

# SAFEPRO BALLASTED GUARDRAIL INSTALLATION MANUAL



**ASSEMBLE AND USE AS SPECIFIED IN THE INSTRUCTIONS MANUAL TO MEET OSHA COMPLIANCE REGULATIONS, AS STATED, UNDER STANDARDS-29 CFR, 1910.29 & STANDARDS-29 CFR, 1926.502.11.**

**INSTALLATION TOOLS REQUIRED : 1/4" HEX KEY**

**TOOLS RECOMMENDED: 1/4"HEXSOCKET BIT, SOCKET ADAPTOR, CORDLESS IMPACT DRIVER**

**WARNING: FAILURE TO COMPLY WITH MANUFACTURER'S INSTALLATION AND USE PROCEDURE MAY RESULT IN PROPERTY DAMAGE, PERSONAL INJURY OR DEATH. ONLY COMPETENT PERSONS EXPERIENCED IN THESE INSTALLATION METHODS SHALL INSTALL SAFEPRO EQUIPMENT. IF METHOD OF USE IS NOT UNDERSTOOD, DO NOT ATTEMPT TO USE THE EQUIPMENT.**

Updated JAN. 2023

## TABLE OF CONTENTS

<b>SYSTEM COMPLIANCE AND PRE-INSTALLATION MESSAGE</b>	<b>3</b>
<b>DEFINITIONS</b>	<b>4</b>
<b>GUARDRAIL PARTS LIST</b>	<b>5</b>
<b>SAFEPRO SECTION VIEWS - MODULAR SYSTEM</b>	<b>6</b>
<b>SAFEPRO GUARDRAIL SPECIFICATION - PANEL SYSTEM</b>	<b>7</b>
<b>SAFEPRO GUARDRAIL SPECIFICATION - TOPVIEW</b>	<b>8</b>
<b>SAFEPRO GUARDRAIL SPECIFICATION - SPLICE</b>	<b>9</b>
<b>INSTALLATION REQUIREMENTS</b>	<b>10</b>
<b>SAFEPRO BALLASTED GUARDRAIL INSTALLATION PROCEDURES</b>	<b>11</b>
<b>TOEBOARD BEST PRACTICES &amp; COMPLIANCE</b>	<b>12</b>
<b>SYSTEM INSPECTION &amp; DISCLAIMER</b>	<b>13</b>

## SYSTEM COMPLIANCE

- System is designed to comply with OSHA Standards 29 CF 1910.29 & 29 CFR 1926.502.11. NOTE: The standard ballasted guardrail design may be reconfigured by SafePro to comply with CalOSHA Title 8, 3209.
- System is certified for use in Factories, Industrial, Storage Occupancies, and in areas that are not accessible to the general public and that serve an occupant load no greater than 50 as per ASCE 7-10 4.5.1(2).
- System is designed to withstand a load of 200 lb (90.7 KG), minimum, in any direction to all components without failing in accordance with OSHA regulation 29 CFR 1926.502 and 29 CFR 1910.29. This loading represents an individual accidentally impacting the rail. Do not intentionally load the guardrail.
- The ballasted guardrail system is designed to withstand an ASCE 7-16 Ultimate Wind Load of up to 130 MPH on a Risk Category II building with Exposure Category B. The standard design configuration may be reconfigured by SafePro to accommodate alternate site conditions if required.
- Toeboards are capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or outward direction at any point along the toeboard.

## PRE-INSTALLATION MESSAGE

- Applications of SafePro ballasted Guardrail should be verified and approved by a competent safety personnel. Fall Protection Systems shall be designed to comply with OSHA or applicable state regulatory limitations.
- Verify that the surface the SafePro ballasted Guardrail will be installed onto 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.
- Only install guardrail on flat dry clean surfaces under conditions where adequate illumination is provided.
- If it is necessary to remove guardrails during a portion of a particular job, make sure to re-secure the unit before resuming work.
- If the guardrail is impacted, inspection and adjustment or replacement is required by a competent person prior to further use. If damaged parts are found, replace with new ones.
- Never erect guardrail near electrical wires. Keep a minimum of ten (10) feet from power lines.
- Never install or use guardrails on top of gravel, metal or on slippery surfaces without speaking with a SafePro representative.
- Routine inspection of all parts is recommended. If damaged parts are found, replace with new parts. Contact SafePro immediately.

## DEFINITIONS

- **COUNTERWEIGHTED BASE:** Supporting non-penetrating base for guardrail system.
- **COMPETENT PERSON:** Defined by 29 CFR 1926.32 (f) as someone "...who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them..."
- **CONTINUOUS RUN:** A single or series of guardrail panels or modules installed in a continuous, without interruption, straight line.
- **LEADING EDGE:** The edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which 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:** A 6 foot, 8 foot or 10 foot long SafePro guardrail panel or module installed at a 90 degree angle to a continuous run with a COUNTERWEIGHTED BASE connected to it. Designated on a site specific basis where the ballasted guardrail system is subject to high wind conditions or load conditions in excess of Federal OSHA requirements
- **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..."
- **RETURN:** A 5 foot minimum length SafePro guardrail panel or module installed at a 90 degree angle at the end of a continuous run with a COUNTERWEIGHTED BASE connected to it. Designated to stabilize the ends of each guardrail system for proper load capacity.
- **TOEBOARD:** A low protective barrier that will prevent the fall of materials and equipment to lower levels.
- **UNPROTECTED SIDE AND EDGE:** Any side or edge of a walking/working surface, e.g. floor, roof, ramp, or runway where there is no wall or guardrail system.

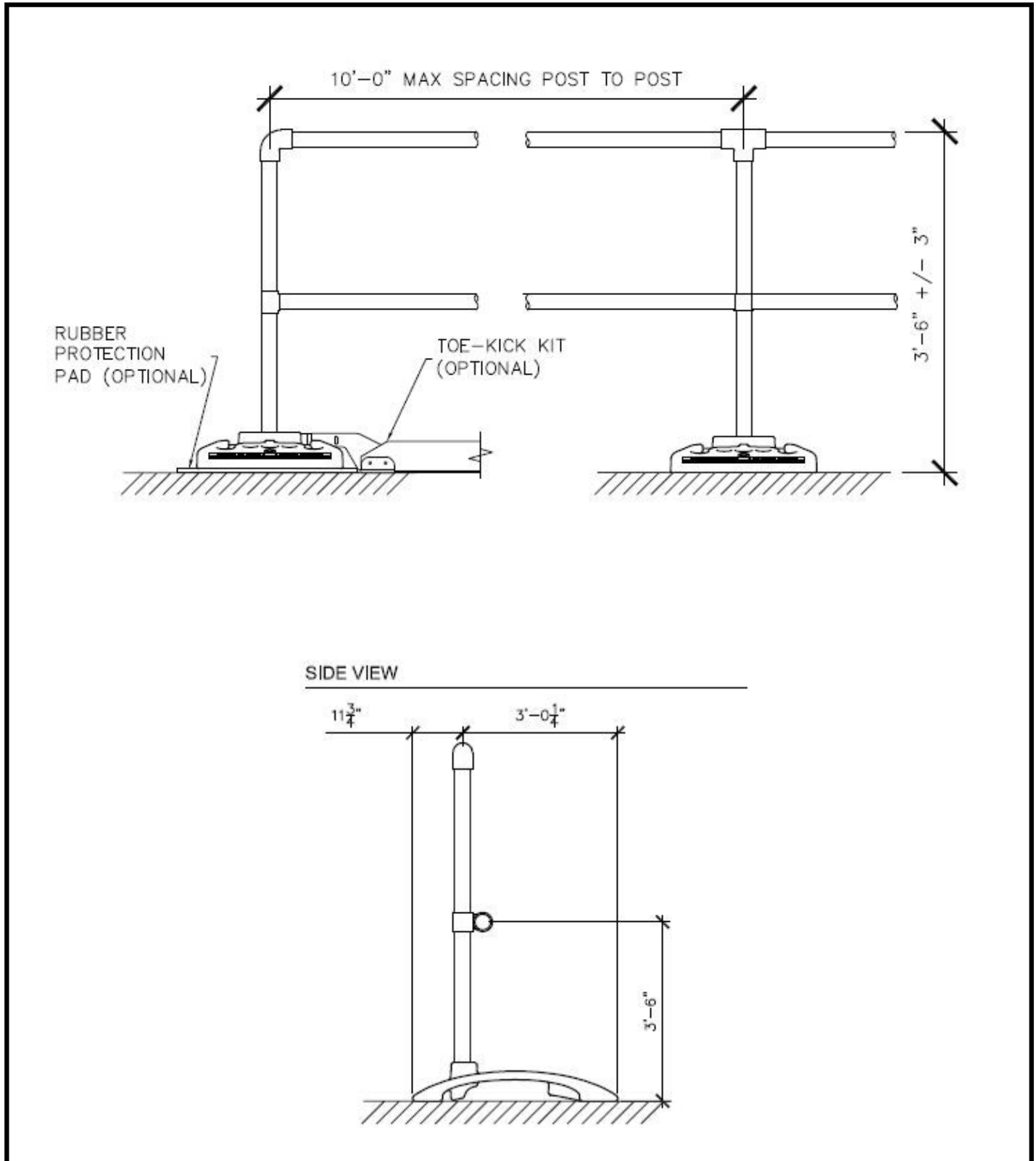
## **SAFEPRO BALLASTED GUARDRAIL PARTS LIST:**

- **(6 FOOT), (8 FOOT), (10 FOOT) GUARDRAIL PANELS:** Portable panels are formed to shape posts, top rails, and mid rails, provided as 6 feet, 8 feet and 10 feet long. Each section is 42 inches tall with a mid rail 21 inches high. The Standard finish is powder coated safety yellow while other colors and finishes are available upon request. Refer to Figure 2.
- **MODULAR POSTS, RAILS, AND FITTINGS:** As an alternative to the guardrail panels above, Vertical Posts with pipe rails are available with integrated pipe fittings as required to form posts, top rails, and mid rails. The Standard finish is pre-galvanized steel while other colors and finishes are available upon request. Refer to Figure 1.
- **COUNTERWEIGHTED BASE:** Cast steel with three receivers that the corresponding Guardrail Panel or Vertical Post is placed within. Standard finish baseplate is hot dip galvanized.

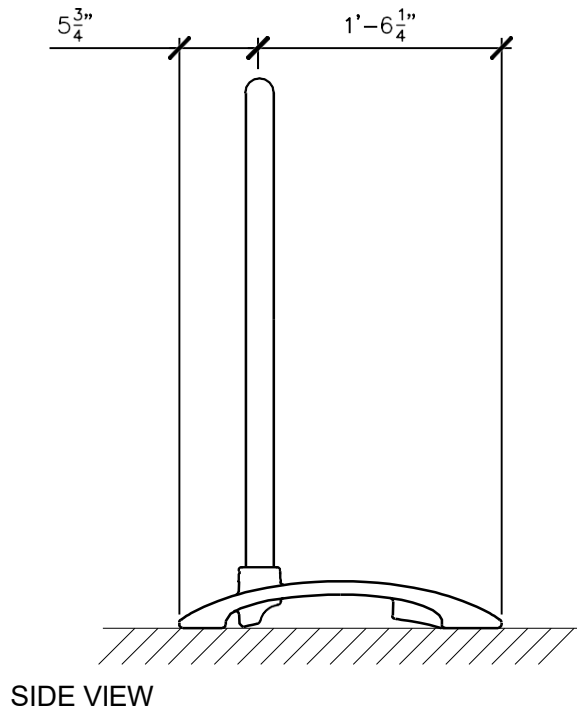
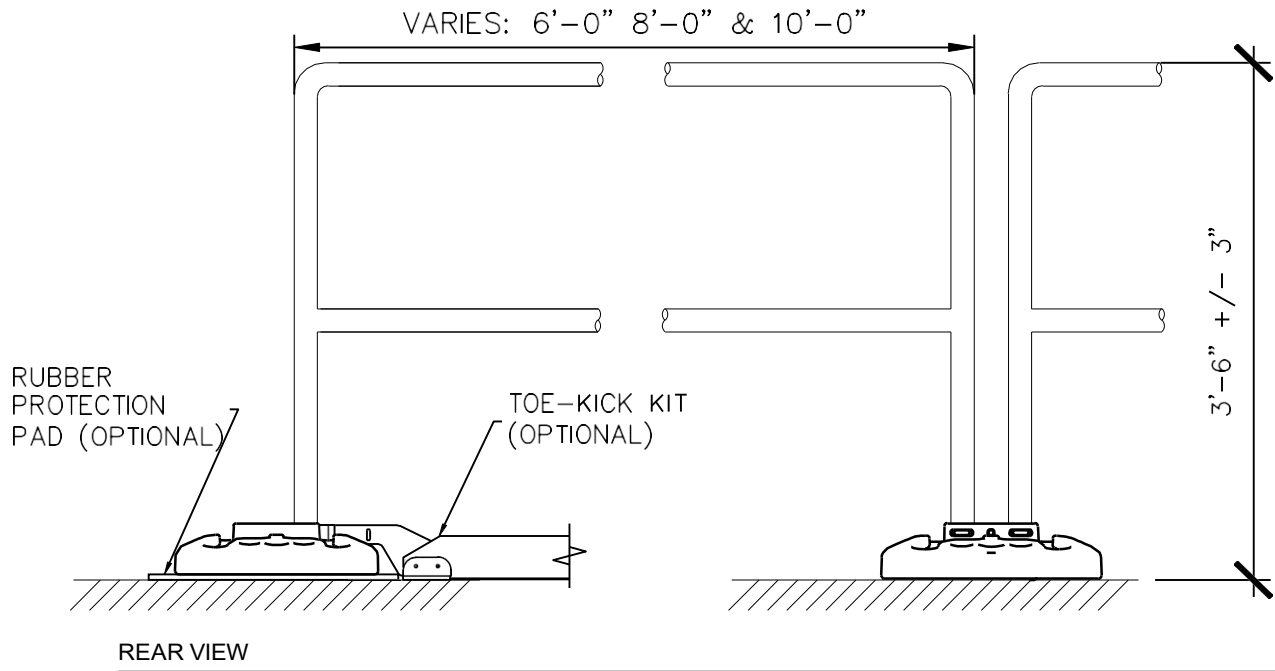
## **ADDITIONAL COMPONENTS:**

- **OPTIONAL SPLICE KIT:** The Splice Kit is a fitting used to create custom length of the SAFEPRO Guardrail Panels
- **OPTIONAL UNIVERSAL TOEBOARD BRACKET:** The Toeboard(s) is only required when it is possible objects could fall or roam from the walking/working surface to a lower level.
- **OPTIONAL RUBBER ROOF PADS:** The Rubber Roof Pad is a protective accessory that withstands environmental conditions and protects the roofing membrane surface from direct contact with the counterweighted base.
- **OPTIONAL SWING GATE:** The Swing Gate is a self-closing gate designed for use with the ballasted Guardrail System at points of entry or exit. Standard finish of the Swing Gate is powdercoated safety yellow while a hot-dipped galvanized finish is also available upon request.

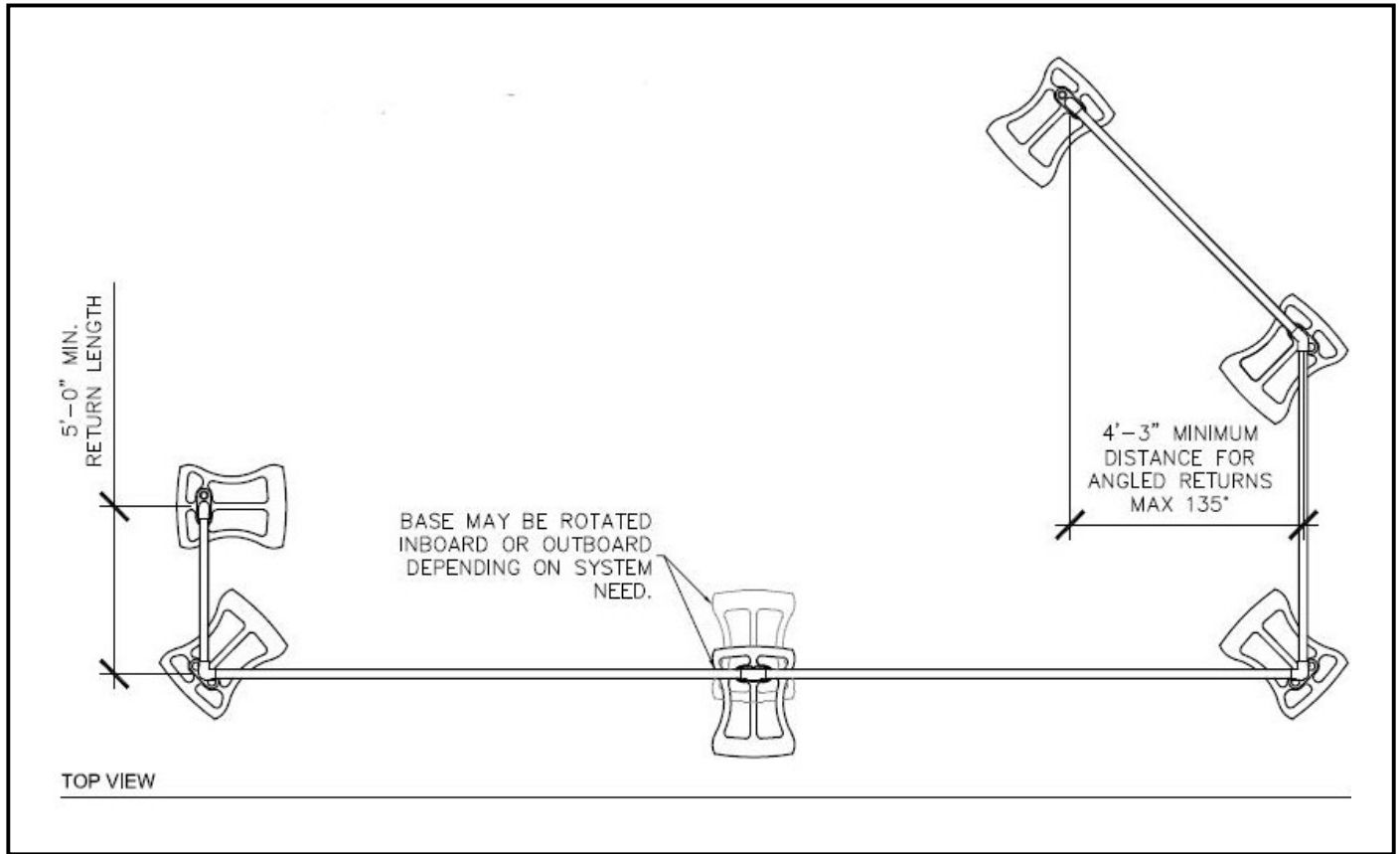
**FIGURE 1: SAFEPRO SECTION VIEWS – MODULAR SYSTEM**



**FIGURE 2 : SAFEPRO SECTION VIEWS-PANEL SYSTEM**

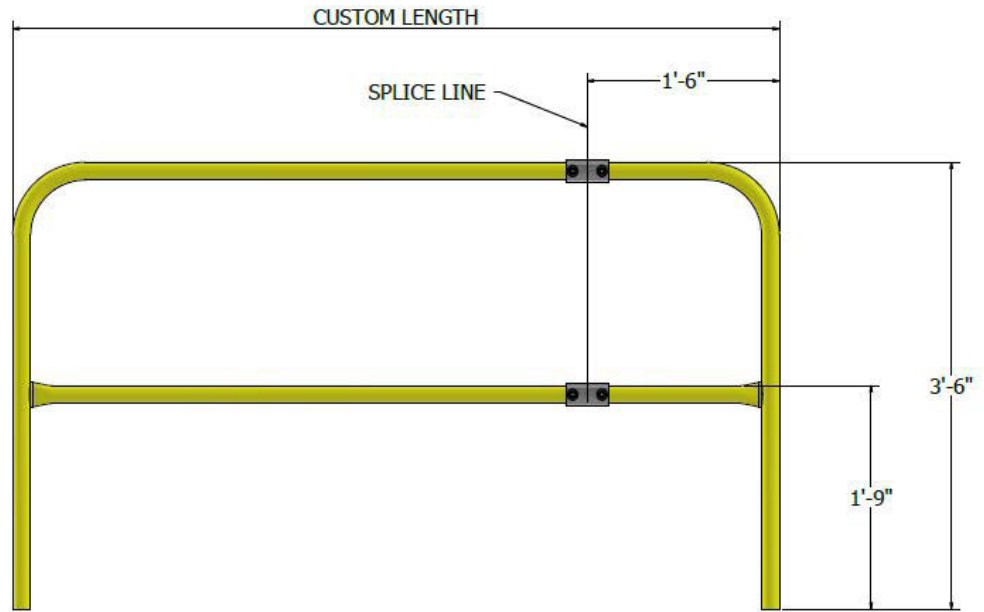


**FIGURE 3: SAFEPRO BALLASTED GUARDRAIL LAYOUT TOP VIEW**



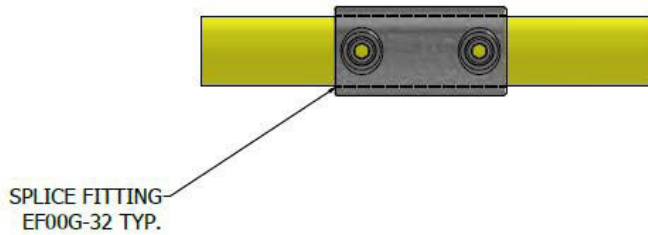


**FIGURE 4: SAFEPRO PANEL WITH SPLICE (CUSTOM LENGTH)**



**STEPS**

1. MEASURE LENGTH REQUIRED
2. CUT TOP AND MID RAIL AS SHOWN
3. SLIDE ON SPLICE FITTINGS
4. TIGHTEN SET SCREW TO 29 FT-LBS



## **INSTALLATION REQUIREMENTS:**

- 1. RETURNS ARE REQUIRED AT EACH SYSTEM END AND MUST BE A MINIMUM OF 5'. RETURNS MAY BE ANGLED PER FIGURE 3.**
- 2. SPACING BETWEEN POSTS MAY NOT EXCEED 10' PER FIGURE 1 AND FIGURE 2.**
- 3. TOP RAIL MUST BE 42" (±3") VERTICAL FROM THE WALKING SURFACE. THE MIDRAIL SHOULD BE MID WAY BETWEEN THE TOP RAIL AND THE HIGHEST EXPOSED EDGE. NOTE: CalOSHA PERMISSIBLE TOP RAIL HEIGHT IS DEFINED AS 41"-46".**
- 4. TOE KICKS, IF INSTALLED, SHOULD BE 1/4" OFF THE WALKING SURFACE TO PREVENT PONDING.**
- 5. SYSTEM SHOULD BE USED ON A FLAT SURFACE NOT TO EXCEED 1/2:12 PITCH.**
- 6. INTEGRATED RUBBER PROTECTION PAD MAY BE USED ON ROOF MEMBRANE FOR ROOF PROTECTION. DO NOT INSTALL ON SLIPPERY SURFACES SUCH AS METAL OR TROWEL FINISHED CONCRETE.**
- 7. REMOVE ALL LOOSE GRAVEL AND /OR MATERIALS IN THE VICINITY OF THE COUNTERWEIGHTED BASE. BASES MUST BE PLACED ON SOUND SUBSTRATE.**
- 8. WHEN PARAPET DOES NOT EXIST, FRONT EDGE OF THE BASE SHALL BE SET BACK A MINIMUM OF 18" FROM THE LEADING EDGE.**
- 9. WHERE PANEL LENGTH MUST BE REDUCED FOR PROPER LAYOUT, PANELS MAY BE MODIFIED WITH SPLICE KIT PER FIGURE 4.**
- 10. TIGHTEN ALL SET SCREWS TO 29 FT-LBS.**

## **SAFEPRO BALLASTED GUARDRAIL INSTALLATION PROCEDURES**

- Layout the job first by measuring and spacing the baseplates. Failure to properly measure and plan ahead will result in difficulty in moving the assembled system to another location.
  - Be sure the baseplates are in the correct orientation. Next, check that adequate space has been provided for Returns at each end of the system (and space for Outriggers, if applicable).
  - When satisfied with the layout, start inserting SafePro Panels or Vertical Posts (Modular System) into the base receivers. For modular system only, connect pipe rails using integrated pipe fittings.
  - Use designated Allen Wrench to tighten the set screws of the receivers at each base. Torque to 29 ft-lbs. Check tension twice on set screws to make sure they all have been tightly secured. To disassemble, reverse the process.
  - Toeboards are an optional accessory provided only upon request. Refer to toeboard section for information regarding toeboards.
- \*Approved fall protection must be utilized while installing bases and guardrails where fall hazards exist.

## **TOEBOARD BEST PRACTICES & COMPLIANCE**

### **WHEN TO USE TOEBOARDS**

- When the unprotected edge does not have a substantial barrier, like a parapet wall on a roof.
- When it is possible that materials and equipment could possibly fall off the working area, like a crew working on a HVAC unit atop a roof and near the roof's edge.
- When any of the following may occur in or around the working area:
  - o Persons can pass
  - o Moving machinery
  - o Falling materials could create a hazard
- When the above conditions exist, toeboards are to be erected along the edge of the overhead walking/working surface for a distance sufficient to protect employees below. (OSHA 1926.502(j)(1))
- On a Continuous Run, the toeboard protection shall extend one LOGGUARD unit on either side of a work area.
- Where tools, equipment, or materials are piled higher than the top edge of a Toeboard, paneling or screening shall be erected from the walking/working surface or Toeboard to an elevation along the guardrail that is sufficient to protect employees below. (OSHA 1926.502(j)(4))

### **TOEBOARD INSTALLATION PROCEDURES**

- Commence installation and place counterweighted bases per the above Installation Procedures. Slide the toeboard over the counterweighted base receiver.
- Insert the guardrail Panel or Module into the baseplate receivers.
- It is necessary to raise the toeboard assembly at this point to tighten the setscrews for the receivers on the baseplate.

## SYSTEM INSPECTION

- System shall be inspected by an authorized person for defects, damage, or deterioration prior to each use.
- Any suspected defective equipment shall be removed from service.
- If the manufacturer's label is not legible or is missing, the equipment shall be removed from service. Fall protection equipment shall be removed from service upon evidence of defects, damage, or deterioration, or upon expiration of the manufacturer's specified service limits, whichever comes first.

## DISCLAIMER

**By accepting and using this Installation Manual, you release SafePro Safety Company and its affiliates of liability. The information in this Installation Manual is provided for informational purposes only and should not be relied upon as the sole source of guidance. Although every effort was made to ensure the information in this Installation Manual is factual, SafePro Safety Company 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. Any person making use of the contents in this Installation Manual assumes all liability arising for such use.**



Distributed By:

**Unistrut**  
Service Company

Unistrut Service Company  
739 Moore Road  
Cleveland OH 44012  
855-923-2611

**SafePro Safety Products**  
**(877) 723-3570**  
**safeprosafety.com**  
**sales@safeprosafety.com**