Perimeter Protection Products Seamless Safety

Only Perimeter Protection Products offers seamless safety in commercial high rise construction.

What is Seamless Safety?

No rework, no duplication, no wasted extra steps, no built-in process interruptions, no periods of fall safety exposure, no extra safety hazards, no unnecessary complications. Just a smooth, simple, efficient, money-saving seamless transition between each stage of construction, across all trades.

How does Perimeter Protection Products Achieve This?

Design

Overall, the secret to seamless safety lies in the Perimeter’s system of universalized screw-and-socket design and its componentized interchangeable parts and accessories. Embeds and baseplates can be installed in a standard manner on the floor, at any point on the floor, but also at any point on the ceiling, or at 90-degrees on vertical surfaces, including the formwork. No other system can do this. We offer 60 fittings and base plates that may be switched in the field without exposing personnel to falls between stages. We even have a double-sided embed that supports a post on the floor above and a D-ring on the ceiling below simultaneously, where you can run 60 feet of a horizontal lifeline. Changing components is accomplished while the system remains intact. Our system adapts to every conceivable configuration or unusual site situation and where necessary, we can quickly custom design fixes.
Seamless Pour Adjustment

Perimeter’s posts install *before* the pour. No matter what the thickness of the pour, Perimeter’s posts stay in place. Only its unique adjustable cable guides (see below) are moved up easily and quickly, after the pour, along with the cables. The cable or wood rails are adjustable to maintain OSHA’s criterion of 21”/42” height above the working surface. There is no need to restring cables or re-install wood rails, saving significant time. The posts and cables stay intact for each successive floor.

Fences: Fences attached to lollycolumns cannot be installed before the pour nor can they be attached until the floor above has been poured and cured, as the lollycolumns have to secure themselves against the ceiling. That means *another* different form of perimeter fall protection needs to be put in place before the pour. This is not seamless.

In many cases, angle irons are installed before the pour, with cables strung through them (see below). That is already a complete fall protection system. Then, the fences are added. Totally unnecessary duplication and expense.
Fences that attach to I-beam clamps either can’t be deployed until after the pour, or if they are deployed before the pour, they have to be removed, then put back in place, creating a safety hazard during the changeover. These fences at least don’t have to wait until the next floor is poured to be deployed.

**Angle-Irons:** Holes are pre-punched out at the 21” and 42” level for the cables, then punched out again at the two levels higher up knowing what the thickness of the pour will be. After the pour, the cables need to be unstrung (highly laborious process), then restrung through the new set of holes (highly laborious process). During this long transition, the workers are exposed to potential falls as common practice is not to tie-off to angle irons. The only other protection would be the laborious process of installing anchors in the floor behind them, or safety straps hanging every 10 feet from the ceiling. Both are complicated and inefficient solutions.

**Seamlessness Across Trades**

Often, the first trade will come in and install their favorite perimeter fall protection system, then the next trade will replace this with their favorite system. Typically, three workers to remove the old system and three workers to install the new one. This is duplicative—-with Perimeter’s system there is no need to change systems—and more dangerous, as in the changeover, there is inevitable exposure at the edge. Its posts, baseplates and embeds adapt to 100% of on-site trades up to curtain wall installation.

**Seamless Debris Netting Installation/Removal**

To attach the base of debris netting usually requires drilling into the concrete every two feet, blowing dust out of the hole, a button is placed between the netting and the hole, then a fastener is hammer drilled in the hole. To remove
the netting base an electric drill is used to remove the fastener, and a corking tube is used to fill the hole with grout.

With Perimeter, there is no drilling. There is a zero-line cable where a plastic tie is quickly and easily snapped on between the netting and the cable every two feet. Removal? The quick flick of a knife, less than one second.

We have calculated how much time is saved by this method and it is always 90% faster than the usual method. Hugely efficient, saving significant manhours and budget.

When debris netting must go to the ceiling, workers have to get up on ladders (more danger) and manually attach the top of the debris netting to the ceiling. A cumbersome process.

Perimeter has a system that eliminates the ladders with a Venetian-blind like pulley where a worker standing on the floor can quickly, easily and safely raise the debris netting to the ceiling.

**Load-In Seamlessness**

To open a bay to allow load-in of materials and equipment, Perimeter’s netting attachment is simplified with adjustments that allow the post to slide to columns and netting to drop to 0%. No need for extra straps or anchor points, because workers can tie-off to the Perimeter posts at 21” inches.

A major construction company reported that on a 59-story building Perimeter’s preparation for load-in was four times faster than the old method. This seamless efficiency, of course, repeated for all load-in occasions for 58 more floors.

**Tie-Offs**

You can’t tie off to fences.
You can’t tie off to slab grabbers.
You can’t tie off to lollycolumns.
You can’t tie off to cable strung between columns.
Industry practice is not to tie-off to angle irons.

You can *always* tie off to Perimeter’s posts at 21” rated at 5,000 pounds. The extra, unnecessary steps of hanging/removing straps every 10 feet from the ceiling, or installing/removing anchors in the floor is eliminated for the entire project.
Closing Up

I-beam clamps and slab grabbers are attached to the building edge and workers cannot close up to install the curtain wall until they are removed. Straps or anchor points have to be installed. Perimeter’s posts are inset anywhere from 4” or more from the floor edge and provide tie-off to protect workers while installing the curtain wall. Once the curtain wall is installed, at that point the Perimeter posts can be removed.

Before closing angle irons must be cut off with a grinder to be removed. This introduces the inefficiency of a fire watch, a hot permit, of getting a fire extinguisher. It introduces the dangers to workers of sparks, fire. In a 59-story building, with a 600 foot perimeter, this exposes workers to this danger over 4,000 times. There is the danger of flying slag damaging the curtain wall. The time to go through this inefficient process is 50 times longer than Perimeter’s process. Finally, where the angle irons was removed has to be flash patched, another inefficiency not present with Perimeter’s posts.

Cost

The GC has to pay for all the inefficiencies (either directly or to the trades) of non-Perimeter Protection Product solutions. Why pay all the extra cost if you don’t have to?

Safety Record Reassurance

Perimeter Protection Products have not had a single incident in 8 years. All their products are sealed, certified and engineered. Our products equal or exceed ANSI and OSHA requirements, often by large degrees. (for example, our D-ring’s ultimate breaking strength is 18,000 pounds, while OSHA only requires 5,000 pounds.) The strength of our baseplates is 10,000 pounds of tension and sheer. Our concrete embeds, once the floor is cured sustains 5,000 pounds of tension and sheer. Thus there is virtually zero risk involved in using our products.

Operating at Scale

Perimeter Protection Products has 123 customers so far, from super large to small construction companies. It has also provided its products on many of the largest construction projects in the U.S. Some examples:

For DPR/Skanska/Rudolph & Sletten, Perimeter Protection Products provided 19,000 posts for the new Apple headquarters, supporting 75 miles of perimeter cabling.

Perimeter provided its system to Tutor-Perini for 52-story10 Hudson Yards, a part of the largest construction project in U.S. history, savings them hundreds of thousands of dollars.

Perimeter provided its system to the huge new Facebook campus for Level 10.
Perimeter provided its system to L.F. Driscoll subs Cornell Steel and Pietrini & Sons for the 59-story Comcast Tower in Philadelphia, the tallest building in that city.

Perimeter provided its system to Suffolk Construction sub S&F Concrete for the 60-story Millennium Tower, the tallest residential building in Boston.

For our engineering see Appendix below.

APPENDIX

Note: J. Murphy Roofing & Sheet Metal, Inc. is the former name of Perimeter Protection Products (President, Thomas J. Murphy).
PROTECTION SAFETY POST FOR THE ROPE SYSTEM TESTING

CLIENT: J. Murphy Roofing & Sheet Metal, Inc.
720 Lincoln Blvd.
Middlesex, NJ 08846
Attn.: Mr. Thomas J. Murphy

DATE: 09/09/2006
FILE NO.: ANS-1799
REPORT #: 1

PROJECT: Load Testing of Safety Rail Posts
Tested in the yard at
720 Lincoln Blvd.
Middlesex, NJ 08846
ENGINEER: Dipak Upadhyaya &
Vikas Sharma
TIME: 10:00 a.m. - 3:30 p.m.

--- CERTIFICATE OF INSPECTION ---

As per your request, visual inspection of fall protection safety post for the rope system testing was performed in at the above referenced project site on September 9, 2008.

Area(s) of Inspection: 1.3” diameter - Scheduled 40 and Scheduled 80 pipe posts.

REMARKS:

Various tests were performed on newly produced “Fall Restrain and Resting System” to determine that the product confirms the “OSHA” Guidelines. All tests were performed at twice the working load to obtain a factor of safety of two (2) for fall restrain and arresting system.

Steel channel base was ASTM-36 steel and it was welded on the support beam using E7018 Lincoln 1/8” diameter rods.

Fall Restrain System

3” wide and 5” long ASTM-A-38 steel channel was welded on both sides on ‘I’ beam using 1/4” thick filled weld along the full length of the channel.

"ANSwers to your construction inspection and testing needs."
Test - (1) - Shear on long side.

Maximum 10,000 lb horizontal force was applied using a Calibrated Jack in the direction as shown on the sketch on the preceding page. The test load was sustained for 5 minutes.

No movement, no weld failure was noticed. Deformation of the channel was not observed.

Test - (2) - Shear on short side

Maximum 10,000 lb force was applied in the direction as shown on the sketch above and it was sustained for 5 minutes. The test load was applied using a calibrated hydraulic jack. Welds and channel satisfactorily sustained the test load. No failure occurred.

Test (3) - Pull Test

The test load 10,000 lb was applied in the upward (pull) direction from the center point of the channel piece utilizing a treader rod in the nuts as shown into the sketch below. The test load was applied utilizing a calibrated center hole Jack.

No movement, no damages were noticed onto the channel piece.
Horizontal push tests were performed on 1.33 O.D inch diameter steel pipe pole supports of two grade steel. Schedule 40 and schedule 80. The test load of 400 lbs. was applied at the top of the post. Where as, 300 lbs. test load was applied in the mid point. The test load was applied utilizing a calibrated center hole jack.

Following observations were made.

**Test - (1) SC-40 pipe**

3" displacement was noticed at full load 400 lb.  
2" rebound was observed after removing the load.

**Test - (2) SC-40 pipe**

2½" displacement was noticed at full load 300 lb.  
2" rebound was observed after removing the load.

**Test - 1 SC-80 pipe**

2.0" displacement was noticed at full load - 400 lb.  
1½" rebound was observed after removing the load.

**Test - 2 SC-80 pipe**

2" displacement was noticed at full load - 300 lb.  
1½" rebound was observed after removing the load.

No damages were observed at any point of the system.

**Conclusion**

(1) 3" wide x 5" long channel base, fully welded to the support steel to accommodate pipe post was structurally sound and it sustained 10,000 lbs. applied forces.

(2) Scheduled 40 and scheduled 80, 1.33" diameter pipe posts sustained horizontal push of 300 pounds and 400 lbs. at the center and at the top, respectively. However, from the residual deflection observed for both post, it appeared that the scheduled 80 pipe had ½ the permanent deflection, compared with scheduled 40 posts. The permanent deflection (maximum deflection at test load - rebound (after removing test load) was ½" for scheduled 80, where as it was 1" for scheduled 40.

(3) ASTM F 987 - 2004 requires schedule 80 stanchion.

(4) ANSI A 10.8 - 2001 requires 2" diameter tubes for medium duty and 2½" diameter heavy duty tubes. (See section 8.2 & 8.3).