ZONEGUARD®

TRAVEL SAFE. WORK PROTECTED.
HURRICANE EVACUATION PLAN

1. GRAB BEER
2. RUN LIKE HELL
Positive Protection
We’ve come a long way
There are Options!

BarrierGuard 800
In celebration of the Insurance Institute for Highway Safety’s 50th anniversary, a 1959 Chevrolet Bel Air was crashed into a 2009 Chevrolet Malibu.
What does that last video have to do with positive protection?
Mass does not mean performance.
ZONEGUARD

MASH TL-3 (3-11)
MINIMUM DEFLECTION SYSTEM (ASPHALT)
Positive Protection…. Why is it so important now?
Distraction
ELDERLY
Anger
Zone Guard
Zoneguard® Milestones

**HOW FAR WE’VE COME**

Zoneguard® has come a long way since it was conceived and first crash tested in 2007. Here are a few highlights:

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<td>2007</td>
<td><strong>CRASH TESTS</strong> Zoneguard® undergoes six separate crash tests at Southwest Research Institute.</td>
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<td>2008</td>
<td><strong>FHWA ACCEPTANCE</strong> Zoneguard® is accepted by FHWA to NCHRP-350 TL-3 and TL-4 and MASH TL-3</td>
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<td>2008</td>
<td><strong>FIRST PROJECT</strong> Zoneguard’s first project was on I-65 near Jeffersonville, Indiana</td>
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<td>2010</td>
<td><strong>LARGEST PROJECT</strong> 36,000 Linear Feet of Zoneguard® is used on WVDOT project in Martinsburg, WV</td>
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<td>2014</td>
<td><strong>ZONEGUARD® GOES GLOBAL</strong> Zoneguard® is made for European and Australian markets.</td>
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<td>2016</td>
<td><strong>ASPHALT TESTING</strong> Zoneguard® is MASH tested on asphalt at TTI</td>
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Zoneguard® is one of the most extensively crash tested temporary barriers on the market today, having undergone testing to both NCHRP 350 (National Cooperative Highway Research Program Report 350) and MASH (Manual for Assessing Safety Hardware) standards.

NCHRP 350 (Published 1993) and MASH (Published 2009) represent uniform guidelines for conducting full-scale crash tests for permanent and temporary highway safety devices.
01/ ANCHORING
The standard system only requires four anchors at each end of the run.

02/ APPLICATION
This system can be used in place of “freestanding” concrete barrier systems

03/ PERFORMANCE
MASH TL-3 (3-11) = 74” (6'-2’’) Dynamic Deflection
NCHRP TL-3 (3-11) = 65” (5'-5’’) Dynamic Deflection
Standard System
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Minimum Deflection System

ANCHORED AT THE ENDS OF THE RUN, ADDING INTERMEDIATE ANCHORS EVERY 33'-4"

01/ ANCHORING
The Minimum Deflection System requires four anchors at each end of the run AND intermediate anchors spaced every 33'-4"

02/ APPLICATION
This configuration is used for "anchored" "limited" or "restrained" temporary barrier applications

03/ PERFORMANCE
MASH TL-3 (3-11) Concrete = 5” Dynamic Deflection
MASH TL-3 (3-11) Asphalt = 23.4” (1’-11”) Dynamic Deflection
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Why it works

INDUSTRY LEADING CRASH TEST PERFORMANCE AND MONEY-SAVING BENEFITS BEGIN WITH ZONEGUARD’S UNIQUE DESIGN FEATURES

01/ Low center of gravity and rigid cross-section produces superior crash test performance

02/ Patented six-point “Speed Joint” technology for quick and strong connection

03/ Easily accessible internal lifting bar for quick rigging

04/ Anchor slot in foot is easily accessible for drilling

05/ 50-foot standard units help accelerate installation and maximize trucking

06/ Design of base, or “foot”, employs weight of vehicle during impact

07/ Hot-Dip Galvanized coating protects against corrosion

08/ Only 62 lbs. per linear foot (compared to 400-500 lbs. for concrete barriers)
Trucking Zoneguard®

[HAULING] A LOT GOES A LONG WAY

The most costly expense when utilizing temporary barrier is often the trucking to and from the jobsite. Zoneguard’s light weight and design allows for 750 linear feet to be hauled on one flatbed trailer.

Compare that to 90-120 linear feet of concrete barrier that can be hauled on one truck.

LET’S COMPAR... To haul 3,750 linear feet of temporary barrier, you would need:

ZONEGUARD®:

5 TRUCKS

CONCRETE:

37 TRUCKS
At 62 lbs. per linear foot, Zoneguard® offers designers a light weight temporary barrier option for bridge projects. On a 1,000 LF bridge, let’s compare the dead load of Zoneguard® and temporary concrete barrier (approx. 450 lbs. per LF).

Avg. school bus weight = 17 tons
http://www.dot.state.pa.us
Connection

CONNECTING SPEED JOINTS

Suspend the piece so that the bottom of the suspended upper speed joint of the recessed end (A) aligns with the top of the upper speed joint of the protruding end (B) that is on the ground. Lower the suspended unit until it locks in place and the top of both units are flush.
Curves & Tapers

HOW TO ADD CURVATURE TO YOUR ZONEGUARD RUN

Runs of Zoneguard® using standard 50’-0 units can be curved down to a radius of 800’-0. For tighter curves, shorter Zoneguard® units can be supplied.
Selecting Anchor Type

ANCHOR TYPE DEPENDS ON ROAD/BRIDGE SURFACE

CONCRETE BRIDGE DECK
6” MIN
7/8” all thread anchor or Kelianchor (with adhesive)
*Four every 33.3’

CONCRETE BRIDGE DECK
8” MIN
1 ¼” all thread anchor or Kelianchor (with adhesive)

CONCRETE ROADWAY
6” MIN
1 ¼” anchor pin x 12”

ASPHALT ROADWAY
3” MIN
1 ¼” anchor pin x 20”
Crash Cushion Connectivity

HOW DOES ZONEGUARD® TRANSITION?

Zoneguard® has transitioned / connected to a variety of crash cushions in both unidirectional and bidirectional applications.

Transitions are used to protect from snag points and blunt ends on a reverse angle impact.
Online Zoneguard® Training

LEARN HOW TO INSTALL SAFELY AND EFFICIENTLY

Simply visit the Hill & Smith online training portal, sign up, click through the installation videos and complete an assessment. User-friendly installer training right at your fingertips.

CERTIFICATION

By completing the online training course and correctly answering 80% of the review questions, trainees receive a Zoneguard® installation training certificate of completion, which can be downloaded and posted to LinkedIn.
On the side of the road and uncertain how Zoneguard® is anchored? We have you covered. Our responsive website includes an installation page with helpful video clips and important documents and drawings.

HELPFUL VIDEOS
Short video clips that cover installation steps

DOCS & DRAWINGS
FHWA Eligibility letters, system drawings and more
WHERE ZONEGUARD® HAS BEEN USED IN THE U.S.
Zoneguard®
In Action

PROJECT PHOTOS
QUESTIONS?