



Installation Instructions

Warning: Failure to follow the instructions for the Hilmerson Safety Rail System poses a threat to safety and health and may result in death or serious injury to installers, users, and/or third parties. Hilmerson Safety and our manufacturer expressly disclaim any liability from injury, damage, or other loss resulting from improper or unauthorized installation or use of the Hilmerson Safety Rail System.

Note: Contact Hilmerson Safety if you have questions regarding the installation, use, maintenance, or application of this product.

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DEFINITIONS

ANCHOR: Bolt used to connect Penetrating Anchored Base Plates to concrete.

BASE PLATE: Supporting bases (penetrating and non-penetrating) for Hilmerson Safety Rail System.

COMPETENT PERSON: Defined by 29 CFR 1926.32 (f) as someone *...who is capable of identifying existing and predicable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them...*

CONTINUOUS RUN: A single or series of Hilmerson Safety Rail System guardrail sections installed in a continuous straight line without interruption.

LEADING EDGE: The edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) that changes location as additional floor, roof or deck, or formwork sections are placed or constructed. A leading edge is considered an unprotected side and edge.

OUTRIGGER RETURN: A 5 ft or 10 ft guardrail panel installed perpendicular to a continuous run with a Non-Penetrating Weighted Base Plate connected to it.

QUALIFIED PERSON: Defined by 29 CFR 1926.32 (m) as someone *...who, by possession of a recognized degree, certificate, professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, work, or the project...*

SPANNER: An expanding telescoping rail used to connect guardrail panels to ladders, accesses, or other guardrail panels where needed.

TOEBOARD: A low protective barrier that will prevent materials and equipment from falling to lower levels.

UNPROTECTED SIDES AND EDGES: Any side or edge (except at entrance points of access) of a walking/working surface, e.g. floor, roof, ramp, or runway where there is no wall or guardrail.

READ PRIOR TO INSTALLATION

1. The Hilmerson Safety Rail System™ is an engineered system. The use of other manufacturers' components, or the failure to follow these installation instructions, may put workers at risk by weakening the system or causing a system failure, and serious injury or death may result.
2. Anchor bolts are specified assuming a concrete strength of f'_c 3,000 psi, normal weight, (cracked) concrete and 6-inch minimum thickness.
3. Required Leading Edge Distance for the Anchored Base Bolt: 6 inches from the nearest edge.
4. Required Leading Edge Distance for Weighted Base: Base shall be no closer than 18 inches from the leading edge requiring protection, unless there is an elevated parapet wall.
5. No component of this system may be used as an anchor point for fall protection or hoisting.
6. Before installation, inspect all parts to insure no damaged parts are used.
7. If there is exposure to a fall hazard while installing this product, an approved fall protection system must be used.
8. Fall restraint is to remain in place as long as a fall hazard exists.
9. Do not lean on guardrails.
10. Do not exceed maximum extension shown on spanner labels.
11. Do not hang, secure, or attach any non-approved material to rail system.
12. Applications of the Hilmerson Safety Rail System should be verified and approved by a competent safety personnel.
13. Verify that the surface the Hilmerson Safety Rail System will be installed on is capable of supporting the product and personnel installing it. A complete assessment of the entire surrounding areas should be made to determine if the walking and working surfaces have the strength and structural integrity to support users safely.
14. Only install Hilmerson Safety Rail System on flat, dry, clean surfaces.
15. If a short parapet wall exists, non-penetrating weighted baseplates can be against it, if no parapet is present it should be positioned no less than 18 inches from an unprotected leading edge.
16. Always use outrigger returns at both ends of a single or continuous rail section.
17. Baseplates must be installed in the correct orientation. Install the non-penetrating weighted baseplates with the long side perpendicular or 90 degrees to the continuous Hilmerson Safety Rail System as shown in examples below.
18. If the Hilmerson Safety Rail System is impacted, inspect for damage and reposition as necessary. If damaged parts or components are found immediately remove from service and replace.
19. Hilmerson Safety Rail System non-penetrating weighted bases have non-skid pads on the bottom. If a non-skid pad is missing or covered with debris, do not use until one is installed. Contact Hilmerson Safety for replacement non-skid pads.
20. Never erect the Hilmerson Safety Rail System near electrical wires. Keep a minimum of ten (10) feet from power lines.
21. Never install or use the Hilmerson Safety Rail System on top of gravel, metal or on slippery surfaces without consulting with a Hilmerson Safety representative first.
22. Routine inspection of all parts and components is recommended. If damaged parts are found, replace with new parts. Contact Hilmerson Safety for replacement equipment.

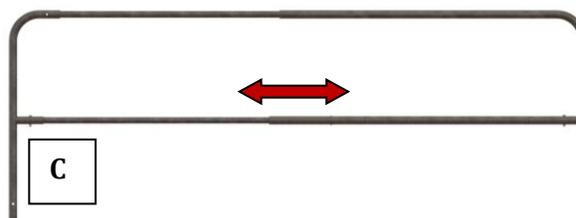
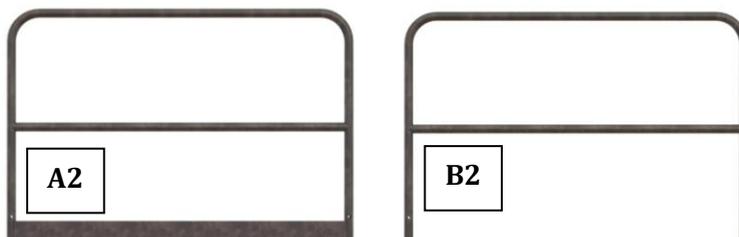
*Approved fall protection must be utilized while installing bases and guardrails where fall hazards exist.

Warning: It is recommended that a competent person approve and oversee the installation of this system. The Hilmerson Safety Rail System™ is an engineered system. Incorrect installation, unapproved use of other manufacturers' components, or the failure to follow these instructions may put workers at risk by weakening the design of the system, causing a system failure, and potentially leading to serious injury or death.

Tools Needed for Installation: Drill and ½ inch concrete drill bit, ¾ inch socket
Compatible with Most Construction Debris Netting. Call for specific wind load capacities.

Component Identification

A1	HLM-GR10G	Rail Panel – 10 ft: 1 5/8" O.D. x Galvanized 13 gage tube with 11 gauge toe board
A2	HLM-GR5G	Rail Panel – 5 ft: 1 5/8" O.D. x Galvanized 13 gage tube with 11 gauge toe board
B1	HLM-GR10NTG	Rail Panel – 10 ft: 1 5/8" O.D. x Galvanized 13 gage tube
B2	HLM-GR5NTG	Rail Panel – 5 ft: 1 5/8" O.D. x Galvanized 13 gage tube
C	HLM-GR9NTG	Rail Panel – 5.5 ft–9ft: (Adjustable) 1 5/8" O.D. x Galvanized 13 gage tube



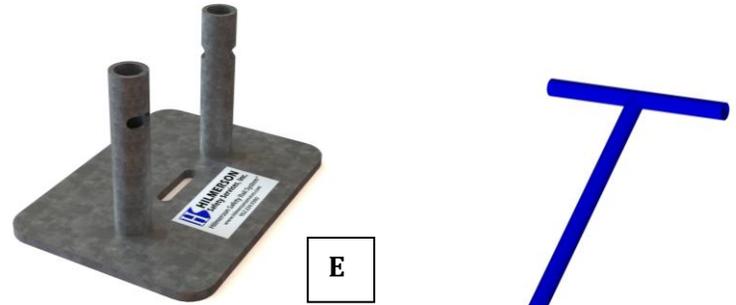
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Component Identification

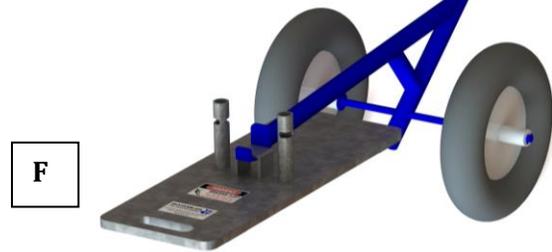
D	HLM-GRBPHXG	Non-Penetrating Weighted Base Plate: 3/4" ASTM-A572 Grade 50 Steel, Galvanized
E	HLM-GRBPG	Penetrating Anchored Base Plate: 3/8" ASTM-A572 Grade 50 Steel, Galvanized
F	HLM-GRBPD L	Weighted Base Dolly: 1 5/8" O.D. x Galvanized 13 gage tube - Powder Coated
G	HLM-RS3G (22"-34")	Spanners: Outer Tube - O.D. 1.625" - 14 Gage
G	HLM-RS5G (34"-58")	Inner Tube - O.D. 1.325" - 13 Gage
H	GL	Gravity Locking Pins: Zinc-plated, self- locking 3/8" x 1 5/8"
I	Hilti KH-EZ #418072	Anchor: 1/2" x 3 1/2" Or equivalent



D



E



F



G

H



I



Choosing Baseplate Type & Designing a Layout

1. Install only on clean, dry, level surfaces and determine if you will be utilizing penetrating anchored bases or non-penetrating weighted bases.
2. Determine the desired protection layout before beginning the installation process.
3. All guardrail layouts must be designed or approved by a competent person.
4. When using penetrating anchored base plates, anchor bolt holes must be no less than 6 inches from the nearest edge.
5. When using non-penetrating weighted base plates, outrigger returns are required at the end of each protection run installed perpendicular to the leading edge hazard.



Note: All guardrail layouts must be designed or approved by a competent person.

Pre-Drilling Holes for Penetrating Anchored Base Plates

1. Penetrating anchored base plates are only approved for concrete substrates with a minimum slab thickness of 6 inches with a minimum concrete strength of f'_c 3,000 psi, normal weight, (cracked) concrete.

*Non-penetrating weighted bases are recommended for use on post-tension decks or other surfaces where you can't penetrate.

2. Pre-drill a $\frac{1}{2}$ " diameter hole in concrete to a minimum depth of 3.5", using the base plate slot for location.

3. Ensure the base plate sits flush on the mounting surface by using a hand pump, compressed air, or vacuum to clear the hole and immediate area of concrete dust and debris prior to final placement of the base plate over the anchor hole.



Installing Penetrating Anchored Base Plates

1. Insert a Hilti KH-EZ anchor bolt (Hilti p/n 418072) through the top of the base plate and into the pre-drilled hole according to Hilti p/n 418072 1/2" x 3 1/2" KWIK HUS-EZ (KH-EZ) installation requirements.



2. Tighten the anchor bolt until it is seated on the base plate, using a Hilti 22T/18T-A high-torque cordless impact driver or hand torque wrench not to exceed 45 ft/lb.

3. Repeat the anchoring process for all base plates in your protection run.



Installing Non-Penetrating Weighted Bases

1. Non-penetrating weighted bases can be used to set up guardrail protection on a wide variety of surfaces, but shall be no closer than 18 inches from the leading edge requiring protection, unless there is an elevated parapet wall.



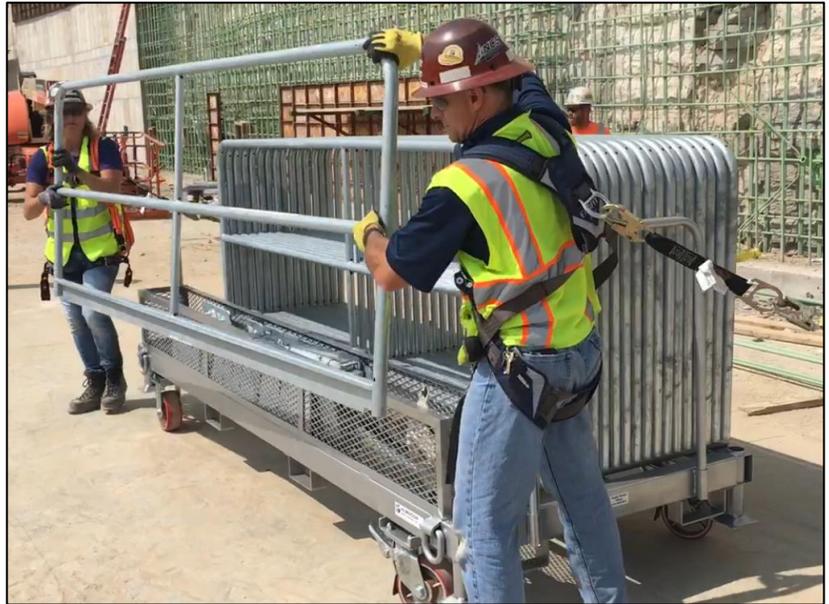
2. Install only on clean, dry, level surfaces where the bases have complete contact with ground beneath it.

3. Using the weighted base dolly, set a base in the desired location and position it to accept rail panels.



Installing Guardrail Panels

1. To install guardrail panels on either type of baseplate, simply remove a guardrail panel from the mobile cart and seat on the base plate post.



2. When seating and positioning guardrail panels on baseplates, ensure that holes are aligned to allow pinning.



Installing Guardrail Panels

3. Install a gravity-locking pin through the base plate post and guardrail panel, making sure that the loop on the pin falls into the locked position.



4. When installing guardrail panels on bases at corners, situate bases at 45 degree angles to allow full pin engagement and secure locking.

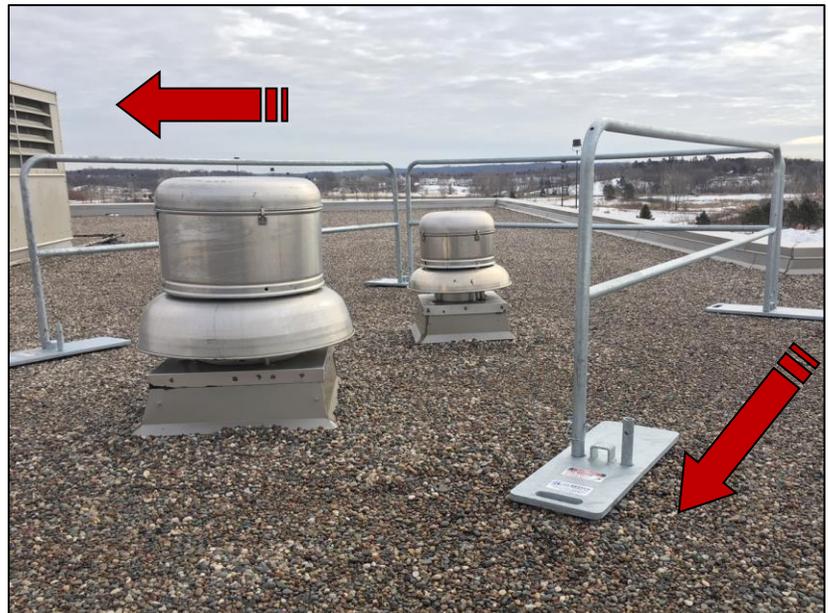


Weighted Base System - Outrigger Returns

1. When using non-penetrating weighted bases, outrigger return guardrail panels and weighted bases are required to be installed perpendicular to the leading edge at the end of each protection run to provide required counterweight.



2. Upon completion of installing the guardrail panels protecting the leading edge, install your last guardrail panels and bases as a perpendicular counterweight to the guardrail panel(s) providing protection from the leading edge.



DISCLAIMER

Although every effort was made to ensure that all information in this installation manual is factual and that the numerical and non-numerical values expressed are accurate to a degree consistent with current practice(s), Hilmerson Safety Services, Inc., and its affiliates do not assume responsibility for errors or oversights that may result from the use of the information contained within this installation manual. Anyone making use of the contents in this installation manual assumes all liability arising from such use. By accepting and using this installation manual, you release Hilmerson Safety Services, Inc. and its affiliates of liability.