

In 1995, OSHA began requiring workers to be fall protected while on a roof and within six feet of an unguarded edge. Unless a building has either a 3'-6" high parapet wall or a properly designed guardrail of the same height (most buildings have neither), personal protective equipment must be utilized. This means a full body harness, shock absorber and a lifeline attached to an acceptable anchor point.

The cost to extend existing parapet walls to 3'-6" high has been estimated at \$35 per linear foot or \$400,000 for a three million square foot one story industrial facility. A similar amount is needed to add a guardrail system to the same building, and this system increases maintenance costs and the probability of roof leaks.

Anchor points for personal protective equipment have been provided on several recent industrial buildings by having certain main building columns extended 4'-0" above the roof line. They were usually located one bay (45'-0") from the roof edge and were spaced at approximately 90'-0". This arrangement required a 90 foot long cable with both ends attached to column extensions and a 45'-0" long sliding lifeline attached to the first cable and the worker's full body harness. The cost for each column extension was approximately \$1,000, including the roof flashing. This solution was not well received by workers or management because it took too long to setup and the workers didn't like wearing full body harnesses.

The Mobile Parapet Barrier is innovative because it is a portable guardrail device that was designed to satisfy OSHA's guardrail requirements, thereby eliminating the need to wear personal protective equipment. It provides a safe environment for workers to service light fixtures and cameras mounted at the roof edge, as well as inspecting, repairing or maintaining roof drains, cant strips and cap flashings. With its four caster wheels, it can be easily moved from one work task to another.

The Barrier only requires at least a 3" high parapet wall to serve as a curb to prevent it from falling off the roof. It has two adjustable bumpers with quick release pins and five different positions for various parapet heights. It is constructed with welded aluminum pipes to make it lightweight and weather-proof, and it has four 8" diameter rubber tired casters with brakes (for smooth sloped roofs) that roll easily across tar and gravel roofs without damaging them. When the Barrier is stationary on hot days on tar and gravel roofs, aluminum wheel plates are placed under the casters to prevent roof damage. It folds into a compact and balanced shape for transporting to the desired location. Both side panels have 100 pounds of counterweight to prevent overturning.

To use the Mobile Parapet Barrier, it must first be located more than six feet from the roof edge, then two pins are removed and the Barrier opened to a 'U' shaped position. At that point two locking pins at both corners will drop into slots to secure its opened position. With the counterweights in place and the bumpers adjusted, the workers move inside the Barrier, attach a chain to the side panel ends, then roll it towards the roof edge until the bumpers bear against the parapet wall. They can now safely perform their tasks. To move it laterally requires the workers to push on a side panel's top railing, while remaining inside of the Barrier. The trailing side panel is pulled by the chain. To move the Mobile Parapet Barrier over an expansion joint, the counterweights are temporarily removed before lifting it over the expansion joint. It weighs 140 pounds without counterweights.

In January of 1998, the first prototype was built and successfully load tested in Athens, Alabama. Several improvements were incorporated and a second one was built in Lansing, Michigan. The first production Barrier was built early in 1999 and as of August, 64 have been shipped for use.



Mobile Parapet Barrier in closed position for transporting.



Mobile Parapet Barrier being opened.



Mobile Parapet Barrier being used to safeguard workers at roof edge.