



A Guardian® Brand.

CUSTOM HEIGHT SAFETY SOLUTIONS

Engineering
Services
Guide

HEIGHT SAFETY.
SIMPLIFIED.

guardianfall.com/engineered-systems

WHO WE ARE

In fall hazard protection, sometimes one size doesn't fit all. Whatever your specific needs or deadline, our in-house team can help. We design, engineer, fabricate and install custom solutions, and Guardian Engineered Systems (GES) have been doing it for over 30 years - on more than 3,000 projects. Whatever the project, your workers' convenience and safety is our top priority.

WHAT WE DO

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. With over 5,000 projects completed, GES has a proven track record of exceeding client's expectations and meeting aggressive project deadlines.

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



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OUR PROCESS

STEP 1

Establish Project Requirements

GES experts provide technical consultation for clients to determine the safest and most cost efficient fall protection solutions for each project.

STEP 2

Rough Design & Estimate

GES is able to complete most preliminary design work within 10 business days. We understand that fall protection may impact other aspects of the building, such as truss design and mechanical system layouts. Consequently, we send preliminary design drawings to clients prior to the Professional Engineer review and stamp in order for our design to be revised and incorporated into the building design as a whole.

STEP 3

Project Engineering

GES engineers provide innovative, project specific, and deadline-driven fall protection solutions for our clients. GES solutions 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, GES can offer custom engineering and fabrication to meet the unique demands of a project's fall protection requirements and needs.

STEP 4

Fabrication

We are capable of creating unique fall protection and façade maintenance solutions through custom design and fabrication. We offer solutions for an extensive array of applications including wood and metal decks, wall and overhead mounted systems, standing seams, and concrete embedment.

Other fall protection solutions include custom debris and fall protection netting, rigid rail systems, and guardrail systems.

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

STEP 5

Certification, Supervision & Documentation

OSHA & ANSI both require that building owners complete a fall protection plan and keep a copy on file. We take closeout documentation very seriously and ensure that each client is left with a complete package.

GES sends one worker to the job site to instruct the contractor's workers on how to install the respective system. The contractor is responsible for providing all the labor and our crew member is there just to supervise and instruct them on the correct way of completing the work. In addition, we spend extra time with the contractors crew training them on the system and other systems they could potentially use. We provide them documented training allowing them to perform future work with our crew not on-site.



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Got a Project?

If you are looking for design assistance, please contact us via email and provide architectural structural details of the roof plan building elevations, wall and parapet details, and any other pertinent drawings or documents.

Files can be sent as Autodesk® AutoCAD® or Adobe® PDF files.



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

CB-SERIES

Fall Protection Systems

CB-Series Post Anchors

The CB-Series delivers a strong, permanent anchorage solution for concrete, wood, I-beam, or steel decking installations. Built from durable galvanized steel, it provides long-term corrosion resistance and reliable performance in both permanent and temporary applications. The post extends cleanly through finished roofing for easy connection to fall protection equipment. Designed for versatility, the CB-Series can be used as a single-point tie-off or as part of a compatible horizontal lifeline system to increase work area coverage.

OSHA-compliant and engineered for strength, it's ideal for commercial and industrial roof safety systems. 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 pages 6 and 7 for additional attachment methods.

Part Number	Description
00645	12" post anchor, galvanized steel
00652	18" post anchor, galvanized steel, toggle application with swivel
00656	18" post anchor, galvanized steel, toggle application
00657	18" post anchor, galvanized steel, for metal and wood
10645	12" weld on post anchor
10655	18" weld on post anchor

CB-Series Post Anchors can range from 12" up to 60" in height. SKUs listed above are stock post heights. All other post heights require a custom quote.



00645

S-SERIES

Façade Maintenance Systems

S-Series Tie-Back Post Anchors

The S-Series is designed for tie-back or suspension applications such as window washing, façade maintenance, and other full-suspension work and meets the latest OSHA 1910.140 and 1926.502, and ANSI Z359.18 standards. When not used for suspension, the S-Series functions as a normal fall protection anchor.

Built for concrete and backer plate installations, and fully compatible with horizontal lifelines, this anchor delivers reliable safety in demanding environments; the S-Series tie-back post anchor is engineered for long-term strength and compliance in both construction and general industry applications. 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

See pages 6 and 7 for additional attachment methods.

Part Number	Description
45000	12" weld-on tie-back post anchor, steel U-bar
45010	18" weld-on tie-back post anchor, steel U-bar
45012	12" weld-on tie-back post anchor, stainless steel U-bar
45020	24" weld-on tie-back post anchor, steel U-bar
45021	24" weld-on tie-back post anchor with baseplate, steel U-bar
45024	18" tie-back post anchor with baseplate, drop-forged eye

S-Series Post Anchors can range from 12" up to 60" in height. SKUs listed above are stock post heights. All other post heights require a custom quote.

45024



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CAL-OSHA SPECIFIC PRODUCTS



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Background

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

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.

Consultation

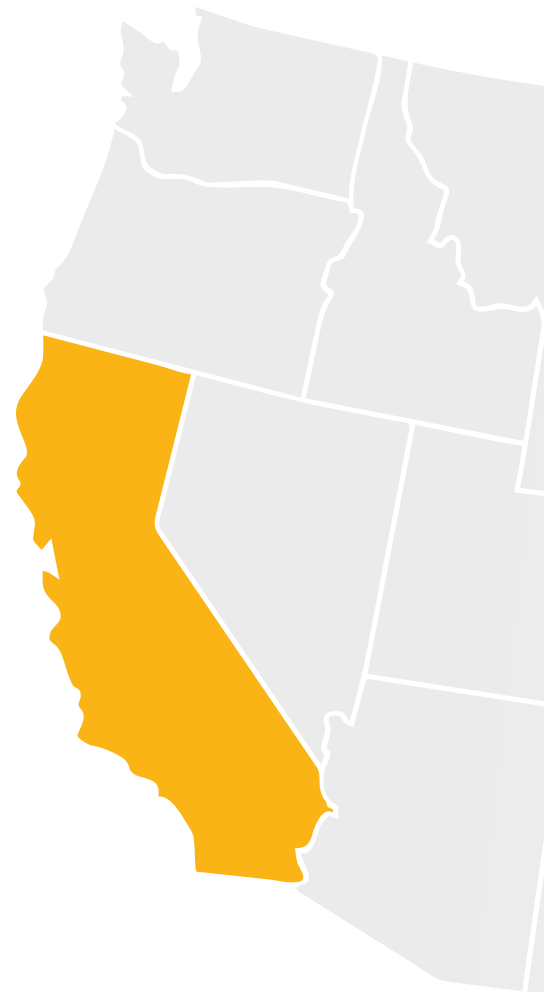
A member from GES's engineering team will gladly walk you through the various Cal-OSHA standards to recommend the perfect solution.

Quality Assurance

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



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



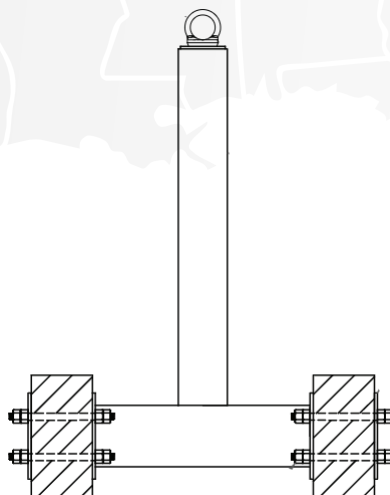
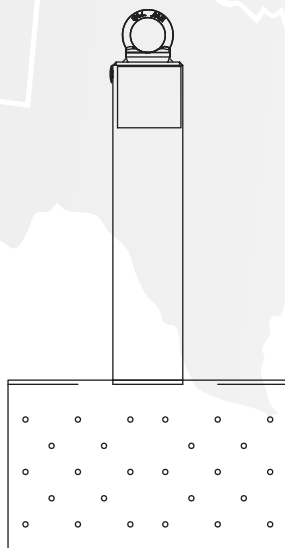
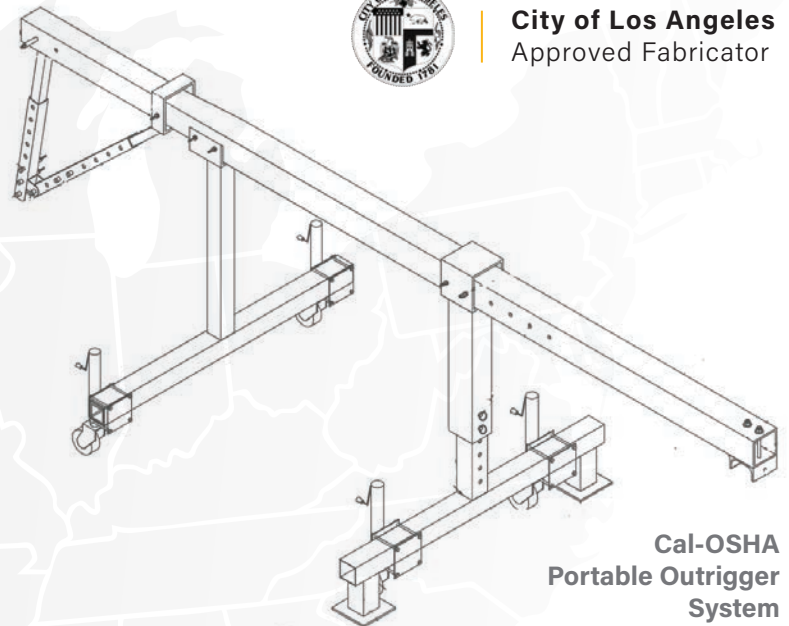
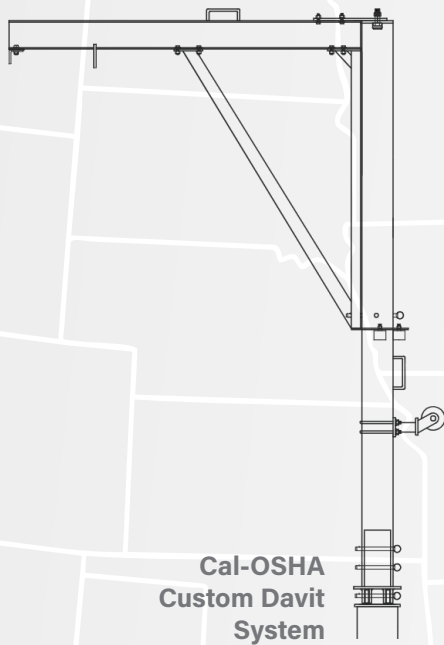
Cal-OSHA
compliant
forged eye



Cal-OSHA Compliant Façade Maintenance Systems



City of Los Angeles
Approved Fabricator



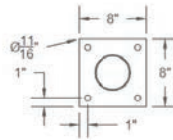
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ENGINEERING CAPABILITIES



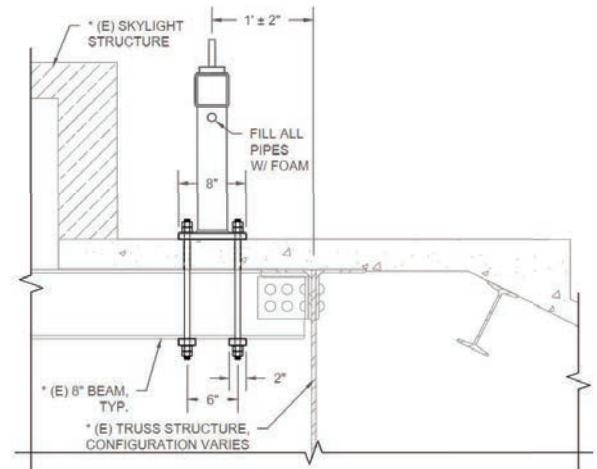
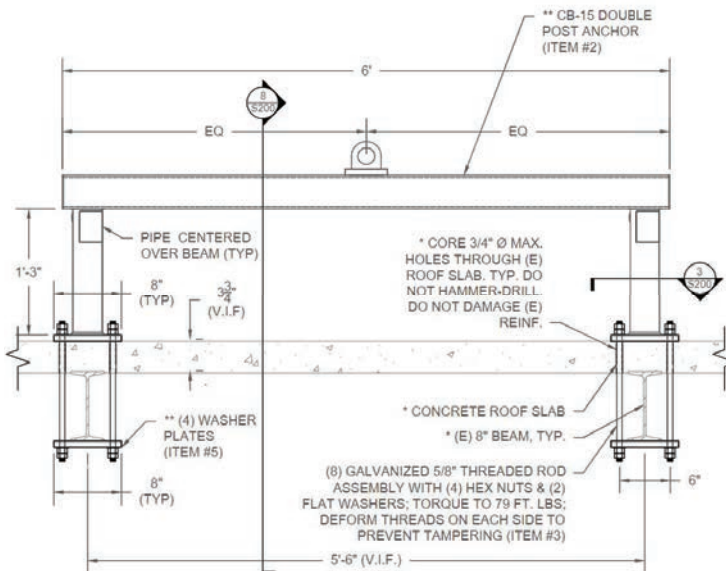
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REF: 3/S200

INSTALLATION NOTES:

1. THE INSTALLATION SPECIFICATIONS SHOWN HAVE BEEN DESIGNED TO MEET OSHA AND ANSI REGULATORY REQUIREMENTS FOR FALL PROTECTION.
2. CONTRACTOR SHALL VERIFY ANCHOR HEIGHT ALLOWS ADEQUATE CLEARANCE FOR WATERPROOFING.
3. WATERPROOFING AND ASSOCIATED ROOFING WORK SHALL BE PERFORMED BY OTHERS.
4. INSTALLATION DETAILS AND INSTRUCTIONS ON THESE SHOP DRAWINGS SUPERSEDE ANY GENERIC INSTALLATION NOTES INCLUDED ON PRODUCT DATA FOR SIMILAR PROJECTS.



Modern construction is a new frontier. GES's engineers and project managers focus on adapting your fall arrest components quickly and efficiently, according to your written specifications. Then we follow up with on-site assistance and certification.

Custom Fall Arrest Anchors

Depending on your particular structure, buildings or project, your fall protection solution may require custom fall arrest anchors. Consult with our expert team

of engineers and project managers to find out how flexible these products can be. All designs are reviewed by a third-party professional engineer (PE) licensed in the state of the project.

Façade Maintenance Systems

If your project needs a specific façade maintenance system, our team is ready - from initial design, and specification to fabrication, supply, and on-site testing. We specialize in customizing to unique buildings and sites with fast turnaround.

- 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

Façade Maintenance Systems

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.

All GES Davit Systems are designed around California specific weight and design principles.

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.

Davit Systems include:

- Davit Base - which is permanently installed to building structure
- Adapter Socket - a connecting piece between davit base and davit arm
- Davit Arm - which can be moved to different davit base locations



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for a
quote



Davit Arms and Bases are custom built. Please contact GES for more information.

HORIZONTAL LIFELINES

Custom HLL Systems

Hybrid HLL System

Our premium fall protection solution, ideal for existing and new buildings.

- Compatible with most deck types
- 100% hands-free system
- Stainless steel and aluminum constructed components

GES installation supervision required.

CB-Hybrid System

Combines the versatility and simplicity of our popular CB-Series Post Anchors with the unique capabilities of our hands-free Hybrid HLL System.

- Custom designed CB anchors to suit unique connection designs, material customization, or insulation depths
- CB anchors can be installed during roof construction

GES installation supervision required.

MEA HLL System

The Metal Energy Absorber (MEA) HLL System can span up to 100 feet between anchors as part of either a permanent or temporary system. This system can also be used to retrofit existing anchorage connection points with a HLL system.

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



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HORIZONTAL LIFELINES

Hybrid HLL & CB-Hybrid Systems

Pass-Through Ball Trolley

The ultra compact Hybrid HLL Ball Trolleys have a unique stainless steel ball bearing design with a swivel handle allowing the device to be pulled as close to the center 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

Removable
Trolley



Fixed
Trolley



Removable Trolley
open



Fixed Trolley on
Inline Gate



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HORIZONTAL LIFELINES

Hybrid HLL & CB-Hybrid Systems

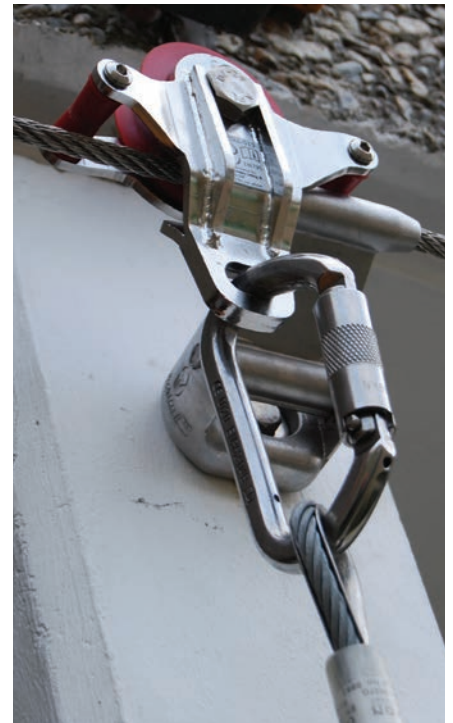
CB-Hybrid HLL System

- Hands free
- Pass through
- Cost effective



Overhead HLL System

- Hands free
- Pass through



ANCHOR & HLL SELECTION TOOL



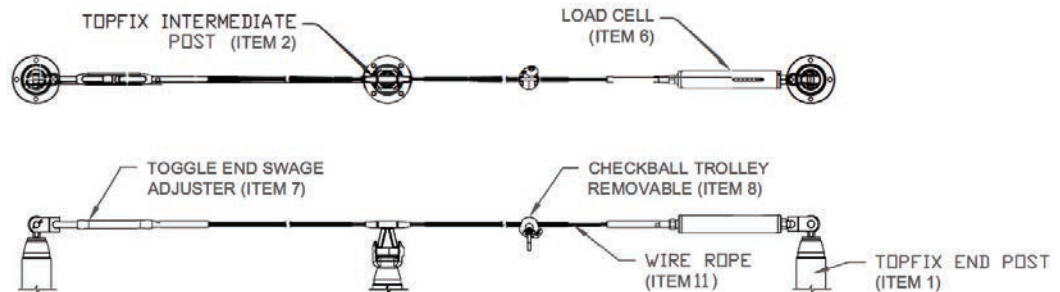
Scan to use the interactive tool

Identify the correct Anchor and HLL for the most common situations or applications with total confidence and submit your design for review.

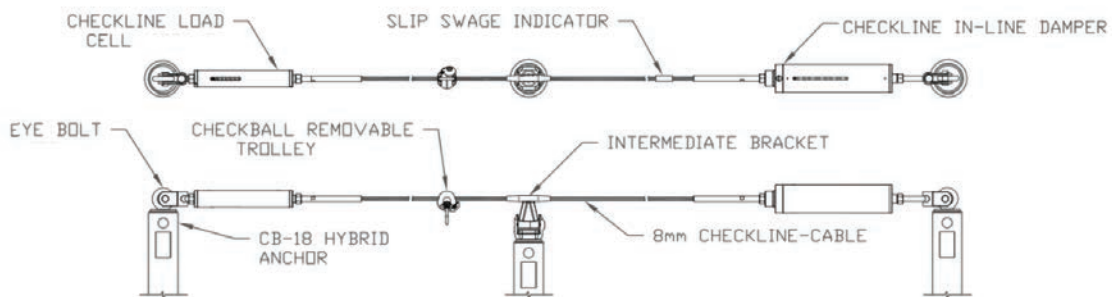
Match. Validate. Select.

HORIZONTAL LIFELINES

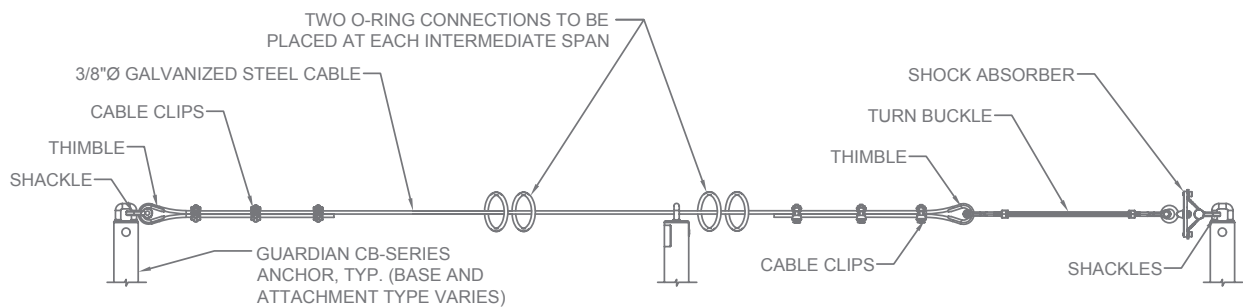
Hybrid HLL System - Hands free



CB-Hybrid HLL System - Cost effective and hands free



Metal Energy Absorber (MEA) HLL System - Cost effective



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GUARDRAILS

Fall Prevention System

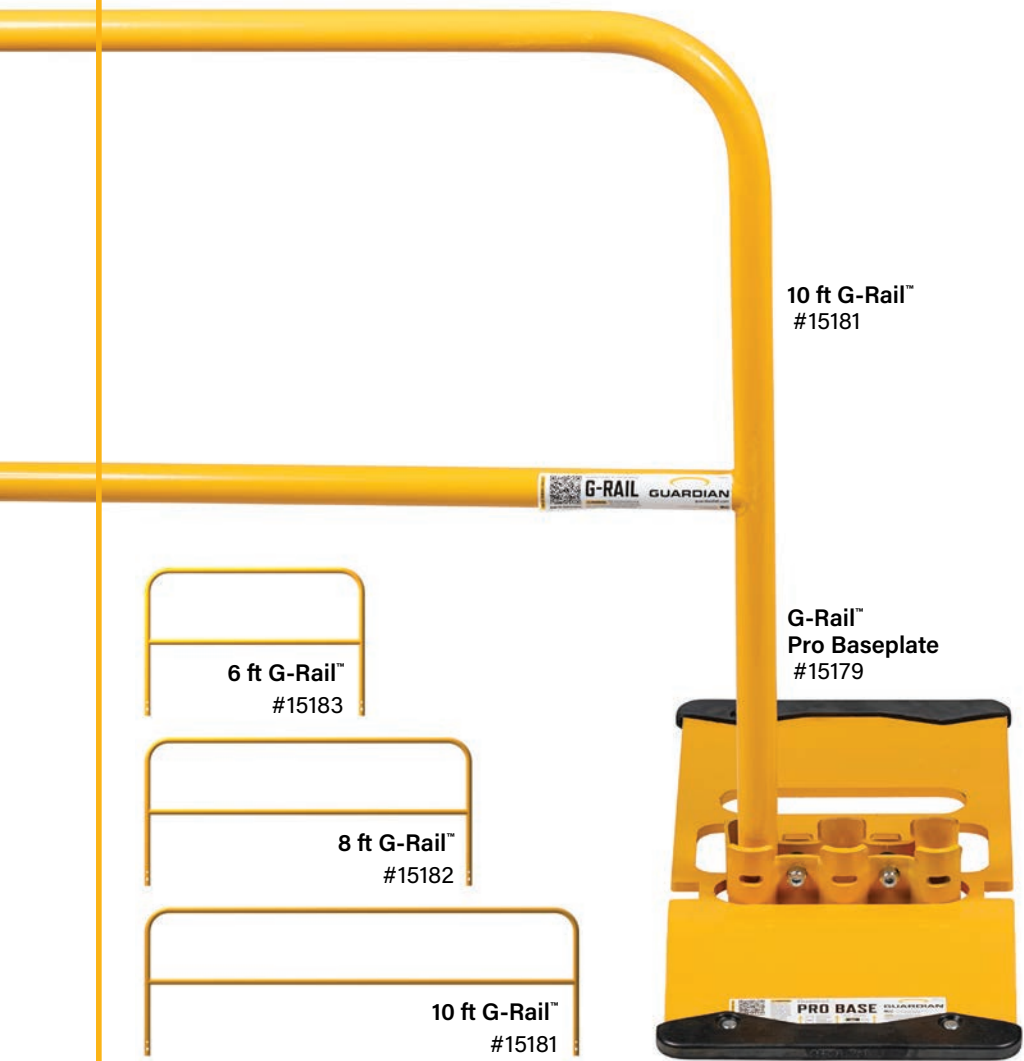
G-Rail™ Guardrails

- Powder-coated or galvanized steel construction
- Simple modular design
- Versatile installation

The Guardian G-Rail™ System functions as a complete passive fall prevention solution when used in combination with Guardian G-Rail™ baseplates and other guardrail receivers.

Guardrail systems are always preferred over Fall Arrest systems because they form a barrier between the user and fall hazard.

When used properly, passive systems can eliminate any chance for a fall to occur. G-Rail™ can be installed permanently but is also simple to disassemble and transport.



Part numbers	Description	Finish	Guardrail Length	Guardrail Height
15181	G-Rail™ guardrail	Powder coated	10 ft (3 m)	42 in (1,06 m)
15182	G-Rail™ guardrail	Powder coated	8 ft (2,4 m)	42 in (1,06 m)
15183	G-Rail™ guardrail	Powder coated	6 ft (1,8 m)	42 in (1,06 m)
15181-GALV	G-Rail™ guardrail	Galvanized	10 ft (3 m)	42 in (1,06 m)
15182-GALV	G-Rail™ guardrail	Galvanized	8 ft (2,4 m)	42 in (1,06 m)
15183-GALV	G-Rail™ guardrail	Galvanized	6 ft (1,8 m)	42 in (1,06 m)

BASEPLATES

Fall Prevention System



G-Rail™
Pro Baseplate
#15179



G-Rail™
Multi-Directional Baseplate
#15178



G-Rail™
Standard Baseplate
#15180

G-Rail™ Baseplates

- Galvanized or powder-coated steel construction
- Easy to install
- Choose from 2, 3 or 4 guardrail post receivers

Guardian G-Rail™ baseplates serve as the foundational components for the secure installation of the G-Rail™ system. Designed to ensure stability and compliance, each baseplate is engineered to meet or exceed all applicable OSHA safety requirements.

Guardian offers three distinct baseplate models: Standard, Pro, and Multi-Directional with options for 2, 3, or 4 guardrail post sockets, allowing for flexible configuration and enhanced adaptability across a wide range of job site applications.

Part numbers	Description	Finish	Guardrail Post Receiver Sockets
15178	G-Rail™ Multi-Directional Baseplate	Powder coated	4
15179	G-Rail™ Pro Baseplate	Powder coated	3
15180	G-Rail™ Standard Baseplate	Galvanized	2

GUARDRAIL ESTIMATOR TOOL

Plan and submit guardrail projects for our GES team to quote in minutes, with no manual guesswork.

Configure. Design. Quote.



Scan to use the interactive tool



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GUARDRAIL ESTIMATOR TOOL

Plan and submit
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interactive
tool

ANCHOR & HLL SELECTION TOOL



Scan to use the interactive tool

Identify the correct Anchor
and HLL for the most common
situations or applications with
total confidence and submit
your design for review.

Match. Validate. Select.



Scan to
get in
touch.



**HEIGHT SAFETY.
SIMPLIFIED.**

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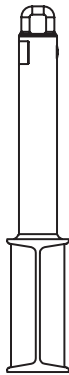
+1 (800) 466 6385

engineered.systems@guardianfall.com

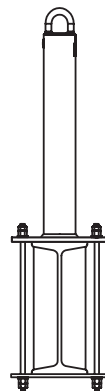
ATTACHMENT METHODS

CB-Series and S-Series

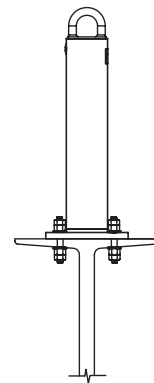
These are just a few of over 100 possible designs and attachment methods for our CB-Series and S-Series anchors, and are also commonly used in conjunction with Horizontal Lifeline systems (see pages 12-15).



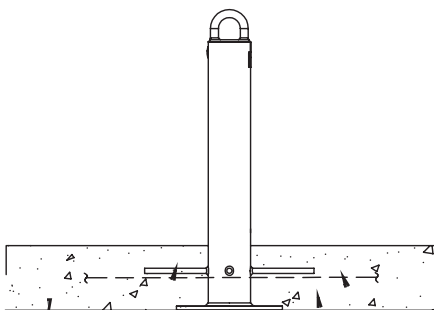
CB-Series | S-Series
Weld-on - Steel



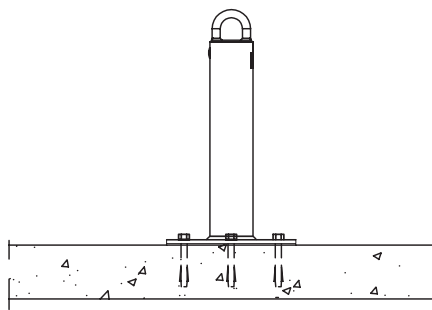
CB-Series | S-Series
Backer Plate



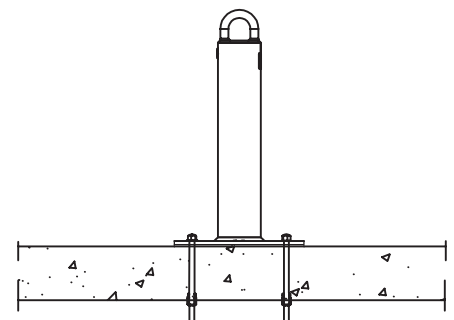
CB-Series | S-Series
Bolt-on - Steel



CB-Series | S-Series
Concrete (Embed)

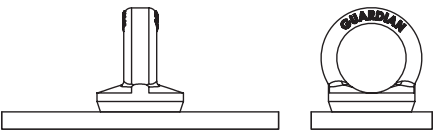


CB-Series | S-Series
Concrete (Epoxy & Mechanical)

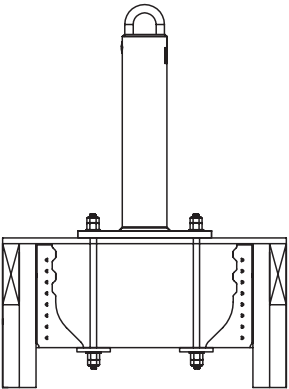


CB-Series | S-Series
Toggle Connection -
Concrete/Metal

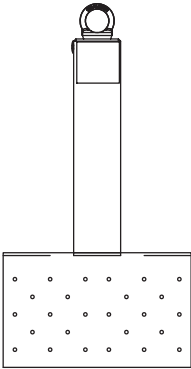
ATTACHMENT METHODS



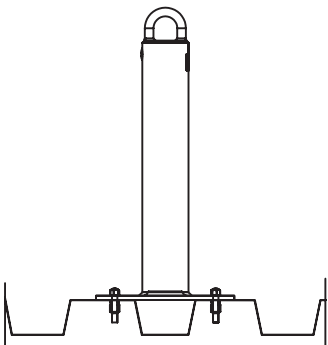
CB-Series
Weld-on/Bolt-on - Steel



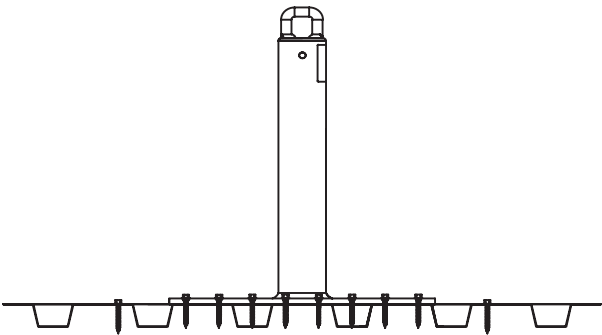
CB-Series | S-Series
Washer Plate



CB-Series | S-Series
Saddle Anchor - Wood



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



CB-Series | S-Series
Screw-down - Wood/Metal