



Rear Impact Guard - Update

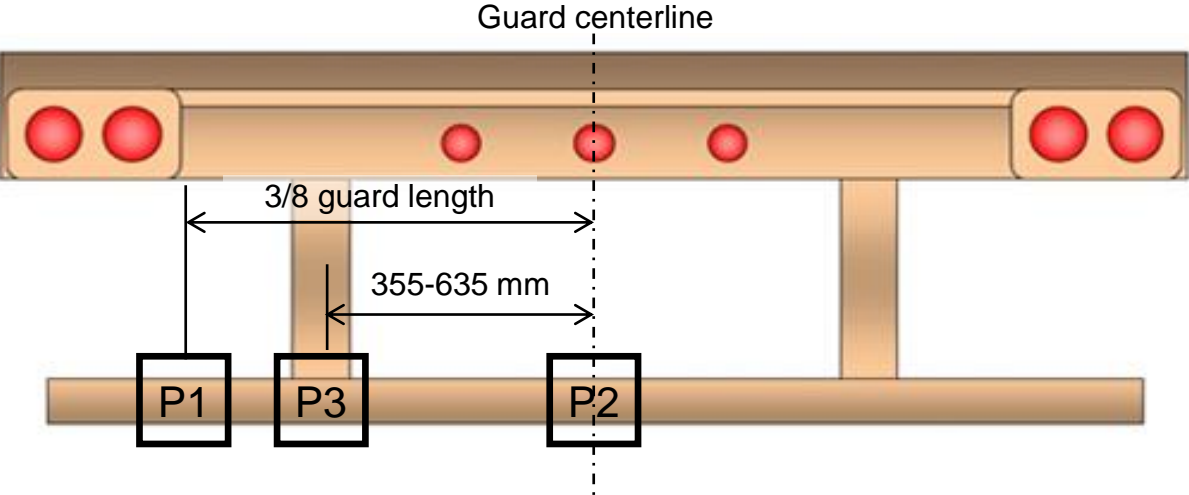
Side Guard Task Force

February 26, 2021

Sean O'Malley
IIHS

[iihs.org](https://www.iihs.org)

Current test requirements



Regulation	P ₁ requirement	P ₂ requirement	P ₃ requirement	Energy absorption requirement
FMVSS 223	50 kN before 5"	50 kN before 5"	100 kN before 5"	5.6 kJ in 5" in P ₃ test

Historic testing – April 1977

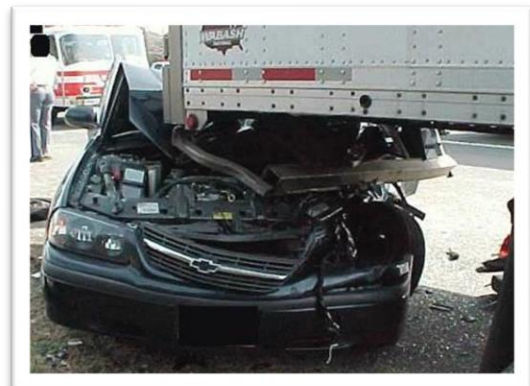


- ▶ IIHS tested guards meeting federal regulations, and guards modified to prevent underride



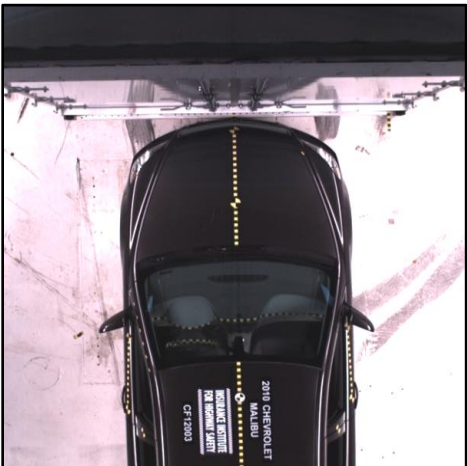
IIHS research on rear underride

- ▶ 2010: photographic study
 - 88% of semi-trailers with guards meeting the 1998 regulation had severe underride
- ▶ 2011: crash tests found guards meeting regulation failed at 35 mi/h
- ▶ 2011: petitioned NHTSA to upgrade regulation

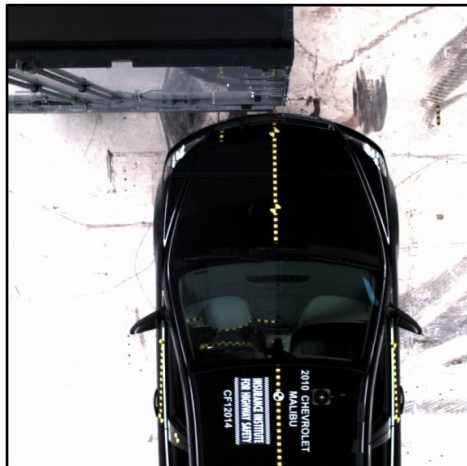


Semi-trailer crash test program

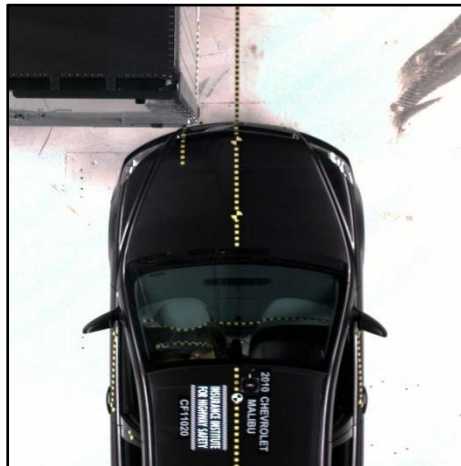
- ▶ 35 mi/h test speed selected based on passenger vehicle regulatory rigid wall tests
- ▶ 3 overlap conditions: 100%, 50%, 30%
 - Evaluated designs of 8 largest manufacturers of dry van trailers (over 80% of market)
- ▶ Initially only 1 of 8 passed all 3 tests



Full width – 100%




50% vehicle width



30% vehicle width



Guard improvements

- ▶ Vanguard, Wabash, Great Dane and Stoughton, **voluntarily** submitted new designs
- ▶ 2017, launched  **TOUGHGUARD** award to recognize 5 designs passing all 3 tests
- ▶ 2017, the 6th and 7th manufacturer passed
- ▶ 2018, the 8th passed
- ▶ 2019, added Kentucky-Trailer to ToughGuard winners (9th)
- ▶ **38 crash tests conducted as manufacturers redesigned guards**



Not rocket science



New manufacturer!

Kentucky Trailer - 2019



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Kentucky Trailer earns IIHS award for good underride guards

March 19, 2020



Kentucky Trailer, a specialty trailer manufacturer, is the latest company to earn the Insurance Institute for Highway Safety's TOUGHGUARD award for effective rear underride prevention.

Underride occurs when a passenger vehicle slides under a larger vehicle during a crash. This typically causes severe intrusion into the passenger vehicle's occupant space and is often deadly. Rear underride guards are metal bumpers that hang from the backs of semitrailers to prevent underride in a rear impact.



EQUIPMENT & PARTS > TRAILER COMPONENTS

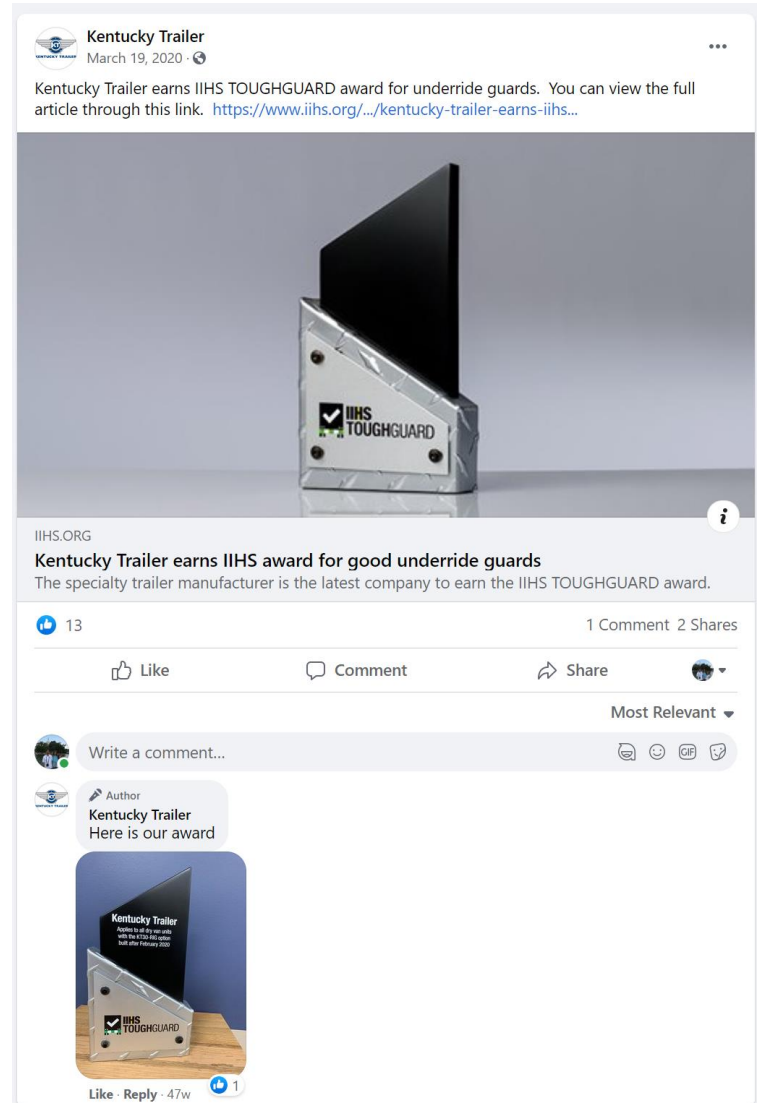
Kentucky Trailer earns IIHS award

TOUGHGUARD recognition certifies effectiveness of manufacturer's rear underride prevention

TBB Staff

MAR 27, 2020

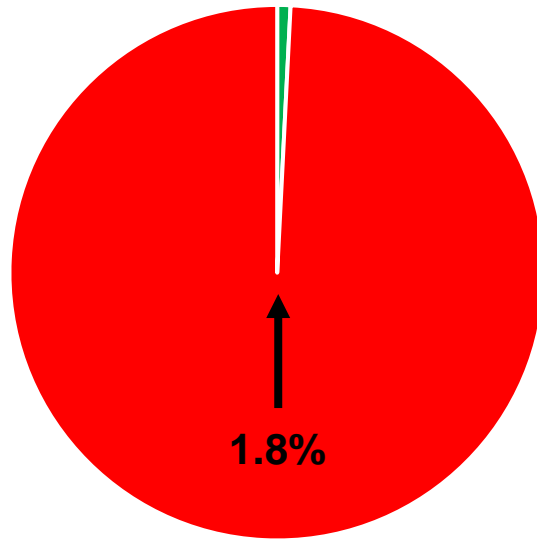
- ▶ Earns ToughGuard Award,
- with optional KT30-RIG



Production numbers

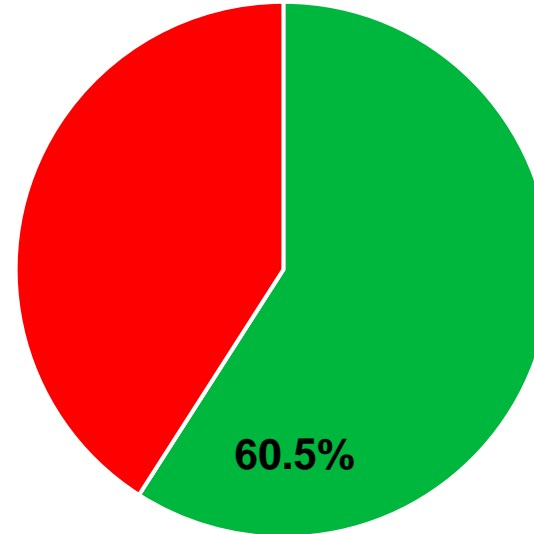
ToughGuard equipped

Dry van sales 2015



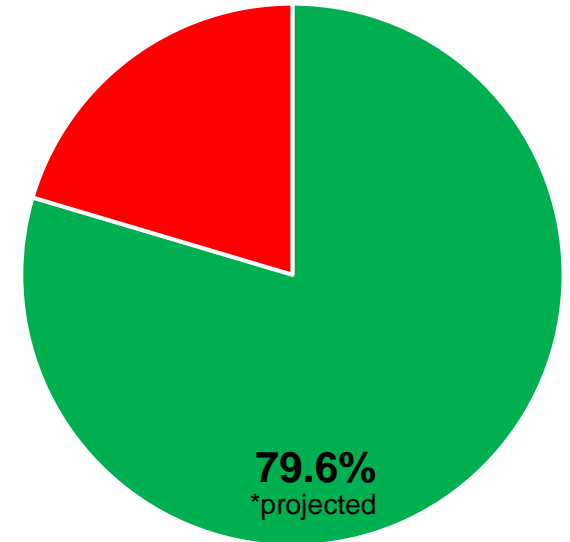
■ ToughGuard ■ Non-TG

Dry van sales 2019



■ ToughGuard ■ Non-TG

Dry van sales 2021*



■ ToughGuard ■ Non-TG

- ▶ In 2019, there were almost 160,000 ToughGuard equipped trailers sold with the TG as standard equipment (Great Dane, Stoughton, Hyundai/Translead, Vanguard, Manac and Strick).
- ▶ All Utility dry vans have a TG RIG installed, 2020 to current (7th of 9 OE's with standard TG)
- ▶ Estimated 500,000+ trailers sold 2015-2020 with a stronger guard!
- ▶ Wabash and K-T offer ToughGuard rear guards as an option.....

ToughGuard

Wabash



- ▶ J.B.HUNT (#1) & Werner Enterprises (#4) get the ToughGuard option when ordering from Wabash
- Wabash #4 in sales for 2019 w/48,700 dry vans sold

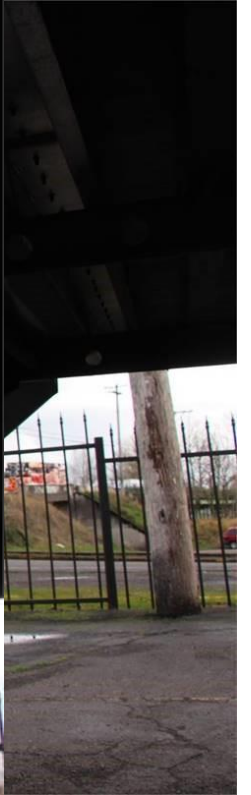
ToughGuard

Hyundai-Translead

- ▶ Hyundai is sales leader, with over 60,000 units sold in 2019, all with ToughGuard

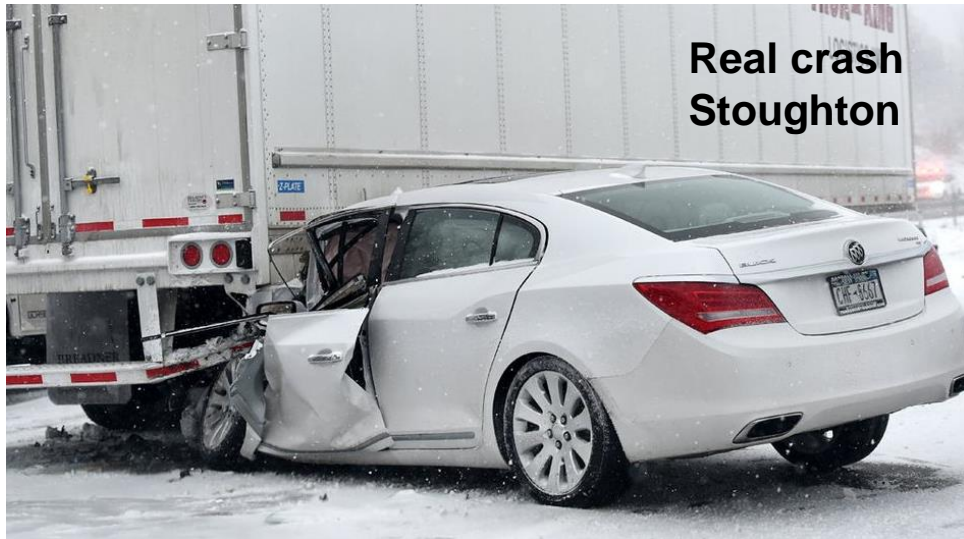


Tou
Roa



ToughGuard

Why?



"I SURVIVED BECAUSE OF STOUGHTON"

Terry S. Rivet
Actual accident survivor
Rochester, New York
March 2, 2017

With its new, robust rear underride guard, Stoughton is making the roads safer for everyone. No one knows that better than accident survivor Terry Rivet and his passenger Mark Robinson. "Early morning on March 2, we found our car headed toward the rear corner of a tractor-trailer that had slid and jack knifed on a snowy, slippery I-90. But thankfully, the rear underride guard on the Stoughton® trailer prevented our car from sliding underneath the trailer."

Stoughton's guard increases the ability to resist compartmental intrusion of a car when the location of impact is at the rear corners. And, it's standard on new Stoughton dry van trailers — with no added cost or weight.



STOUGHTON®

U.S.A. Owned & U.S.A. Made

Stoughton



2012 Stoughton 30%



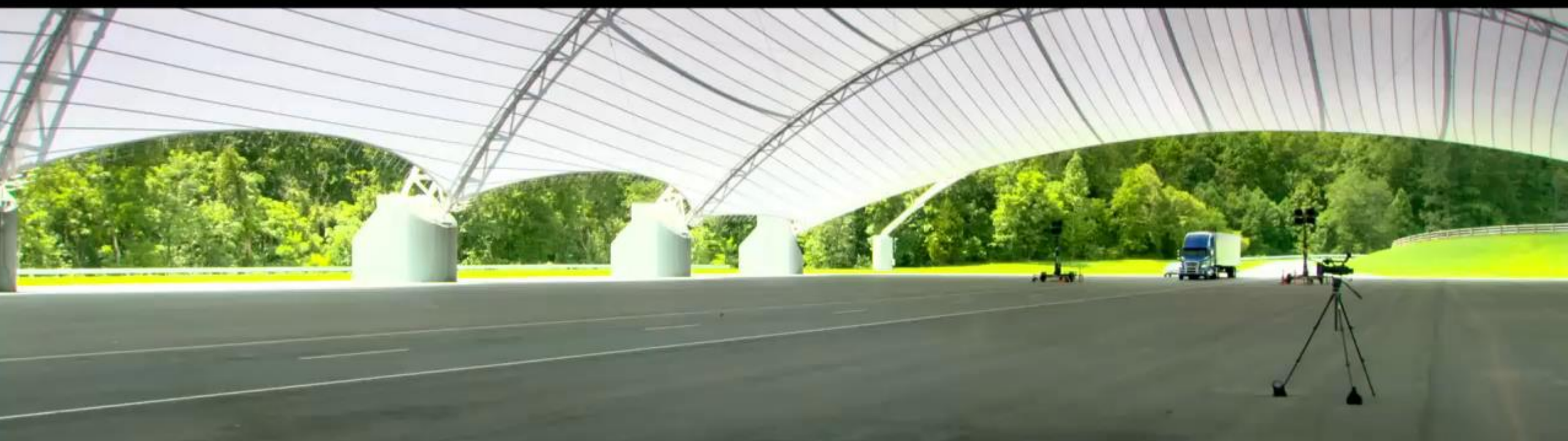
Large Truck AEB & FCW

- ▶ Both FCW and AEB are associated with strong reductions in crash rates
- ▶ While AEB seems most promising, FCW can be added to existing trucks
- ▶ Increasing the use of these technologies is a major safety opportunity

Speed reduction between intervention (warning or autobrake) and impact in front-to-rear crashes

Police-reportable large truck crashes, 2017–19





Thank you!

Questions/comments

