Definitions

1. Anchorage – per ANSI Z359.0 – A secure connecting point or a terminating component of a fall protection system capable of supporting impact forces applied by a fall protection system.

2. Anchorage Connector – per ANSI Z359.0 – A component or subsystem that functions as an interface between the anchorage and a fall protection, work positioning, rope access or rescue system for the purpose of coupling the system to the anchorage.

3. Clearance – per ANSI Z359.0 – The distance below an authorized person that must remain clear of obstructions in order to ensure that the authorized person does not make contact with any objects that would cause injury in the event of a fall.

4. Continuous Fall Protection – per ANSI Z359.0 – One or more fall protection systems that provide fall protection without interruption.

5. Fall Arrest – per ANSI Z359.0 – The action or event of stopping a free fall or the instant where the downward free fall has been stopped.

6. Fall Hazard – per ANSI Z359.0 – Any location where a person is exposed to a potential free fall.

7. Fall Restraint/Travel Restraint – per ANSI Z359.0 – A combination of anchorage, anchorage connector, lanyard (or other means of connection) and body support (full body harness) that limits travel in such a manner that the user is not exposed to a fall hazard.

8. Qualified Person – per ANSI Z359.0 – A person with a recognized degree or professional certificate and with extensive knowledge, training and experience in the fall protection and rescue field who is capable of designing, analyzing, evaluating and specifying fall protection and rescue systems to the extent required by the Z359 standards.

1.4 PERFORMANCE

A. System shall comply with 1.1 System Description

B. Performance Requirements

1. The Fall Protection System shall be designed to allow users to walk the entire length of the system without catching or binding. The system shall be designed to support required number of users in case of a fall and to prevent the users from free falling more than 6 feet. All components shall be designed by the fall protection system supplier and shall meet the applicable requirements of ANSI standards, IWCA standards, and OSHA regulations.

2. Structural Performance:

a. Structure supporting Uniline Unirail system must be capable of withstanding design loads as required by governing regulations and codes. Where component design loads are specified herein, they represent design minimum requirements.

b. All unirails shall be designed with a minimum 2:1 safety factor.

1.5 DESIGN

A. Design Requirements

1. Fall protection unirails shall comply with current applicable OSHA, ANSI, IWCA, and state regulations and standards.

2. The fall protection system and any supporting structure shall be designed by:

Capital Safety	Phone:	1-800-328-6146
3833 Sala Way	Website:	www.capitalsafety.com
Red Wing, MN 55066	E-mail:	info@capitalsafety.com.
Gravitec Systems Inc.	Phone:	1-800-755-8455
21291 Urdahl Road NW,	Website:	www.gravitec.com
Poulsbo, WA 98370-7124	E-mail:	solutions@gravitec.com.

3. General Requirements:

a. Unirails shall be designed and installed, under the supervision of a Qualified Person, as part of a complete personal Fall Protection system.

b. The unirail must be level (less than a 5% grade).

c. Engineers shall, at minimum determine the performance of the system when a fall occurs on the shortest span (largest forces) and the longest span (largest total fall distance) in the system.

e. Anchorages for unirails systems shall be verified and designed, prior to use, by a Qualified Person with experience and training in designing and using unirails systems.

f. Unirail shall satisfy the seismic conditions for nonstructural components as described by ASCE/SEI 7 and the most current edition of the IBC. No exceptions can be taken if the system is required to function for life-safety purposes after an earthquake.

g. 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 disconnecting from the system.

h. Brackets and supports shall be attached to the structure with appropriate anchors of proper size to adequately support the intended loaded.

i. The unirail shall comply with Uniline design requirements.

4. Restraint Unirails shall be designed per ANSI Z359.2 & ANSI Z359.6:

a. The Unirail shall prevent workers from reaching and falling into any open hole or off the edge of a working surface.

b. The Unirail shall comply with the requirements for fall arrest Unirails as indicated in this document.

c. Where a worker is using a full body harness the force on the worker's body shall not exceed 400 lbs.

d. The use of fall restraint systems shall be limited to surfaces at or less than a slope of 4:12 from the horizontal. This is so a fall will not result in dynamic loading on the fall restraint system or where the authorized person could end up being suspended vertically from the system.

4. Fall Arrest unirail (s) shall be designed per ANSI Z359.2 & ANSI Z359.6:

a. The selection, design, and installation of fall arrest Unirails shall be performed under the supervision of a Qualified Person.

b. Fall arrest unirails shall have the strength capable of sustaining static loads applied to the trolley at the system's worst case loading of at least two times the maximum arresting force.

c. When more than one user is attached to a Unirail, the strengths set forth in b. above shall be multiplied by the number of users attached to the system.

d. The swing fall shall comply with ANSI Z359.6 [5.3]

e. The clearance safety margin shall comply with ANSI Z359.6 [7.2.6.2]

5. Window Washing System (ANSI/IWCA I-14.1):

a. Fall Protection Systems shall provide independent fall arrest anchorages in addition to suspension line anchorages for each descent location as required by IWCA.

b. The trolley shall be designed to be compatible with current window cleaning industry standard equipment (e.g. rope descent systems, Boatswain chairs, swing stages, transportable suspension devises).

c. Design of the Unirails, and equipment shall meet or exceed the following:

I. The primary support trolley(s) and the safety line trolley(s) shall be designed by a registered professional engineer and designed to support an ultimate capacity of not less than 4 times the rated load (swing staging) plus the fall arrest load for each operator suspended from the track.

II. All Unirail and supporting structure shall be connected to the super structure using a minimum of two fasteners (e.g. bolts, epoxy anchors, threaded rod, etc...) per anchorage.

B. Sub-System Requirements

1. Harnesses and Vertical Lifelines (VLLs) used with the system shall comply with ANSI Z359.1

2. Connecting Components (carabiners and snaphooks) used with the system shall comply with ANSI Z359.12

3. Energy Absorbing Lanyards (EALs) used with the system shall comply with ANSI Z359.13

4. Self Retracting Lifelines (SRLs) used with the system shall comply with ANSI Z359.14

C. Unirails shall be used exclusively for their designed use and shall be marked to prevent other uses.

D. The design shall take into consideration the potential uses of and loads on the Unirail, in order to facilitate the prompt rescue of workers who may fall while attached to the system.

1.6 SUBMITTALS

A. Submit under provisions of Section ##### – Submittal Procedures

B. Product Data: Uniline's data sheet on each product to be used, including:

1. Preparation instructions and recommendations.

2. Storage and handling requirements and recommendations

3. Installation methods

C. Drawings and Calculations:

1. Drawings:

a. Show the layout of the system including where the system is located and the complete assembly of all components.

b. Include a specification of the number, location, and qualifications of workers using the system.

c. Clearly specify the equipment dimensions, materials, fabrication details, hardware, and installation instructions.

2. Calculations:

a. Calculations shall be prepared under the supervision of a registered Professional Engineer and Qualified Person.

b. Include a statement defining the type of system and indicating that the design is in accordance with the requirements of ANSI Z359.6.

3. The Professional Engineer who oversaw the design of the system shall affix their professional seal to each drawing and calculation package issued.

D. Operation and Maintenance Data shall be prepared per Z359.2 & ANSI Z359.6:

1. Include complete list of equipment replacement parts; identify each entry with the equipment description and part numbers.

2. Include technical information for servicing equipment.

3. Include legible “as-constructed” drawings of the installed system.

4. Include installation date and system owner’s name and address.

5. Include detailed operating procedures:

a. Written by a Qualified or Competent Person.

b. Identifying the unirails location

c. Stating any safety precautions that shall be followed during access and egress.

d. Describing the limitation on use of system: maximum load, designated equipment, required clearance and maximum number of persons permitted to be attached to the system at one time.

e. Instructions for inspection, maintenance, and retirement of the system and all of its components, including how often inspection and maintenance are to be performed and a description of the qualifications required for persons performing these tasks.

f. Procedure for inspection:

I. Required or recommended inspection intervals.

II. Detailed instruction for inspecting each component of the system.

III. Description of acceptance or rejection criteria, including retirement criteria, of each component of the system.

IV. Fall protection procedures shall include a requirement that any incidents, including accidents or near misses, be investigated to determine if procedures can be improved.

6. Provide or direct the owner of the system or the employer of the workers using the system to develop and implement a rescue plan before the system is used.

1.7 QUALITY ASSURANCE

A. Single Source: Obtain all materials and equipment required under this section from a single supplier.

B. Designer/Installer Qualifications: Engage a single firm to assume undivided responsibility for the design and fabrication of all fall protection system components. Firm shall have a minimum of 5 years documented experience in the fabrication of such components similar to that required for this project. Additionally, the firm shall have a minimum of 5 years documented experience in the installation of such components and who offers a regular inspection and maintenance service on such systems.

C. Design Engineer: Employ a firm with a minimum of 10 years experience designing fall protection systems with a minimum of 5 systems installed in the previous 12 months. Who employs a registered Professional Engineer (PE), with evidence of being the principal PE on at least 3 fall arrest systems which have been in use for no less than 1 year prior to bid closing date.

D. Professional Engineer and Fall Protection Qualified Person: Shall oversee the fall protection systems' design, such that all component items meet the "Structural Performance" requirements, including sizing and spacing of all attachments to the building structure and verify the design is compliant with all applicable OSHA

and ANSI standards. Additionally, they must prepare, stamp and sign all required calculations; while also approving the system designer's drawings

E. Welding to be executed by certified welders in accordance with AWS requirements.

1.8 DELIVERY, STORAGE & HANDLING

A. Material delivery shall be coordinated with all effected entities.

B. Storage and Protection:

1. Store originally packaged materials in a cool, dry, and protected location.

2. Materials shall be in new condition and show no signs of damage.

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. Manufacturer's standard year warranty for materials and workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers shall comply with the *Quality Assurance* section of this documentation.

B. All supporting structure which connects the Unirail to the super structure shall be designed by:

Gravitec Systems Inc.
21291 Urdahl Road NW,
Poulsbo, WA 98370-7124

Phone: 1-800-755-8455
Website: www.gravitec.com
E-mail: solutions@gravitec.com.

2.2 PRODUCTS

A. Capital Safety
3833 Sala Way
Red Wing, MN 55066

2.3 MATERIALS

A. Product

1. The system shall be a complete and turnkey complying with the performance and design criteria of this document.

2. The Unirail (s) shall be the product of Uniline.

3. Components: All system components shall be anodized aluminum or molded plastic.

4. The Uniline Fall Protection 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 2 times the maximum design load without failure.

5. Provide all designed sub-system items per Section 1.5 (B) of this document.

B. Supporting Structure

1. Structural Components shall comply with the applicable standards:

   a. Structural Steel: ASTM A36

   b. Structural Tubing: ASTM A500 Grade B

   c. Structural Bars, Plates, Shapes, and Sheet Piling: ASTM A6

   d. Piping: ASTM A53

2. Fasteners shall comply with the applicable standards:

   a. Structural Bolts: ASTM A325

   b. Alloy-Steel and Stainless Steel Bolting: ASTM A193

3. Flashing and Sealing Material shall comply with the applicable standards:

4. Material substitutions shall be better than or equal to the requirements found in this section.

5 Fabrication

   a. Fabricate work true to dimension, square, plumb, level, and free from distortion or defects detrimental to performance.

   b. Coordinate the system with supporting structure.

   c. Welding:

      I. AWS D 1.1 as applicable.

II. If Butt welds are used, then surplus welding material is to be ground off to ensure exposed surfaces are smooth. Fillet welds shall not be ground.

III. Slag is to be removed from the materials surface.

6 Finishes

a. Hot Dipped Galvanizing: Comply with ASTM A123.

b. Powder Coat: Safety Yellow

2.4 UNIRAIL DESIGN

A. Unirail design shall comply with the *Design Requirement* section of this document.

B. Steel design shall comply with AISC 14th ed.

C. Wood design shall comply with ANSI/NDS [2005]

D. Concrete design shall comply with ACI [2008]

E. Fall protection systems attached onto an existing or new structure shall comply with IBC [2009] and ASCE/SEI [2010]

PART 3 EXECUTION

3.1 INSTALLATION

A. Installation shall be performed by:

Gravitec Systems Inc.
21291 Urdahl Road NW,
Poulsbo, WA 98370-7124

Phone: 1-800-755-8455
Website: www.gravitec.com
E-mail: solutions@gravitec.com.

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

C. The Uniline Fall Protection System shall be installed under the direction of manufacturer's authorized trained personnel and under the supervision of a Qualified Person

D. 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.

E. Do not load or stress the Uniline Fall Protection System until all materials and fasteners are properly installed and ready for service.

F. Where bolting is used for fastening, no fewer than three threads are to be exposed and the nut is to be positively locked using a thread-locking fluid or the double nutting technique.

G. Dissimilar materials with greater than 0.15V shall be separated by a faying surface.

3.2 FIELD QUALITY CONTROL

A. After the Uniline Fall Protection System is installed and properly tensioned, Uniline approved authorized Qualified or Competent Person shall inspect and operate the system and shall make all final adjustments for proper operation.

3.3 ADJUSTMENTS AND FINAL INSPECTION

A. Verify that all manufactured units have been installed in accordance with specifications and details, and will function as intended. Adjust any items where necessary to ensure proper operation.

B. Provide a complete drawing set with any revisions to the design or layout of the unirails during installation.

3.4 OPERATOR TRAINING

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

3.5 MAINTENANCE, INSPECTION AND TESTING

A. Provide manufacturer maintenance, inspection and testing instructions.

B. Provide documentation that is consistent with applicable OSHA, ANSI and IWCA standards.

END OF SECTION

uni rail®

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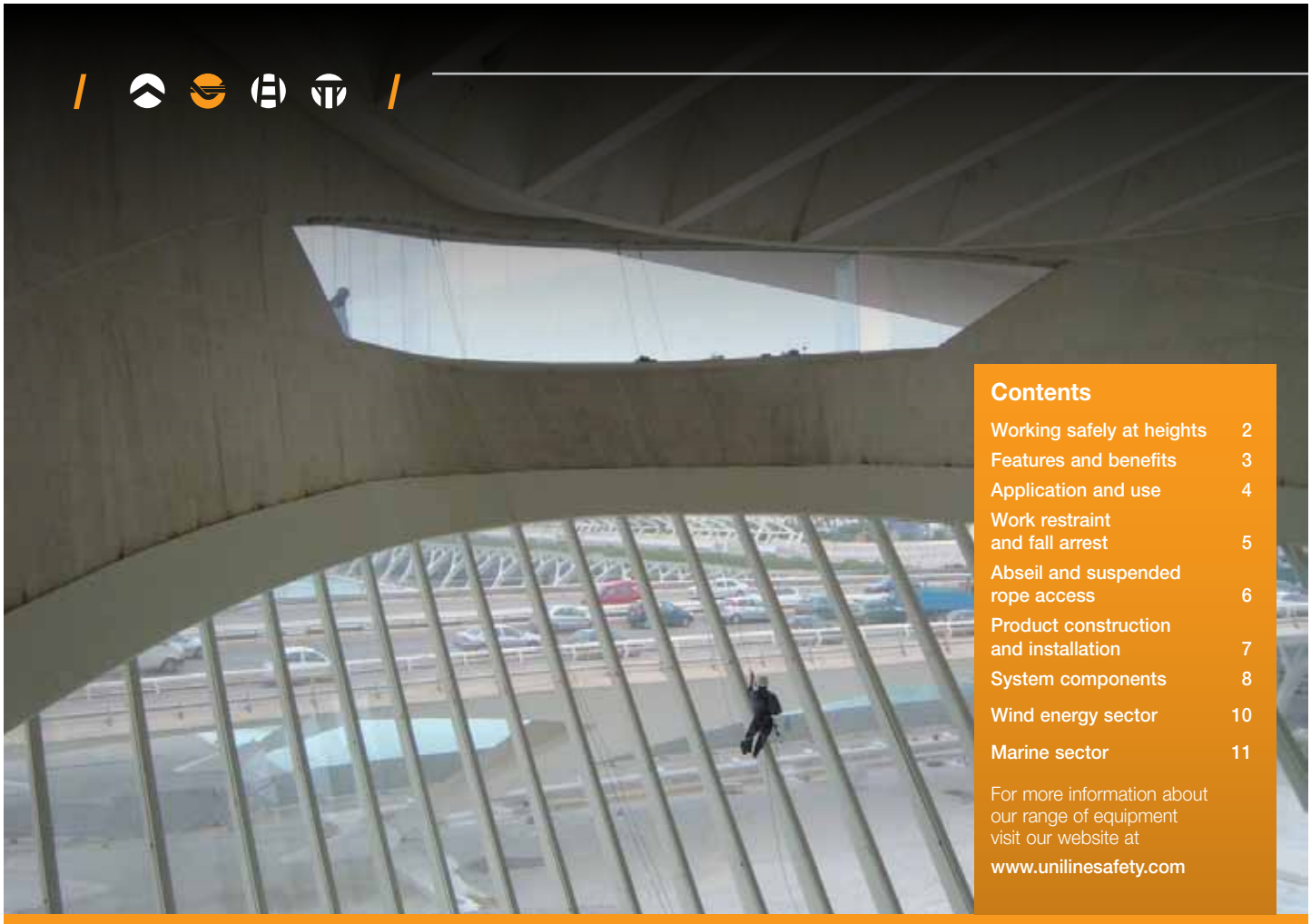
Uniclass L773 EPIC N57
CI/SfB (66.3) Xt6 (U47)
20060384 August 2011



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For more information about our range of equipment visit our website at **www.unilinesafety.com**

Working safely at heights

Current workplace legislation requires that any person working at height should be properly protected against the risk of falling. This is especially important for people required to work in many aspects of building maintenance, structural and vehicle inspection and cleaning and construction tasks, as they can be exposed to significant risks whilst carrying out their duties.

Changes in weather, fragile roof elements, slips and trips, wind, steep inclines and slippery surfaces can all add to the dangers, so providing a safe system of work is essential, ensuring both compliance with regulations and the safety of employees and contractors.

The responsibility for providing a fall protection system falls to the building owner, employer or person in control of the work place. In new building design, the architect and person in control of the project, as well as the client, have a responsibility to 'design in' fall protection measures. The provision of a suitable solution should be based on risk and the work to be carried out, with a suitably qualified person assessing the workplace.

Protection from falls, by means of a secure and proven anchorage system, provides great reassurance to workers and helps them to carry out their job in a productive and efficient manner. Workers should not be exposed to unnecessary risks and, wherever possible, the highest standard of safety equipment to minimise risk should be provided.

Unline's UniRail product is a quality extruded aluminium rail system combining a simple, continuous and functional anchorage system with very high levels of user safety and great aesthetics.

In addition to fall protection applications, it has also been used extensively as the primary anchor point for suspended rope access tasks, where it is very cost effective when compared to using building maintenance machines.

With UniRail, you can be assured of the most effective protection against many of the risks associated with working at height, combined with great aesthetics that perfectly complement any building or structure.

Features and benefits of the UniRail system

UniRail is a quality extruded aluminium rail system, which provides a high level of user safety combined with an aesthetically pleasing appearance. The product can span up to 3m (9.84ft) between support brackets. It offers excellent functionality through its free flowing attachment carriage and, with no brackets to pass over, the user's experience with the system is truly hands free. The system is also capable of navigating corners and contours in the building or structure to provide complete design flexibility.

UniRail can be fitted to a wide range of structures and can support multiple workers for both fall arrest and fall restraint work applications.

- Rigorously tested product backed up with custom system design capabilities: your system will work to protect your employees when required, ensuring worker confidence and satisfaction
- Meets current international product standards: tested in accordance with EN795 and compliant with OSHA and AS/ NZS standards, ensuring customers meet their legal obligations
- All supporting documentation available, including technical manual, installation manual and user instruction manual in various languages helping with specification and training obligations
- 6000 Series Aluminium Alloy components ensure a quality safety system that will withstand harsh environments and deliver uncompromising levels of safety when needed
- Anodising of all parts and use of 316 stainless steel provides greater longevity, adding value to your investment and saving future maintenance and replacement costs
- Product design and fixing centres reduce structural loading and increase UniRail's ability to adapt to the building or structures tolerances, especially in weaker structures
- A discrete design and range of fixing brackets ensure design flexibility and offer concealed fixing solutions to complement building aesthetics
- The main rail floats in its fixings to mitigate the effects of thermal expansion and contraction which would otherwise cause the rail to buckle
- System offers workers continuous hands free movement and navigates corners and building contours, thereby providing maximum design and integration flexibility
- Continuous/enclosed systems available. Ideal for water treatment tanks and abseil access
- Proven track record of over 10 years use in buildings and 20 years use in commercial marine applications, reducing risk in specification and purchasing for employers and building owners.

great aesthetics
uncompromising safety

Application and use

The UniRail product is suited to protecting people from falling in a wide variety of building, structural and vehicle maintenance and inspection tasks, and has been used in some of the most prestigious and demanding projects all over the world.

Typical applications include:

- External façade access for window cleaners and building maintenance engineers
- Internal and external access for high work areas such as walkways and gantries
- Overhead anchorage for work on vehicles and in production halls
- Suspended rope access work for internal and external building maintenance tasks
- Fall arrest support for a swing stage
- Water treatment tanks and storage vessels
- Commercial maritime vessels
- Public and heritage buildings
- Wind turbine Nacelle safety
- Tourist attractions and theme parks

The UniRail system provides a very robust and solid anchorage for attachment by multiple workers and does not flex under normal working loads. This, combined with free running attachment carriages and continuous attachment for a high level of user safety and reduced need for training, makes UniRail uniquely suited to a wide range of applications and explains why it has been specified and installed on some of the world's most prestigious buildings and in demanding environments.

Work restraint and fall arrest

UniRail has been tested to perform primarily as a fall arrest system, complying with the European Standard EN795 for Class D Anchor Devices; the US OSHA standard for fall protection systems; and the Australian Standard AS/NZS 1891.2.

Best practice demands that the system is designed to restrain a worker so that exposure to the risk of falling is minimised. UniRail is excellent for this purpose as the rail does not flex under load and, in the event of a fall, deflection is minimal, reducing the risk of injury from the fall and easing recovery of the fallen worker.

In addition, unlike a cable fall protection system, loads applied in the event of fall are limited to the force produced via the fall arrest lanyard or self retracting lifeline attached to the worker. This load is then distributed between the two nearest fixing brackets, making a rail system more beneficial for the structure. (In a cable system the fall arrest loads are multiplied and transferred to end or corner brackets, where the loads can be significantly higher than the arrest force.)

Self retracting lifelines

Self retracting lifelines (also known as retractable fall arrest blocks) are suitable for use in conjunction with the UniRail System. In the event of a fall, the device will lock off, arresting the worker's fall and controlling the forces that go into the system and the worker's body to a safe limit.

Your system integrator will advise you further on your equipment selection, including training for working safely at height.

Harnesses and lanyards

Uniline and our integrators also provide a range of harnesses and lanyards for use with our systems. Your system integrator can assist you in making the correct choice.

Equipment for use with your UniRail System should comply with local standards and regulations, be inspected before use and should only be given to personnel trained in its correct use.

Abseil and suspended rope access

UniRail's strength and functional characteristics make it very suitable for use as an anchorage system for rope access and abseil work tasks where the structure requires inspection and light to medium duty tasks.

The user connects to the rail via two attachment carriages - one for their abseil rope and one for their safety back up rope - so that they are attached via two independent points as required by industry standards. Carriages can be locked in place or allowed to move, which they do very well under load.

Each carriage has an ultimate strength of more than 15kN (3300lbs) and the entire system maintains a safety factor of at least two for multiple workers as part of a complete personal fall protection system. This ensures that the UniRail system meets the requirements for anchor systems specified by the industrial rope access standard BS7985, ASTM E2505 and Australian Rope Access Association Industry Code 2005; and helps operatives to comply with other aspects of these standards.

UniRail is fixed to the structure at approximately 500mm (1.64ft) intervals, making sure that the rail does not flex when under load and that fasteners do not suffer from fatigue. The rail can be formed to navigate corners and curves in building design in either axis and is aesthetically very pleasing, complementing modern building designs.

This type of work access system for building maintenance is extremely cost effective when compared to other access rail systems and building maintenance units on the market. It offers great flexibility when maintaining complex building designs, lower maintenance costs and, through high standards of industry training via member organisations of IRATA, has an excellent safety record.

UniRail has been used extensively for suspended access work by rope access technicians and specified on numerous projects of architectural merit around the world.

Roof Jockey System

A custom designed davit system elevates the abseil rope and prevents contact with the structure. All loads are deviated back to the UniRail System and the UniRail carriages allow the 'Roof Jockey' to be easily moved to the required descent location.

Contact us for details.

Rope access work kit

Low rise buildings and areas of buildings or structures of up to 25m (82ft) that require cleaning, maintenance and inspection, can be accessed easily and safely with minimal user training.

By combining a UniRail System with a Liftevac access device and a back up fall arrestor, a maintenance worker can raise and lower themselves to carry out routine maintenance tasks.

Product construction and installation

The UniRail system is modular and therefore is easy to specify and install. The safety rail is supplied in lengths of 3m (9.84ft) and is jointed to create a continuous system. Each side of the joint is supported by a fixing bracket, and further fixing brackets can be added to the system to provide additional support depending upon the application, number of workers or structural requirement and capability.

Fixing brackets are available in different styles, allowing both ease of installation, where fasteners are exposed (side fix), and maximum aesthetic effect, where the fasteners are hidden from view (concealed fix). Side fix brackets use as standard two 10mm (3/8") screws to secure the system to the structure and the concealed fix brackets use a counter sunk 10mm (3/8") hex head machine screw. (A tapped version is also available for use with a 10mm metric screw).

The rail can be formed or bent in either axis, enabling the system to follow changes in direction or contours in building designs.

The rail can be trimmed on site during installation work to ensure the correct fit is achieved, although this is only usually necessary for one or two lengths of rail where system designs have been properly planned.

A complete technical manual is available from Uniline to assist with design and specification works.

System design

Successful safety system design requires early input from trained safety professionals. Uniline's team is on hand to provide you with design input, identifying system layouts, fixing detail, structural suitability and discussing how the system will be utilised. This is an important feature of Uniline's product offer and it ensures that system designs are both safe and practical, providing complete functionality for future users.

Local design assistance, site visits, installation and training are facilitated by our network of Approved Contractors, all of whom are trained and audited by Uniline to ensure our customers receive the best possible service.

For architects, Uniline can provide technical drawings and specification details to help with the inclusion of its products in building specification documents and tenders.

System components: **Common parts**

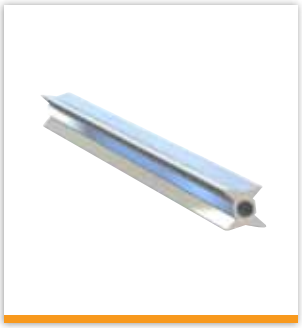
Moulded end (Part code: 7241053) – protects personnel from injuring themselves against an exposed edge of end rail.

System stop (Part code: 7241001) – prevents the rail from coming out of its end anchorage bracket in the event of a fall in the first or last span of the system.

Tamper-proof carriage stop (Part code: 7241000) – prevents the carriage from coming off the end of the system.

Removable carriage stop (Part code: 7241002) - prevents the carriage from coming off the end of the system but can be removed to allow the carriages to be taken off.

Rail joint (Part code: 7241005) – joins the ends of two rails and maintains the integrity of the system for fall arrest situations.



Rail (Part code: 7241013) – discrete profile just 32mm x 32mm (1 ¼" x 1 ¼"). Silver anodised as standard and can be powder coated on request.

Corners
90º (Part code: 7241014),
90º external (Part code: 7241015),
90º internal (Part code: 7241016),
45º (Part code: 7241019),
45º external (Part code: 7241018),
45º internal (Part code: 7241017) corners are available from stock and other bends and forms are easily accommodated down to a radius of 200mm (7.88").

Attachment carriage (Part code: 7241006) – enables the user to connect to the system and enjoy complete hands-free movement along the rail. It features a stainless steel parking lock for work positioning tasks and aluminium, nylon coated wheels. A stainless steel shackle enables connection of a karabiner hook and pivots to enable best functionality at any angle of take off. Min strength 15kN (3300lbs)

System components: Side fix parts

End anchor (Part code: 7241009) – secures the end of the rail to the structure and controls rail movement in the event of a fall.

Intermediate anchor (Part code: 7241012) – secures the rail to the structure at intervals to suit the work site and structure.

System components: Concealed fix parts

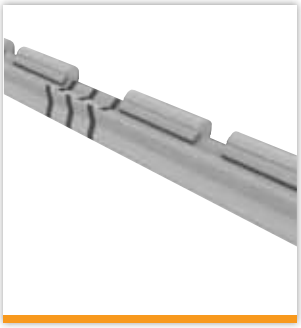
End anchor (Part code: 7241008) – secures the end of the rail to the structure and controls rail movement in the event of a fall.

Intermediate anchor (Part code: 7241011) (Part code: 7241010 Tapped version) – secures the rail to the structure at intervals to suit the work site and structure. (Tapped versions available.)

System components: Commercial marine

32mm Omega Clamp (Part code: 7241043) – to be used to mount sections of rail to stanchions or hand rails fabricated from approximately 32mm dia. Tube.

Carriage Gate (Part code: 7241040) – to allow the carriage to be removed from a closed loop of unirail for maintenance, as part of commercial marine system.



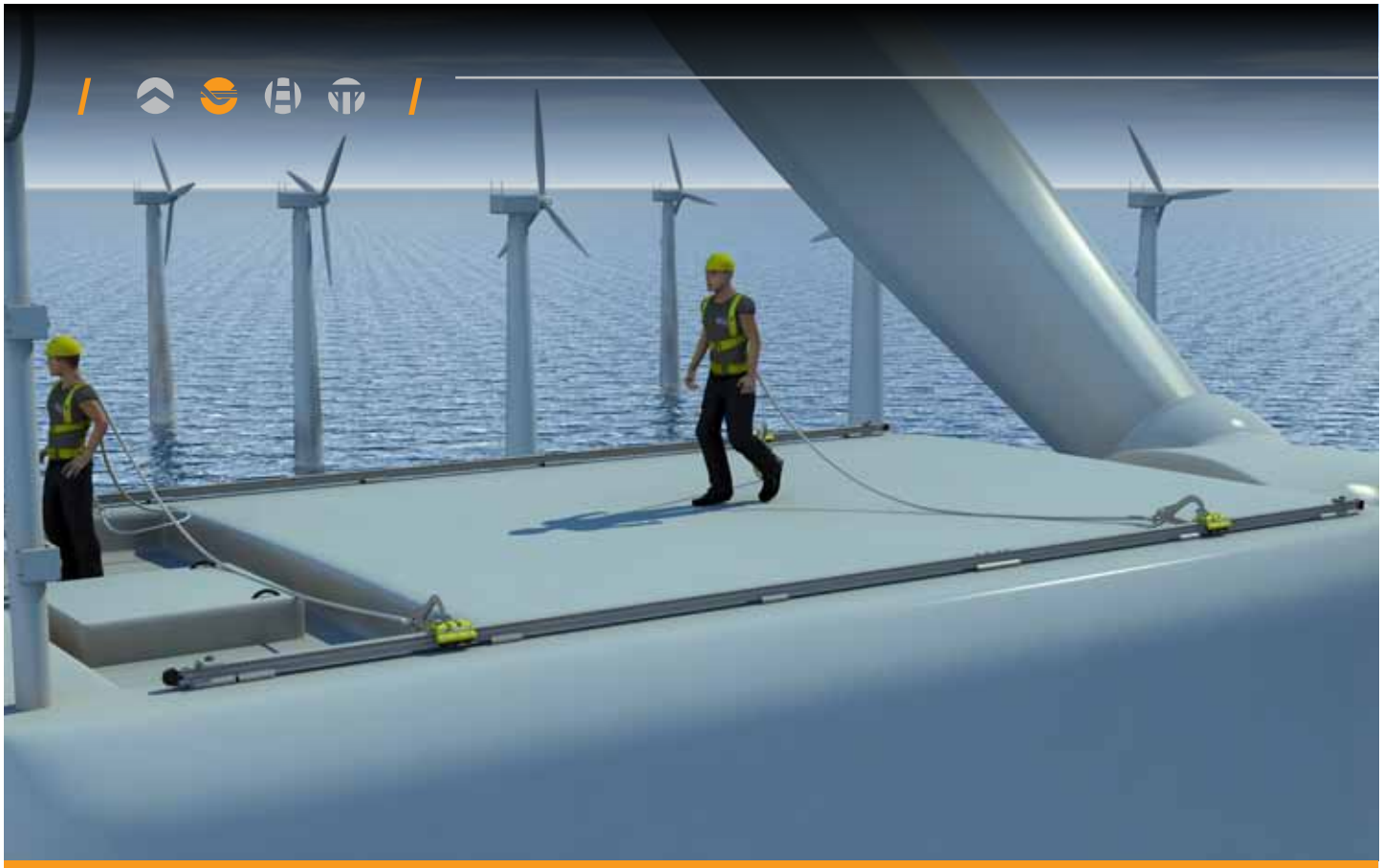
Flexirail Insert (Part code: 7241047) – to allow a continuous system to be fitted where two adjoining sections of rail need to be mounted to parts of the structure which can move independently of each other. In a UniRail commercial marine system.

System components: Wind energy sector

WT joint anchor (Part code: 7241025) – used to join two rails together and anchor to the structure in Wind Turbine Systems that are required to comply with BSEN50308.

WT intermediate anchor (Part code: 7241023) – for fixing the rail system to the structure in Wind Turbine Systems that are required to comply with BSEN50308.

WT UniRail carriage (Part code: 7241027) – the carriage is part of the Unirail system. It provides a mobile attachment point for users to connect to. One user per carriage. Use only on straight systems. Minimum strength 22kN (5,000lbs)



Wind energy sector

UniRail is a valuable safety system for the wind energy market, with its potentially hazardous working environment: the nacelle requires external access for inspection and maintenance tasks which expose workers to the risk of falling.

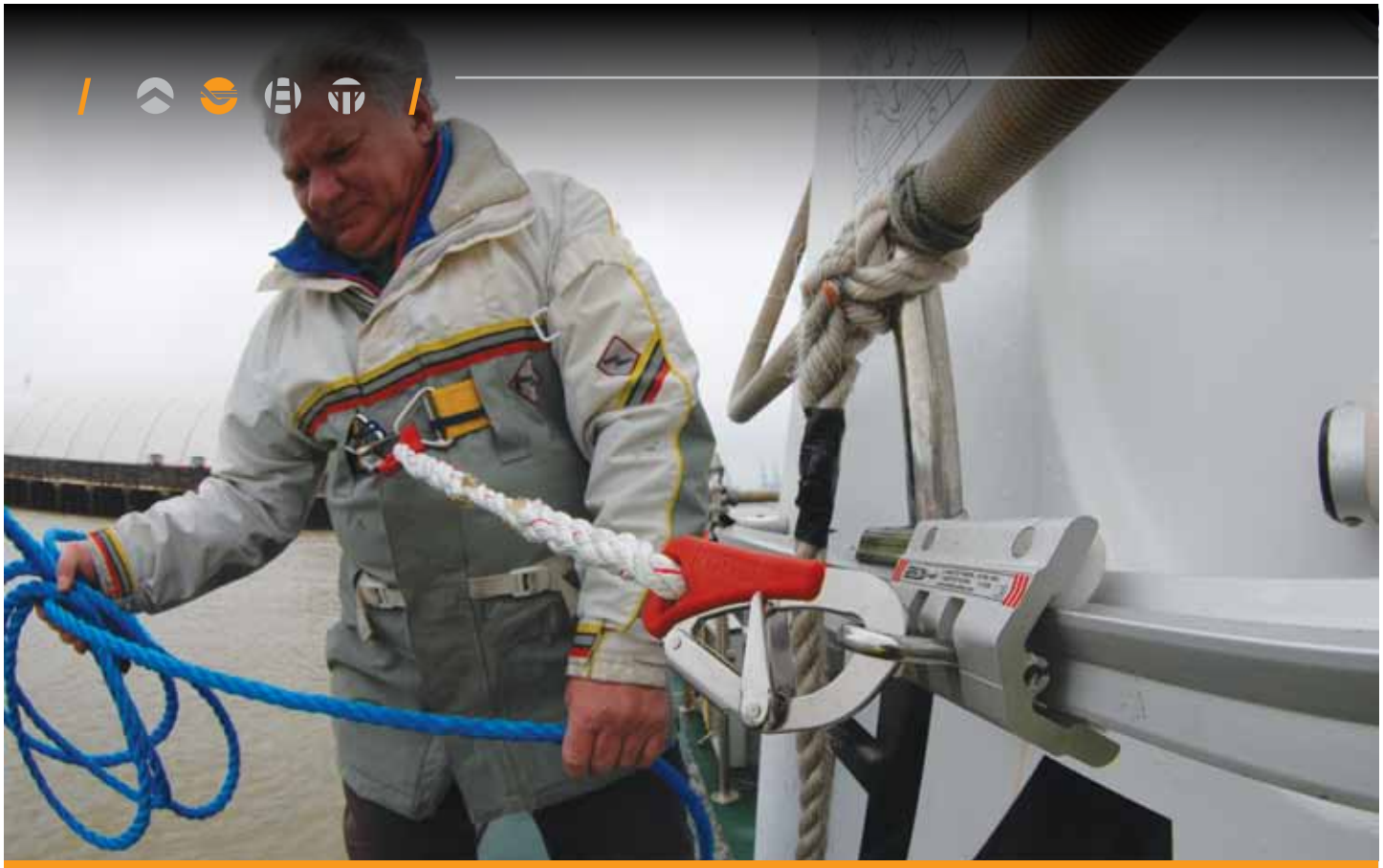
It is essential to be able to attach to a secure anchorage and move about efficiently and confidently. In the event of a slip or fall, the worker will almost certainly need to be rescued, so additional anchorage points need to be available to provide the flexibility and security to carry out such an operation.

UniRail has been tailored to meet the specific needs of wind turbine manufacturers and operators, providing a continuous anchorage system for up to 3 workers for fall protection, suspended access and rescue applications. Its free running attachment carriages can be parked during use to maintain worker stability, and when not in use to prevent the wind from moving them away from access points.

The system can easily be installed both during nacelle production and retrofitted to existing structures, enabling customers to standardise their chosen fall protection solution.

UniRail's marine grade anodised aluminium construction provides long term protection in harsh weather conditions. Fixings have been developed for wind energy structures with proven waterproofing details to prevent water ingress. The rail can expand and contract with changes in temperature, removing the risk of damage or unnecessary stress to the structure or fixings.

The rail system is complimented by a range of anchor points that can be attached to by two workers for fall protection, suspended access and rescue applications.



Commercial marine sector

The sea can be a hostile environment in which to work. The combination of harsh weather conditions with a constantly moving work environment means worker safety and security must always be paramount – especially as the implications for rescue in the case of an accidental fall are more onerous and carry additional significant risk than would be the case on shore.

UniRail is the only marine safety system to offer complete hands-free security. It provides continuous attachment via a four-wheel attachment carriage and can be used both as a proactive restraining system for multiple users or a reactive system to arrest a fall.

UniRail is particularly well suited for pilot cutters, harbour patrol vessels, police patrol craft and other similar vessels which operate without any external guardrails. The forces generated by acceleration, turning and sea motion are enough to catapult crew off the decks: pilot cutters are particularly vulnerable as they often operate with only a coxwain and one crew member to assist the pilot. Full two-handed assistance is required to safeguard the transfer of the pilot, but this cannot be achieved if the crew member is holding on with one hand or ejected off the deck whilst moving forward to the transfer station.

The product has been designed for easy installation with anchorages which are fixed to the vessel's structure or its stanchions while enabling the rail to float. This allows for thermal expansion and contraction as the temperature changes throughout the different seasons. A change in gradient and direction in both axes of the rail extrusion presents no problem, with complete continuous access and attachment guaranteed at all times.

UniRail can easily be retrofitted to existing vessels or structures or can be designed in before construction, and meet all necessary marine safety standards and codes of practice.

Capital Safety Group, through our Uniline brand is the global market leader in the design and manufacture of engineered fall protection systems. Through a combination of expert knowledge and practical experience, we can help our customers reduce risk and increase safety when working at height.

Our comprehensive Uniline range of products offers fully compliant, practical solutions for structures of all types, in all industries. Our ethos of delivering quality, service, training and support for our customers has earned Uniline a deserved reputation for excellence around the world.

Operating through specialist safety companies globally, Uniline provides local support and installation services to meet the specific safety objectives of all our customers.

roofing systems™

If you need a safety solution for roof access during maintenance and inspection tasks, then look no further than Uniline's Roofing product range. Our products, including roof anchors, horizontal lifelines & horizontal rail systems offer comprehensive protection for workers on all types of roofs.

horizontal systems™

The products in our Horizontal systems range are some of the best know brands in fall protection safety. The versatility of these products combined with Uniline's expertise in fall protection ensures we can solve even the most complex of height safety problems in industry, construction, façade access and for all manner of building maintenance and inspection tasks.

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A unique range of custom access products for challenging fall protection situations in transport and industry. These solutions are structurally analysed and designed to our customers exact needs and specifications.

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