



technology opportunity

Roadway Barrier for Decelerating and Retaining a Moving Vehicle

Nets and straps capture the vehicle to control dangerous, high-impact collisions



Researchers at NASA's Johnson Space Center have developed a roadway barrier system capable of slowing and capturing vehicles in high-impact collisions. Energy-absorbing straps deploy for controlled deceleration, protecting the driver from a life-threatening collision. Nets capture the vehicle, greatly reducing the possibility of secondary impacts on other vehicles or innocent bystanders. The roadway barrier can be used on our nation's streets and highways, in amateur and professional auto racing, at security checkpoints, in homeland security to redirect an explosive force away from high value targets, and in vulnerable areas of schools or public parks to protect pedestrians.

Benefits

- **Safer:** Enhances survivability for drivers in high-impact collisions, catches debris from explosions, and protects innocent bystanders
- **Cost-efficient:** Inexpensive to transport, install, maintain, and replace
- **Easy to implement:** Allows for simple set up and maintenance of modular panels
- **Effective:** Stops a vehicle traveling at 80 miles per hour within 8 feet
- **Durable:** Deflects vehicles in low-impact collisions without breaking away

Commercial Applications

- Professional and amateur auto racing
- Homeland security
- Highway safety
- Secured facilities

The Technology

NASA's deceleration-limiting roadway barrier was originally developed as a hatch restraint device for use on the space shuttle. The innovation has several applications beyond aerospace, including high-speed auto racing, highway safety, and homeland security.

How it Works

The deceleration-limiting roadway barrier is composed of three components:

1. High-strength straps provide controlled resistance to decelerate the vehicle.
2. Net or mesh, secured to anchors by energy-absorbing straps, capture the vehicle.
3. Energy-absorbing panels deflect vehicles that collide only tangentially with the roadway system.

High-strength straps deploy under a predefined tensional load. The net, sandwiched between two panels and anchored to form a segment of a barrier or crash wall, catches an oncoming vehicle and dissipates much of its kinetic energy through ripping of the stitches in the load-limiting straps. The panel facing the roadway is capable of withstanding small impacts and only breaks in the event of a high-impact collision.

Why it is Better

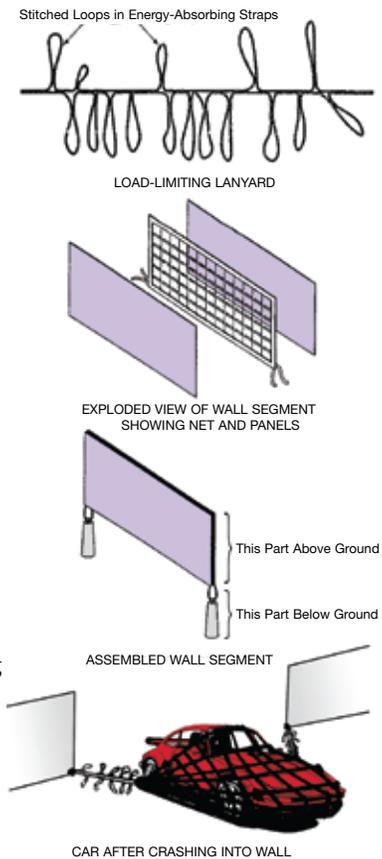
Existing rigid barriers designed to stop a moving vehicle are typically made of unyielding materials, such as reinforced concrete, and offer little or no opportunity for controlled deceleration. This deceleration-limiting roadway barrier protects drivers by reducing the impact of a collision and drastically improving the driver's chances of survival. Furthermore, it protects innocent bystanders by capturing the vehicle and preventing it from rebounding into nearby drivers and/or pedestrians. The system is inexpensive to install and maintain, it can be transported easily, and damaged sections can be replaced within minutes. In addition, the barrier system can be installed in cramped or crowded spaces (a car traveling at 80 miles per hour can be stopped safely within just 8 feet).

Patents

Johnson Space Center has received patent protection (U.S. Patent No. 6,997,637) for this technology.

Licensing and Partnering Opportunities

This technology is part of NASA's Innovative Partnerships Program, which seeks to transfer technology into and out of NASA to benefit the space program and U.S. industry. NASA invites companies to consider licensing this technology for the Deceleration-Limiting Roadway Barrier (MSC-23178-1) for commercial applications.



For More Information

If you would like more information or want to pursue transfer of this technology please contact us at:

Advanced Planning Office
NASA's Johnson Space Center
Phone: 281-483-3809
Email: jsc-techtran@mail.nasa.gov
Web: <http://technology.jsc.nasa.gov>