GUARDIAN® | Engineered Systems

# Fall Arrest and Fasçade Maintenance Systems

**HEIGHT SAFETY.**
**SIMPLIFIED.**

# Who we are

As a leader in the fall protection industry, Guardian has been supplying fall protection safety equipment for thousands of contractors and workers across the world for over 40 years. Combined with Guardian's history for producing quality fall protection products, our Engineering Services Team designs and services fall protection systems for clients across North America.

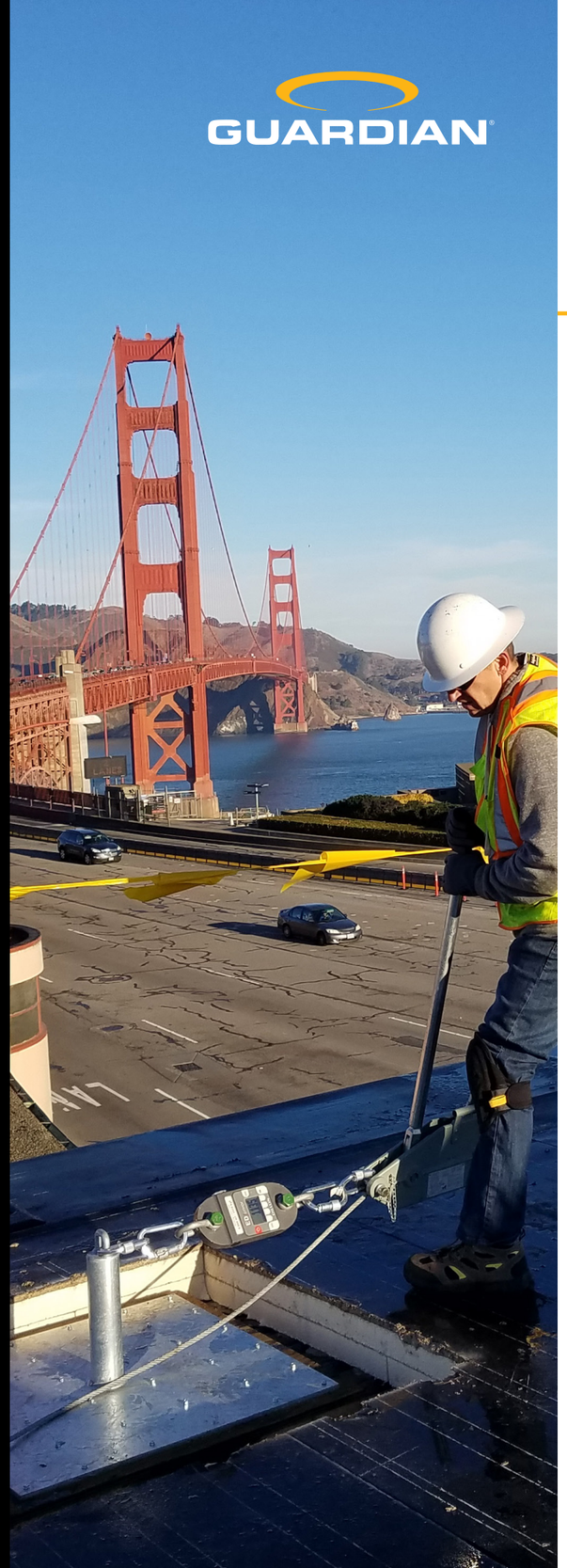
# How we do it

We utilize a team of engineers and project managers to provide innovative, project specific, and deadline-driven fall protection solutions for our clients. Guardian Engineered Systems are worker oriented, and are designed for an end user to conveniently and safely work alongside potential fall hazards.

Whether the job involves an existing structure without accurate plan work, or new construction with detailed drawings and specifications, our team can offer custom engineering and fabrication to meet the unique demands of a project's fall protection requirements. With over 3,500 projects completed, Guardian Engineered Systems has a proven track record of exceeding client's expectations and meeting aggressive project deadlines.

From initial proposals to closeouts, Guardian takes pride in providing exceptional customer service. Whether you have a question regarding a quote, system load calculations, layout designs, or shipment information, the Guardian Engineered Systems team is available for all your project needs.





**Guardian** | Engineered Systems

# Our Process

**STEP 1:**
**Establish Project Requirements**

Guardian Sales provides technical consultation for clients to determine the safest and most cost efficient fall protection solutions for each project.

If you are looking for design assistance, please contact us via email and provide us with the following: ***Architectural structural details of the roof plan building elevations, wall and parapet details, any other pertinent drawings***

**STEP 2:**
**Rough Design & Estimate**

Engineered Systems is able to complete most preliminary design work and estimates within a few business days.

We understand that fall protection may impact other aspects of the building, such as truss design and mechanical system layouts, so it is our goal to quickly turnaround our proposals and allow your project to continue uninterrupted.

**STEP 3:**
**Project Engineering**

Guardian Engineered Systems utilizes a team of professional engineers to provide innovative, project specific, and deadline-driven fall protection solutions for our clients. Our systems are worker oriented, and are designed for an end user to conveniently and safely work alongside potential fall hazards.

Whether the job involves an existing structure without accurate plan work, or new construction with detailed drawings and specifications, we can offer custom engineering and fabrication to meet the unique demands of a project's fall protection requirements and needs.

If you are looking for design assistance, please contact us via email Engineered Systems or you can call us at: +1 (800) 466 6385

**STEP 4:**
**Fabrication**

We are capable of creating unique fall protection and façade maintenance solutions through custom design and fabrication. custom design and fabrication.

Our custom products are fabricated in the USA to the highest quality standards to insure our customers receive the best product possible.

Guardian offers many product finishing options ranging from galvanized steel, stainless steel, and custom powder coating to match any desired color.

**STEP 5:**
**Certification, Supervision & Documentation**

We take closeout documentation very seriously and ensure that each client is left with a complete package.

If needed, Guardian can send workers to the job-site to instruct the contractor's workers on how to install the respective system. In addition, we spend extra time with the contractor's crew training them on the system and other systems they could potentially use. We can also provide documented training for the users of our systems.

On-site testing and certification is also available providing building owners the needed OSHA required documentation.

***Typical lead time for custom fabrication is four weeks. Please contact us directly for information regarding expedited fabrication and shipment services.**

# CB-Series Anchors


**CB-12 Anchor Point**
SKU# 00645

## Fall Arrest Systems

**CB-Series Anchors** (Stock & Custom)
Are a custom design of our basic CB-Anchor system to accommodate certain specific project requirements. It is ideal for new construction and re-roofing projects, which allow direct access to roof decking and/or structural materials.

Attachment methods include:

- *Bolt-on*
- *Clamp to standing seam metal roof*
- *Welding to structural members*
- *Rivet to exposed metal deck*
- *Saddle plate to glulam beam*
- *Screw down to structural roof decking.*

*See page 6 and 7 for some of the additional attahcment methods for the CB-Series and S-Series Anchors.*

**Stock Anchors Available**

| | |
|---|---|
| 00645 | CB-12 roof anchor, galvanized steel |
| 00656 | CB-18, galvanized steel |
| 00657 | CB-18, galvanized steel, for metal and wood |
| 10645 | CB-12 Weld on post |
| 10655 | CB-18 Weld on post |

***SKUs listed are stock CB-Series anchors. All others require custom quote.**





# S-Series Anchors

**S-Series Anchor**
SKU# 45010

## Façade Maintenance Systems

**S-Series Anchors** (Stock & Custom)
S-Series Tie-Back Anchor Points can be utilized as suspension points for a Bosun's chair, as part of a Rope Descent System, tie-back for portable equipment, or as a complete rooftop fall protection system.

Attachment methods include:

- *Cast-in-place to concrete*
- *Weld-on application*
- *Through-bolt wood blocking*
- *Post-installed concrete fastener attachment*
- *Backer plate connection around structural beams* S-Series

Unlike many fall protection anchors, S-Series Tie-Back Anchor Points are engineered specifically for compliance with OSHA 1910, walking and working surfaces. For more information regarding the difference between fall protection and window washing anchors, please visit our website, click on the Engineered Systems link at the top of the page, and navigate to our downloads section.

*See page 6 and 7 for some of the additional attahcment methods for the CB-Series and S-Series Anchors.*

**Stock Anchors Available**

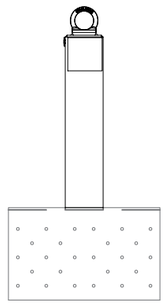
| | |
|---|---|
| 45000 | 12" Tie-back anchor, weld-on, steel U-bar |
| 45010 | 18" Tie-back anchor, weld-on, steel U-bar |
| 45012 | 12" Tie-back anchor, weld-on, stainless steel U-bar |
| 45020 | 24" Tie-back anchor, weld-on, steel U-bar |
| 45021 | 24" Tie-back anchor w/base plate, steel U-bar, weld on |
| 45024 | 18" Tie-back anchor w/base plate, drop-forged eye |

***SKUs listed are stock S-Series anchors. All others require custom quote.**

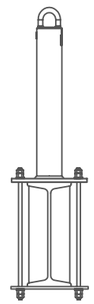
# **Attachment** Methods

The attachment methods below are for our CB-Series and S-Series anchors, and are also commonly used in conjunction with our Horizontal Lifeline systems (see pages 12-15)

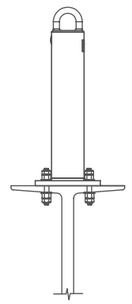
***These are only a few of our over 100 possible designs**



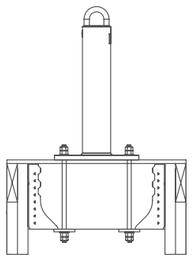
**CB | S-Series Saddle anchor**
for Wood



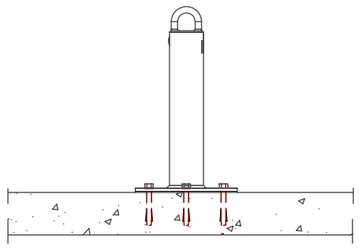
**CB | S-Series anchor**
w/Backer Plate



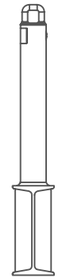
**CB | S-Series anchor**
Bolt to Steel



**CB | S-Series anchor**
Washer Plate



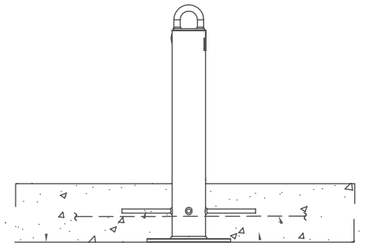
**CB | S-Series anchor**
for Concrete (Epoxy & Mechanical)



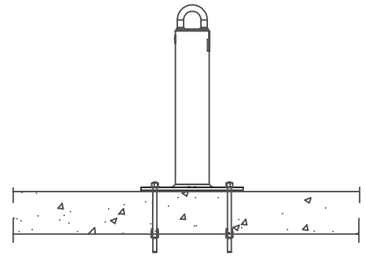
**CB | S-Series anchor**
Weld to Steel



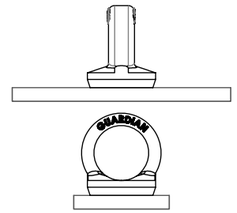




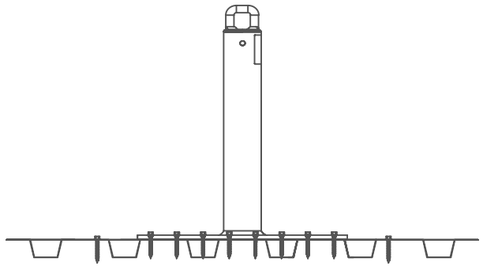
**CB | S-Series embed anchor**
for Concrete (Embed)



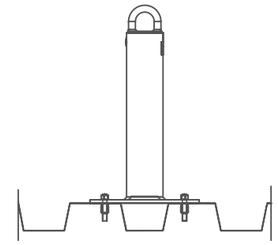
**CB | S-Series anchor**
Toggle connection - concrete/metal



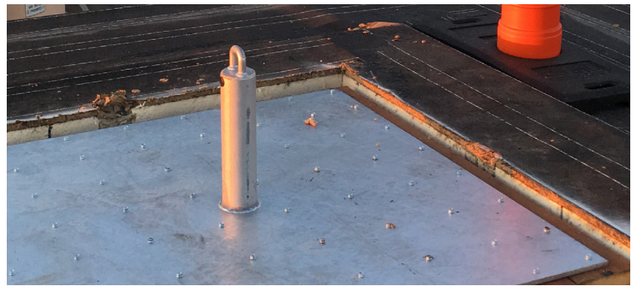
**CB-Series anchor**
Weld-on/bolt-on connection



**CB | S-Series anchor (12" & 18")**
Screw down to metal or wood deck



**CB | S-Series anchor**
Toggle Connection - Wood/Metal



Custom CB-Series anchor options shown above.

# Cal-OSHA
# Specific Products


## BACKGROUND

Cal-OSHA 3291 (f)(1) mandates special "roof tie-backs" on "every building constructed 3 stories or 36 feet or more in height."

**Cal-OSHA then stipulates unique:**

- Design Criteria (See Below)
- System Layout Requirements
- Engineering Criteria
- Testing Regulations

## DESIGN CRITERIA

Unlike more commonly known fall protection standards, Cal-OSHA adds several unique requirements regarding tie-back anchors:

- Able to hold 5,000 lbs without permanent deformation:
  **Cal-OSHA 3291 (f)(2)(C)**
- Designed by an engineer:
  **Cal-OSHA 3294 (a)(1)**
- Engineering Documentation:
  **Cal-OSHA 3291(a); 3292 (c)(2)**
- On-site Testing on all anchors:
  **Cal-OSHA 3296 (a); 3292 (c)(2)**

For more information, please visit:
**dir.ca.gov/title8/3291.html**



### FUNCTION

Tie-back anchors are used to secure suspended personnel and equipment hanging off of the side of the building, or to hold an independent fall arrest safety line.

Cal/OSHA requires Tie-Back Anchors for potential unscheduled maintenance, regardless of owner (s) intent.

### CONSULTATION

A member from Guardian's Engineered Services team will gladly walk you through the various Cal-OSHA standards to recommend the perfect solution.

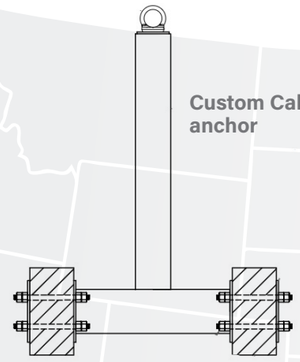
### QUALITY ASSURANCE

Cal-OSHA regulations aside, tie-backs should always be procured from a manufacturer dedicated to their design & fabrication to absorb any liability that would otherwise be unfairly borne by the contractor or by a miscellaneous metals fabricator.

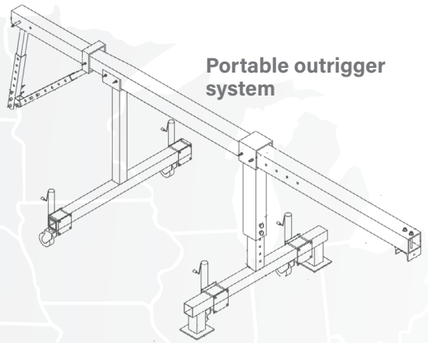
Engineered Services utilizes a team of engineers and project managers to provide innovative, practical, and deadline-driven solutions.

**Guardian** | Engineered Systems

## Cal-OSHA Compliant Façade Maintenance Systems

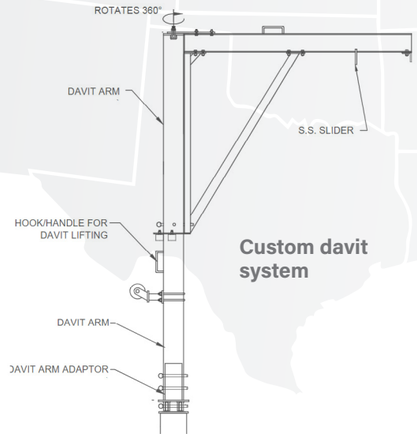


**Custom Cal-OSHA anchor**

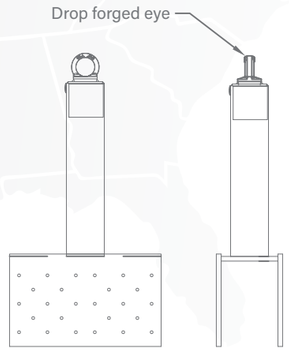


**Portable outrigger system**

**Cal-OSHA compliant forged eye**




**Custom davit system**



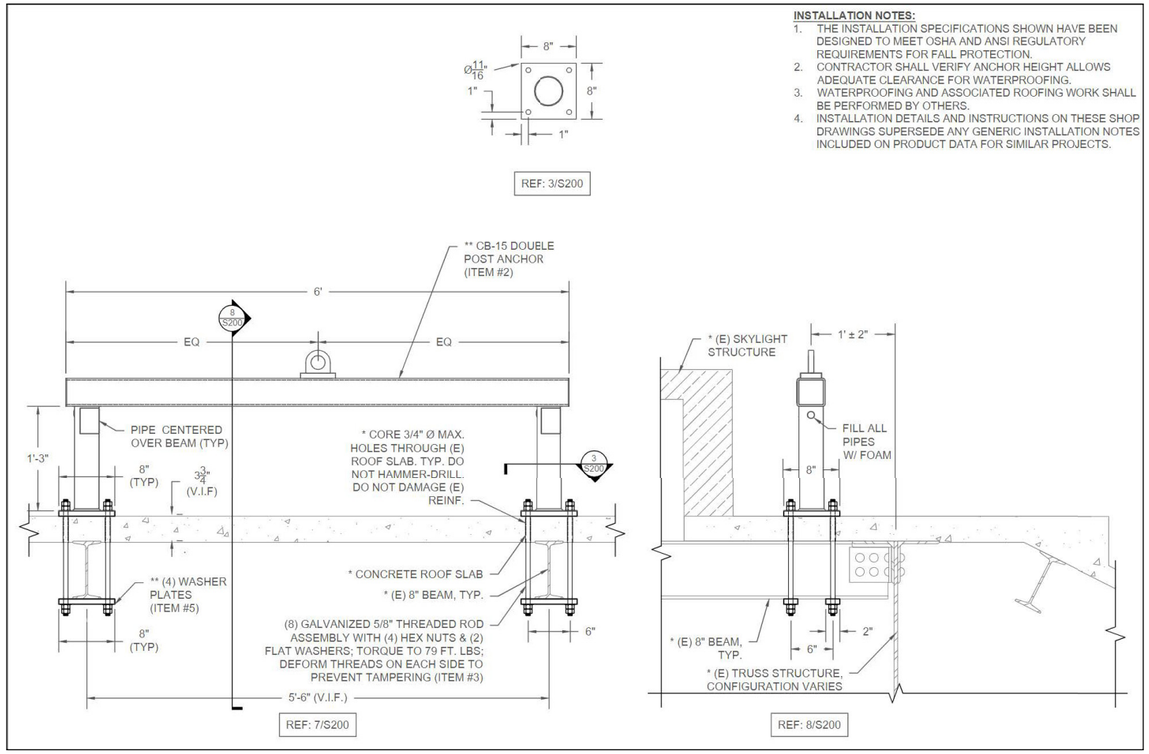

**Cal-OSHA compliant saddle anchor**

ESG also offer façade maintenance systems that utilize tie-back anchors such as:

- ***Davit Arms***
- ***Outriggers***
- ***Rigging Sleeves***
- ***Horizontal Lifelines.***

Regardless of the project stage, ESG can help determine your needs and best course of action based on Cal-OSHA's unique stipulations.

# **Engineering** Capabilities




## THIS IS WHAT WE DO!

- **PE Stamps in all 50 states**
- **Project-specific anchor designs**
- **Use of materials to suit environment and specifications**
- **Project-specific installation instructions**
- **Custom attachments to fit nearly any structure**
- **Anchor loading calculations**
- **Structural analysis**
- **Complete submittal packages**





# **Davit Arms** & Bases


## Davit Arms & Bases

Davit Systems are the premiere façade access equipment. Available in both ground and roof-rigged varieties, they are used to support suspension equipment over the edge of the building façade.

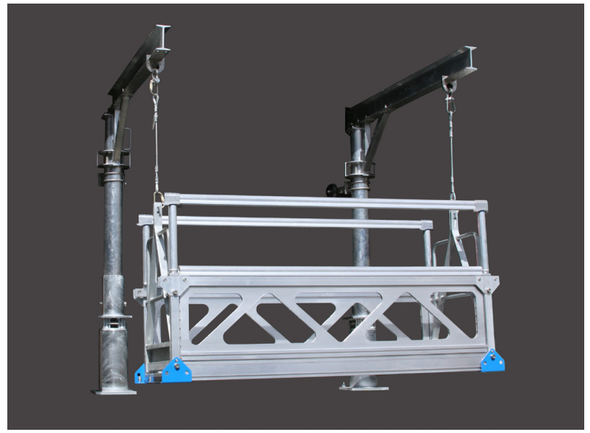
**Typically, a Davit System is used in conjunction with a Tie-Back Anchor System, which will serve as an independent anchorage for a worker's safety line.**

A Davit System includes the following components:

*A Davit base, which is permanently installed to building structure*

*An adaptor socket, a connecting piece between davit base and davit arm*

*Davit arm, which can be moved to different davit base locations*



***Davit Arms and Bases are a custom build. For more information please reach out to one of our experts.**

# Horizontal Lifelines

## Custom HLL Systems

### Horizontal Lifelines

There are three horizontal lifeline systems available, including:

**Checkline HLL System**

**CB Hybrid System**

**Metal Energy Absorber (MEA) HLL System**

### Checkline HLL System

The Checkline Horizontal Lifeline System is Guardian's premium fall protection solution, ideal for existing buildings.

- Compatible with nearly any deck type
- Pass through, 100% hands-free system
- 304 stainless steel and aluminum constructed components

*Guardian requires installation supervision services for Checkline Horizontal Lifeline Systems to ensure they are installed in accordance with engineering specifications.

### CB Hybrid System

Guardian's CB-Hybrid System combines the versatility and simplicity of our popular CB Anchor with the unique capabilities of our hands-free lifeline system.

- Custom designed CB anchors to suit unique connection designs, material customization, or insulation depths
- CB anchors can be installed during roof construction without Guardian Engineered Systems supervision

*Guardian requires that the lifeline components to be installed under the direct supervision of an ESG representative or a certified Checkline installer.

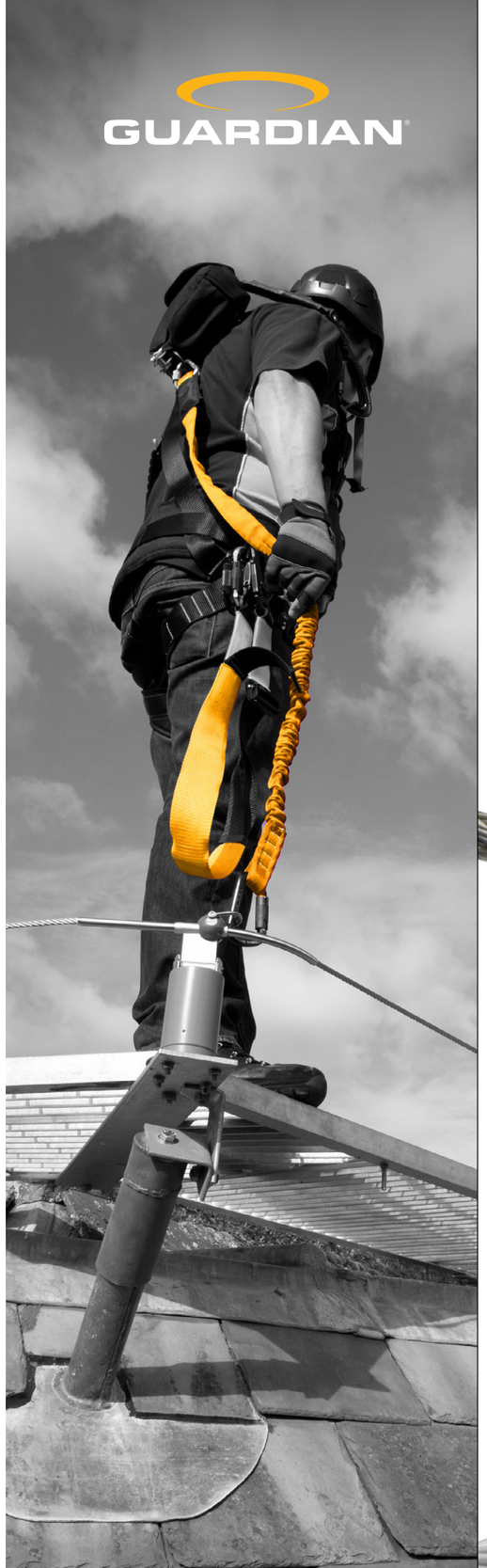
### Metal Energy Absorber (MEA) HLL System

The Absorbinator Horizontal Lifeline System can span up to 100' between anchors as part of either a permanent or temporary system. This system can also be used to retrofit existing anchor points with a horizontal lifeline system.

- Shock absorber to reduce end anchor loads
- Cable tensioner, 3/8" cable, all required hardware
- Available in galvanized or stainless steel components

*While Guardian does not require Absorbinator Systems to be installed by or under the direct supervision of an Guardian Representative, Inspection and certification during or after lifeline installation is available to provide reassurance that the system has been installed correctly.








GUARDIAN

## Checkline HLL System

### Pass-Through Trolley

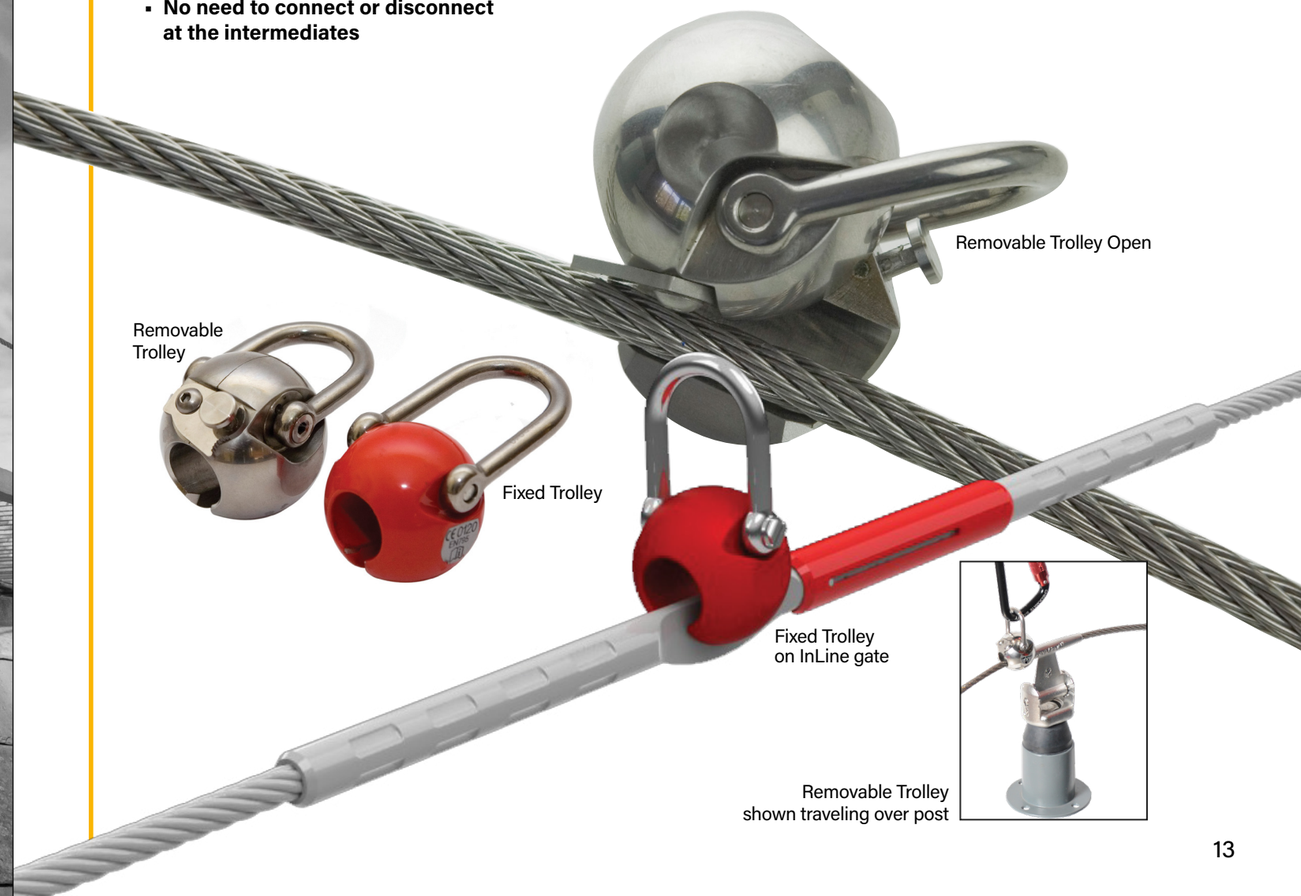
***Used with Checkline and CB Hybrid Systems***

The ultra compact CLB *CheckLine Ball Trolleys* have a unique stainless steel ball bearing design with a swivel handle allowing the device to be pulled as close to the centre line of the cable as possible. This stops the device from twisting and ensures it passes intermediates smoothly.

The removable trolley opens by a simple two movement button and can be fitted to the line at any point.

The fixed trolley enters the system via an inline spring loaded gateway which can be fitted at the end of the system or along the lifeline as required, or simply left permanently installed.

- **Hands free**
- **Pass through**
- **No need to connect or disconnect at the intermediates**



# Horizontal Lifelines

## CB Hybrid HLL System

*Used with Checkline and CB Hybrid Systems*

- **Cost effective**
- **Hands free**
- **Pass through**


## Overhead HLL

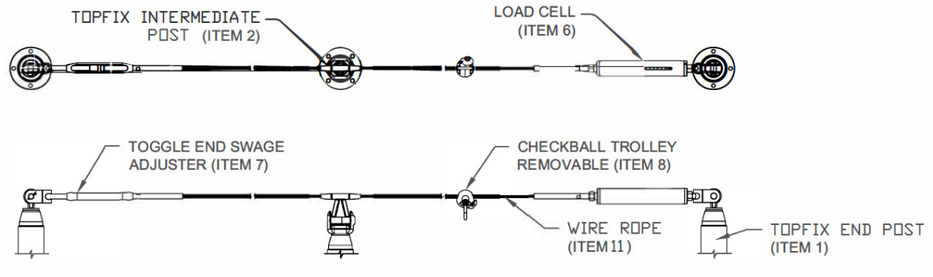
*Used with Checkline and CB Hybrid Systems*

- **Hands free**
- **Pass through**

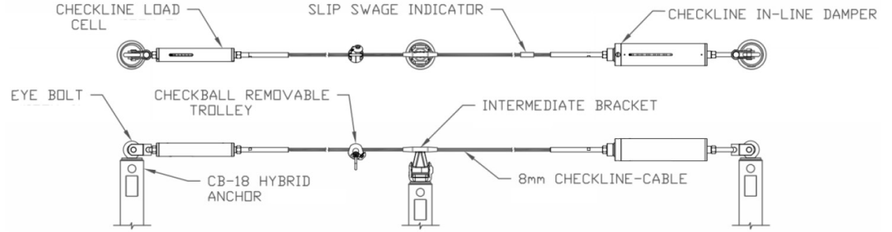




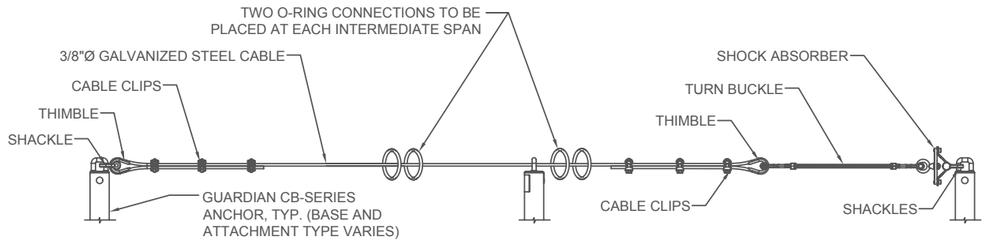
## Checkline HLL System - *Hands free*




## CB Hybrid HLL System - *Cost effective and hands free*




## Metal Energy Absorber (MEA) HLL System - *Cost effective*



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