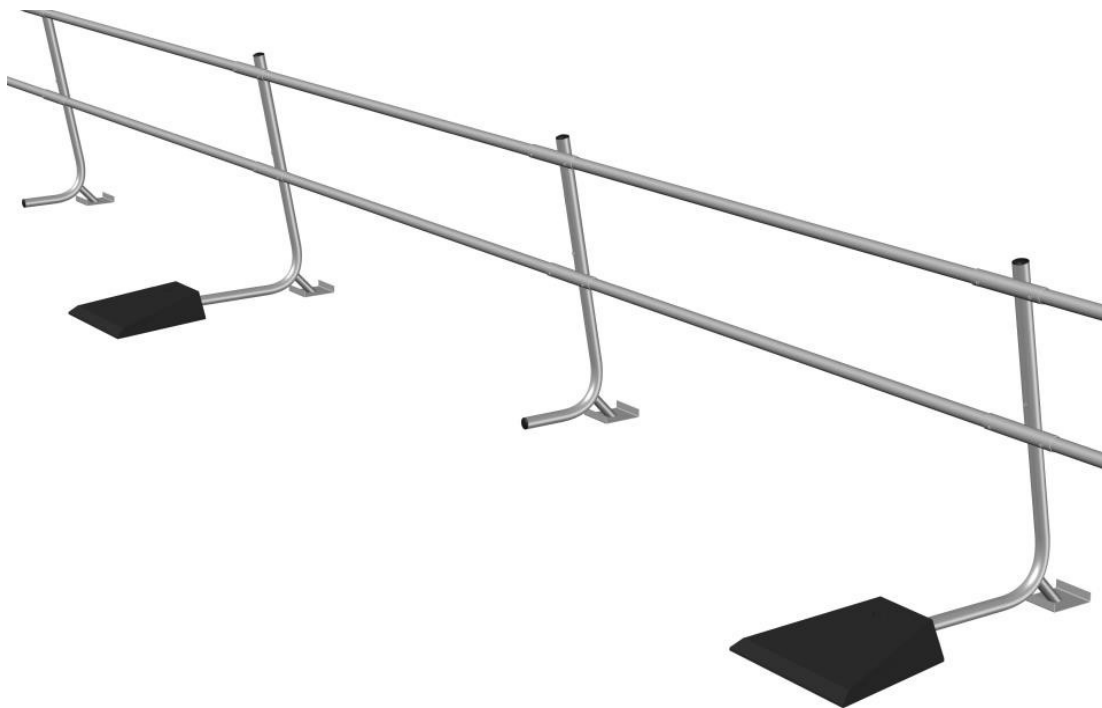




# Freestanding Guardrail System

## Operation & Maintenance Manual



# Freestanding Guardrail System Specification

## General Description

Our **SafeRail™** Freestanding Guardrail has its very own unique design which makes the system aesthetically pleasing like no other system on the market. The raked curved design helps to reduce the institutional feel against other handrails

Our **SafeRail™** Freestanding Guardrail provides permanent edge protection without the need to mechanically fix through the roofing membrane or roof structure, providing full protection where regular access for maintenance and inspections are required.

This system has been designed and manufactured to fully comply with current H.S.E regulations.

## Material

The main and intermediate uprights are fabricated from 2mm hot dipped galvanised steel equivalent to BS EN ISO 1461, with the upper and lower cross rails manufactured from 1.5mm x 48.3mm external diameter galvanised steel.

The rubber counterweight is manufactured from 100% recycled PVC compound with the fixing screws manufactured from zinc-coated steel.

## Safety Standards

Our **SafeRail™** Freestanding Guardrail is designed in accordance with and/or tested to the following safety standards:

- HSG-33 Health and safety in roof work.
- HSE INDG 284 "Working on roofs".
- EN ISO 14122 Part 3.
- EN 13374-2013 Class A.
- BS 6399: Part 2 1995 Wind Code.

## Testing and Certification Procedure

Our **SafeRail™** Freestanding Guardrail has been tested to EN ISO 13374-2013 Class A by Satra Technology Ltd

- All testing was carried out on a bituminous mineral roof felt and single ply membranes in both wet and dry conditions.
- All testing was carried out on a standard 5m run of guardrail.
- A 0.3kN load was applied to the top and middle rail at the end of a 5m run without moving more than 55mm at the base
- A 1.2kN load was applied to the top and middle rail between the uprights, the tube deflection did not exceed 300mm.
- The testing was carried out on four independent samples.

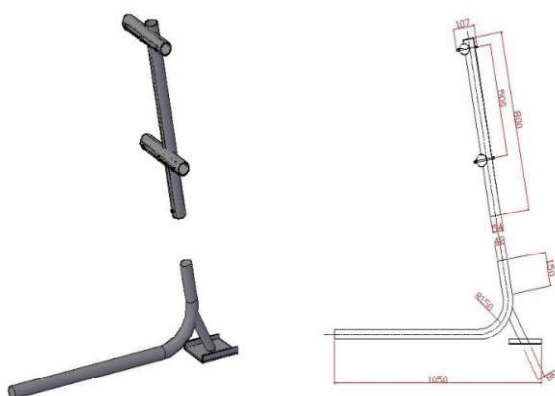
# Freestanding Guardrail System Components

## Long SafeRail™ Upright.

The upright is used as the main support to the system; the 2.5mtr rail easily slides in and is locked on using a 5mm Allen key. The stop inside the upright gives 2.5mt centres naturally without the need of measuring on site.

Material – galvanized to BS EN ISO 1461 Component weight – 7 kilos

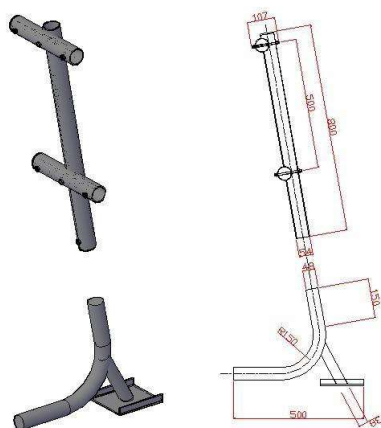
The long base leg can also be covered with a contrasting HI-VIZ TPO Coating to help provide clear delineation and have button head security screws in stainless steel fitted for added protection.



## Short SafeRail™ Upright

The upright is used as the 2nd main support to the system, the 2.5mtr rail easily slides in and is locked on using a standard 5mm Allen key although other options are available such as security button head sets. The stop inside the upright gives 2.5mt centres naturally without the need of measuring on site.

Material – galvanized to BS EN ISO 1461  
Component weight – 5.5 Kilos

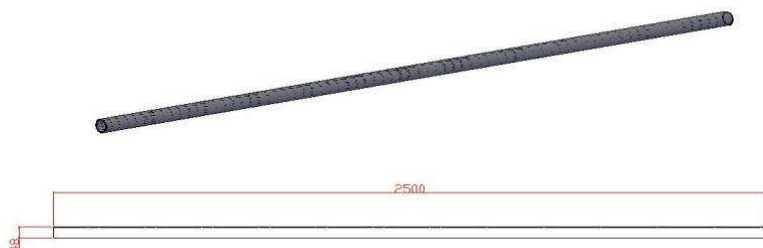


## SafeRail™ 2.5M Connecting Rail

The 2.5mt rail connects the long and short uprights together, using 2 no at a time.

Material – galvanized to BS EN ISO 1461

Component weight – 6.0 Kilos

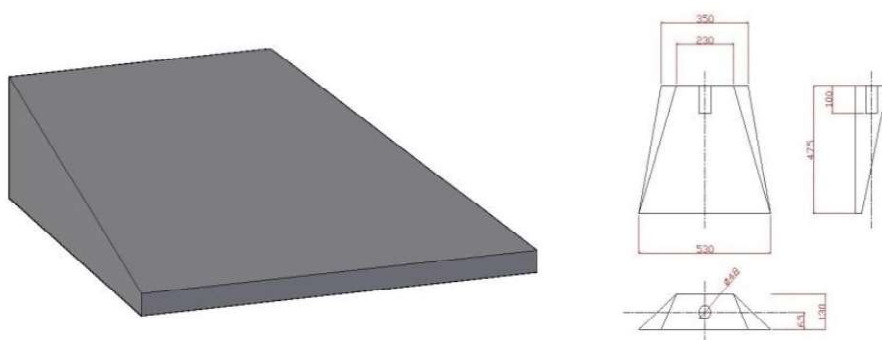


## SafeRail™ Rubber Weight

The easy slide on weight gives the stability to the system.

Material – re-cycled rubber

Component weight – 20.0 Kilos



## SafeRail™ D-End Termination

The pre-formed 180° bend inserts into the top riser and is a quick and convenient way of terminating a run of guardrail. This flexible pre-formed component can be used for both horizontal and vertical terminations. Materials The 'D' end is manufactured from 2mm steel and is galvanised coated equivalent to BS EN ISO 1461. Its is also available powder coated to any RAL colour.

## SafeRail™ 90° Elbow

The pre-cast 90° elbow allows for a quick and convenient way of creating a corner. Materials The 90 deg elbow is manufactured from cast steel and is galvanised coated equivalent to BS EN ISO 1461. Its is also available powder coated to any RAL colour.

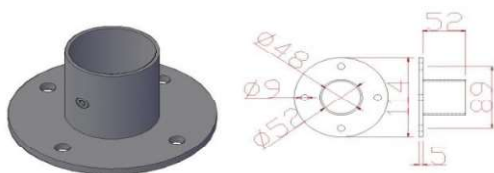


## SafeRail™ Short Tee

The pre-cast short tee allows for a quick and convenient way of creating a butt joint. Materials The short tee is manufactured from cast steel and is galvanised coated equivalent to BS EN ISO 1461. It is also available powder coated to any RAL colour.

## SafeRail™ Wall Bracket

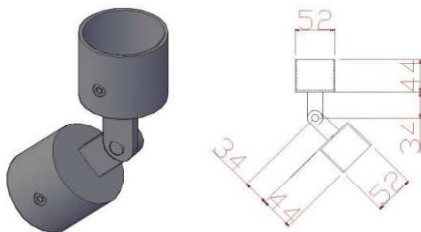
The Wall bracket is used at the end of a run where you can fix into a wall or cladding. Material – galvanized to BS EN ISO 1461 Component weight – 1.1 Kilos.



## SafeRail™ Variable Angle

The flexible variable angle fitting allows you to deal with corners that aren't 90 degrees, and also can be used for changes in level.

Material – galvanized to BS EN ISO 1461 Component weight – 1.5 Kilos



## Freestanding Guardrail System Configuration

- The Height of **SafeRail™** is set at 1100mm.
- All uprights are set at 2.5mt centres, alternating the long upright and short upright.
- Rubber weights to be fixed on every long upright at 5mt centres.
- All free standing ends are double weighted or supported by being fixed with a wall bracket.

### Typical Layout - Freestanding End

The amount of counterweights installed on a freestanding end is determined by the roof covering. On a Bituminous Felt, Asphalt, EPDM, or Concrete roof, the system requires two weights with one being attached with a short tee and short length of tube. On a PVC / TPO Singly Ply or Liquid Coated roof, three weights are required which is done by using a two socket cross and two short lengths of tube.

### Typical Layout - Spring Loaded Gate

When installing a spring loaded gate it creates two freestanding ends and therefore the system must finish on a weighted main upright, and have the appropriate amount of weights depending on the roof covering (see above). The gate has two welded tubes that fit into the top riser section of the upright. A D-End is installed on the opposing side for the gate to close onto. The gate should always open inwards towards the user on the roof.

# Freestanding Guardrail System Installation

Wherever possible the starting point for all installations should be the end termination, or at a corner for perimeter systems, remembering to carry out the initial setting out a minimum distance of 2m from the edge of the roof.

## Step 1 - Setting out

Starting at a termination if a straight run or a corner is a perimeter system, place the 2.5m CR2.5's end to end in pairs along the length of the roof. Then alternate an LUP and an SUP between each pair of CR2.5's. Once the LUP and SUP's are in place connect a CW20 counterweight to each LUP.

## Step 2 - End Termination

Once the setting out is complete, start by assembling the first end termination. For a wall bracket termination, place an SUP against the wall and mark where the top and bottom tubes will finish. Then drill and attach the wall bracket in the area marked. The first 2.5m tube and SUP can now be assembled and attached. For a D-End Termination, attach a D-End to an LUP and then make sure you have the correct amount of 20kg Counterweights and components to weight the end correctly. If the system is being installed on a PVC Single Ply roof then the D-End Termination needs three weights. If the system is being installed on a Bituminous Membrane roof then the D-End Termination only requires two weights.

## Step 3 - Section Assembly

Once the setting out and end terminations are complete, continue to assemble the first two bay section by connecting the second and third pair of CR2.5's to the first and second LUP's and fully tighten the screws. Join these two LUP assemblies together using an SUP. You now have a completed two bay section. Repeat the above process until all the two bay sections are assembled.

## Step 4 - Corner Assembly

Begin by assembling a complete corner unit consisting of one LUP, one SUP, one CW20, two 90° Elbow and two CR2.5's cut to length. Cut two CR2.5's down to form two tubes at 1200mm and two at 1300mm. Take the LUP's and connect a CW20, Insert one 1200mm tube into the top of the top riser, and one 1300mm tube into the bottom of the top riser, fully tightening the screws as you do so. Repeat the process for connecting the cut tubes to the SUP. Join the LUP and SUP assemblies using two 90° Elbows ensuring that all the screws are fully tightened. Using two people carry the corner assembly to the roof edge, being careful to remain behind the assembly at all times.

## Step 5 - Positioning

Using at least two people positioned behind the assembly, carefully carry a two bay into position at the edge of the roof. The two bay sections should be positioned leaving a single bay between each one.



### **Step 6 - Final Assembly**

The remaining 2.5m Cross Rails are now attached in between the two bay assemblies. By placing one person either side of the opening behind the existing handrail assemblies, connect the remaining CR2.5's into the top and bottom of the top riser on each upright fully tightening the screws as you go.

# Freestanding Guardrail System Maintenance & Re-Certification

## Maintenance

Our system is maintenance free, however if cleaning is required use only a mild detergent and water (such as domestic washing up liquid) in order not damage any of the galvanised coating.

## Re-Certification

- We recommend that the guardrail installation should be inspected periodically by a competent person. The frequency of these inspections will depend upon the environment, location, and utilisation, but should be at least every twelve months.
- Visual inspection of the complete installation in accordance with the current needs of the client. Check if any new equipment has been installed on the roof that may require further guardrail protection.
- Check against the original installation drawing to see if any part of the installation has been modified.
- Check that all counterweights are installed.
- Check all screws and fixings are in place and sufficiently tightened.
- Check the height of the top rails and that they are level.