

Kee Guard Counter-weight & Post-base loadings



The following is an overview of how the weight of the Kee Guard system is dispersed on the roof surface. The weight is distributed $1/2$ of the distance to adjacent posts as shown here; each leg supports 50% of each bay.

The Kee Guard counterweight has mass 13.3 kg, and its foot-print is 0.23 square metres.

The Post-base fitting has a foot-print of 0.013 square metres.

The railing and post is taken as Size 8 with mass of 3.93 kg/m.

The cantilever arm attached to the counterweight is taken as Size 7 with mass of 3.11 kg/m.

Therefore, for a post spacing of 3.0 m, each vertical leg is supporting the weight of the top tube and the mid-rail each for length 3.0 m, 1.5 m each side of the post. The total weight of the assembly section is 45.9 kg, with 30.2 kg distributed to the post base and 15.7 kg to the counterweight.

In the aggregate, each segment is resisted by a roof area of at least 1.58 square meters, over which the total load of 45.6 kg (0.45 kN) produces an effective roof loading of 0.29 kPa.

Similarly, if the post spacing is reduced to 2.0 m, the total weight of the segment drops to 38.0 kg. Reducing the effective resistive of roof to 1.12 square meters produces an effective roof loading of 0.32 kPa.

By comparison, a person weighing 100 kg (0.98 kN) standing on the same section of roof, as resisted by at least 1.5 square metres of area produces an effective roof loading of 0.66 kPa.

This information is provided for reference only for use by qualified designers.



William R. Parsons, P.Eng.
Group Technical Director
Kee Safety Group
wparsons@keesafety.com