Memtech Acoustics

ACRYLITE® Soundstop
TL-4 System

MASH Compliant Crash Tested System



Example installation of a TL-4 System

Product

The newly designed and crash tested ACRYLITE® Soundstop TL-4 System offers the impact resistance and safety necessary for elevated roadways, while providing unobstructed views to maintain natural aesthetics and light transmission. Used primarily on highway bridges where safety barriers and the noise barriers attached to them are close to travel lanes and therefore more prone to collisions, the TL-4 system is capable of absorbing an impact without endangering the lives of vehicle occupants or areas under the bridge structure. Performance tested at both the University of Nebraska and Texas A&M Transportation Institute, the TL-4 system prevents vehicle snagging and occupant compartment intrusions; requirements for TL-4 impact standards for attachments to existing roadside safety features. These features, in combination with observed benefits to vehicle stability during test collisions, have resulted in approval by the US Federal Highway Authority (FHWA) of the TL-4 system for use on the National Highway system as an attachment to crash rated concrete barriers.

Features & Benefits

- Offers a safe, yet lightweight system for use on bridges and elevated roadways
- Specifically required where a noise barrier is to be placed in the zone of intrusion (the region above and beyond the face of a traffic barrier where an impacting vehicle may extend during an impact)
- Excellent sound reflecting properties
- Maintains views of surroundings when used with transparent ACRYLITE® Soundstop GS CC panels
- With over 100 Generation I System (NCHRP 350) installations in North America, the history of this system has a proven performance for the safety of the motoring public



MASH Test 4-12 uses a 22,180 lb box truck at 58 mph at a 15° angle which meets the minimum TL-4 criteria of 142 kip-ft.

Specifications

- Patented through US Patent #7,220,007 and Canadian Patent #2,562,204
- Previously crash tested in accordance with NCHRP 350 requirements, Test Level 4 in 2005
- Newly designed and successfully crash tested system in early 2020 now meets updated MASH (Manual for Assessing Safety Hardware) requirements per AASHTO safety guidelines

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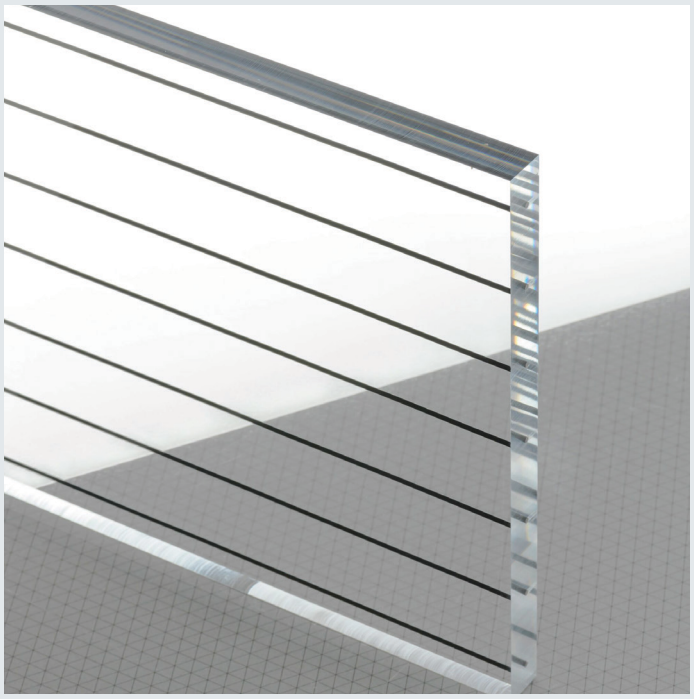


Still image of the box truck used in the TL-4 MASH Crash Test at Texas A&M Transportation Institute Proving Ground, College Station, TX.



Still image of the heavy duty pick-up truck used in the TL-3 MASH Crash Test at Texas A&M Transportation Institute Proving Ground, College Station, TX.

- Complete turn-key crash tested noise barrier system meets the requirements of AASHTO LRFD Bridge Design Manual
- Approved for use on the National Highway System by the FHWA
- Incorporates ACRYLITE® Soundstop GS CC noise barrier panels with integrated polyamide filaments for fragment retention, meeting international standards, e.g. EN 1794-2
- Lightweight, as little as 100 pounds per linear foot, which reduces the cost of the structure
- Durable, maintenance free panels retain clarity and physical strength despite decades of exposure to sunlight and weather (ASTM D1003 & E1996 test methods)



ACRYLITE® Soundstop GS CC has embedded polyamide filaments to contain broken fragments resulting from collision damage. This complies with EN 1794-2.

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Availability

- ACRYLITE Soundstop GS CC sheet is pre-assembled into drop-in style fames
  - Allows for quicker installation times
- Post spacing up to 10 feet wide
  - Fewer anchors and posts also allows for quicker installation times
- Individual frame sizes range from 3 ft – 8 ft
- Multiple frames can be stacked to nearly any height

ACRYLITE® Soundstop GS CC	
Thickness	15, 20, 25 mm
Sheet Size	2 m × 3 m 2 m × 4 m 2 m × 5 m 2.38 m × 3.30 m
Filament Direction	(-D) black along width (-A) black along length (-J) clear along width (-G) clear along length

ACRYLITE® Soundstop GS CC	
Colors	**Color Number**
Colorless	0S00
Smoky Brown	8S75
Sky Blue	5S33
Steel Blue	5S31
Midnight Blue	5S34
Sapphire	5S09
Spring Green	6S40
Emerald	6S56
Sea Green	6S44
Forest Green	6S41
Danish Green	6S50
Topaz	2S01
Amethyst	4S01
Citrine	1S02
Ruby	3S02
Light Grey	7S90
Satinice (Frosted)	0S00 SC

"That is the most stable TL-4 crash test I've ever seen!"

– Senior FHWA Official in the Office of Safety Design

The following table shows the test conditions for the three MASH tests. All parameters given are actual values, and are within test specifications.

MASH Test Conditions					
MASH Test	**Vehicle Weight**	**Impact Speed**	**Angle of Impact**	**Impact Severity**	**Result**
4-10 (TL-2)	2,423 lb	63.0 mph	25°	57 kip-ft	Pass
4-11 (TL-3)	5,020 lb	63.2 mph	24.7°	117 kip-ft	Pass
4-12 (TL-4)	22,180 lb	58.5 mph	15°	170 kip-ft	Pass



Time-lapse of MASH 4-10 (TL-2) crash test



Time-lapse of MASH 4-11 (TL-3) crash test



Time-lapse of MASH 4-12 (TL-4) crash test

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