Barrier innovations making roads safer

First published in World Highways January February 2013 as Safer roads

Developments in barrier technology continue to make roads safer for drivers - Mike Woof writes

Innovative new barrier technology is helping make roads safer for drivers. Key developments have been made in barrier design, helping ensure road and highway infrastructure is more passively safe. New barrier designs ensure that errant vehicles are redirected into the roadway, with reduced risks for occupants and also other road users.

Continuously slipformed concrete barriers reinforced with steel are now widely used in central line dividers on highways, in the US and Europe as well as elsewhere, to minimise the risk of crossover accidents with heavy vehicles. The Jersey type barriers are used frequently, with variations to suit local requirements and much of the US and European network now features slipformed barriers. This type of barrier features a wide base that offers structural rigidity and various slipformer manufacturers, such as US-based Power Curbers, offer purpose-built molds to suit customer needs.

Steel barrier technology also continues to develop. And from Barrier Systems comes a new development in end terminals, which have used many different methods to shield dangerous guardrail ends. Slotted rail systems, turned down ends, eccentric loading systems, and extruder based systems have all proven as effective yet imperfect technologies to redirect an errant vehicle to a designated clear zone behind the hazard. Rail buckling, improper insta systems to fail, with more recent technology offering safer solutions. The newest science used to shield guardrail ends is known as tension-based technology and is used in the Barrier Systems X-Tension End Terminal.

This technology uses forces under tension rather than extrusion, which can deliver according to Barrier Systems. Low angled impacts on a tension terminal end will transfer energy back to the anchor, behind the vehicle, as well as to the rail in front of the vehicle. These cables provide lateral strength to the system to allow it to overcome the force of the vehicle travelling in a different axis, resulting in the vehicle being redirected.

Absorbing impact forces at the impact head rather than being transferred down the rail and energy absorbing capabilities. The X-Tension System is said to be easy to install, which can deliver according to Barrier Systems. Low angled impacts on a tension terminal end will transfer energy back to the anchor, behind the vehicle, as well as to the rail in front of the vehicle. These cables provide lateral strength to the system to allow it to overcome the force of the vehicle travelling in a different axis, resulting in the vehicle being redirected.

The company says that the redirective, non-gating performance means clear grading begins at post one rather than post three as with earlier gating terminals. The use of many common guardrail components and a lightweight impact head helps keep inventory costs low. The X-Tension Terminal is available with either wood or steel posts.
Innovative new end treatments are available from Barrier Systems.

French firm Tertu has been a pioneer of timber-faced guardrail for use in highway applications. These types of guard rail are now offered by a number of manufacturers and are often used in scenic areas to reduce the visual impact of the barrier, ensuring safety for road users with the installation of compliant products. Wood treatment ensures that the material offers a long service life to match that of the steel has agents or licensing arrangements in Chile, New Zealand, South Korea and the US. The latest of its corporate establishment of a subsidiary operation in Shanghai in 2011, while exports currently account for some 40% of sales.

All the Tertu barrier units are crash tested according to the European EN1317 standard, with a number of containment levels N2 and H2 systems and even a TL 3 NCHRP 350 approved to be highly reliable and easy to install and this includes the new products the firm has introduced. The latest development is the TM 18 4M, which has been successfully tested at containment level N2 and highlights the company’s plan to maintain its strong market presence through investing heavily in research and development. This new barrier system is said to provide cost benefits as well as faster installation compared to competing products designed to meet the same containment performance, but using...
Post protection

US firm Pexco says that its new DP 200 EFX City Post offers high performance and can be rotated into position and is made from polyurethane, offering a long life. The one-piece channeliser post is said to rebound quickly when impacted and has benefited from recent manufacturing improvements.

In addition, the post has a new top cap with four holes in the top that allow air to escape during impacts. The improved cosmetics with a higher sheen, giving it the look of an expensive steel bollard, combined with the flexibility and durability of engineered plastic polymers. The City Posts were subjected to tough endurance testing at the Texas Transportation Institute (TTI), with every post surviving 90 impacts at 88km/h and half even coping with 90 impacts at 112km/h. The test was designed to subject the posts to the NTPEP test protocol requiring both bumper and wheel-over impacts. Channeliser posts are sometimes subject to low-speed crushing forces from heavy vehicles such as tow trucks, but the 100% polyurethane City Post resists these forces and rebounds to within 5° of the vertical, little the worse for wear.

Key benefits of using the City Post include minimal maintenance, no base to become dislodged, a single post for both high-speed and low-speed installations, easy spin installation and removal, and long life. The main features of the DP 200 EFX City Post are high-performance, durability, one-piece construction and no base to become dislodged, 360° visibility and a slim, sleek profile.

The company further highlights its investment in research and development with the news that more innovative safety products are due for testing in the near future.