CHALLENGES IN THE DEVELOPMENT OF SEMI-FLEXIBLE BARRIERS TO MEET MASH TL4

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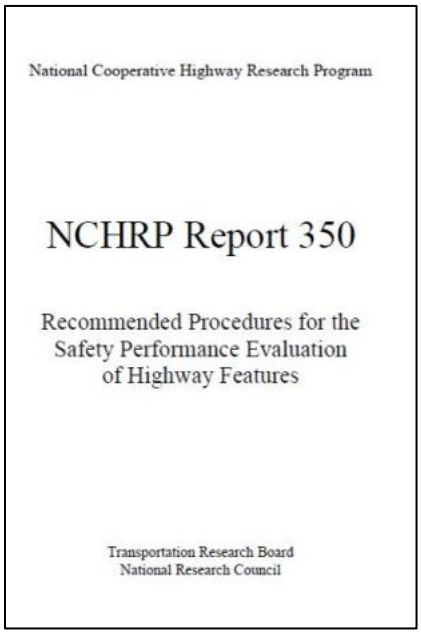
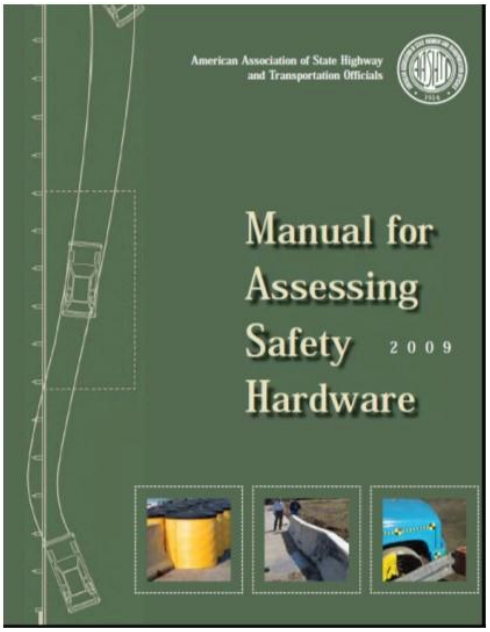
This presentation will explore the challenges associated with the development of semi- flexible barriers to meet the new MASH TL4 standard. Semi-flexible barriers are traditionally steel w-beam or thrie-beam rails connected to strong or weak steel posts embedded into the ground. The presentation will cover the design elements and innovative mechanisms, of several systems, developed to enhance the crash testing performance of semi-flexible barriers to meet the new standard. The MASH TL4 standard has significantly increased the re-directive requirements of barriers over the NCHRP350 TL4 standard and this influence will be explored.

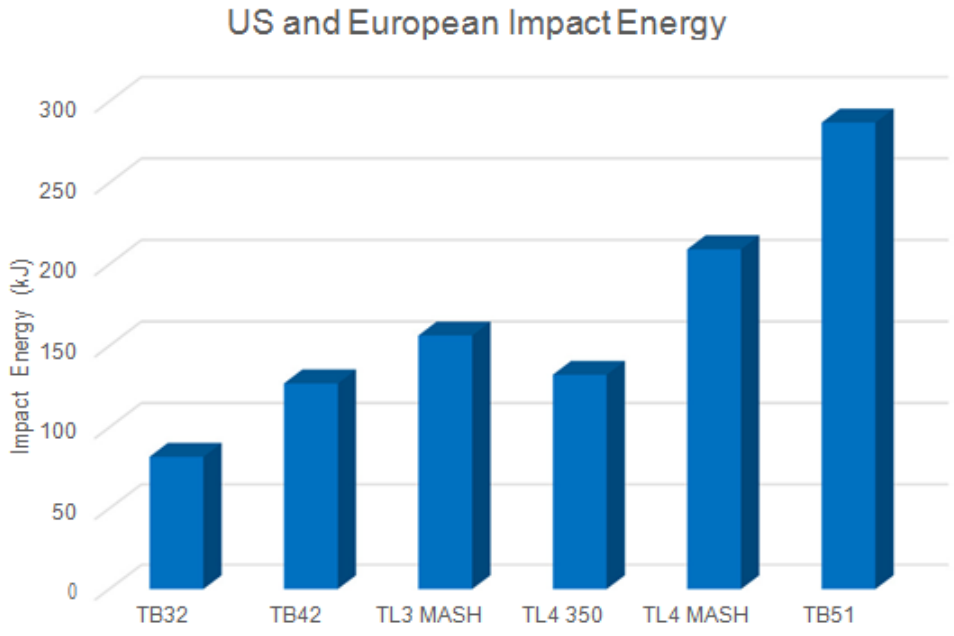
The presentation will be a very visual power point presentation highlighting the changes to crash test protocols for larger trucks displaying and explaining these tests through real life video footage.

What has changed between NCHRP350 to MASH TL4

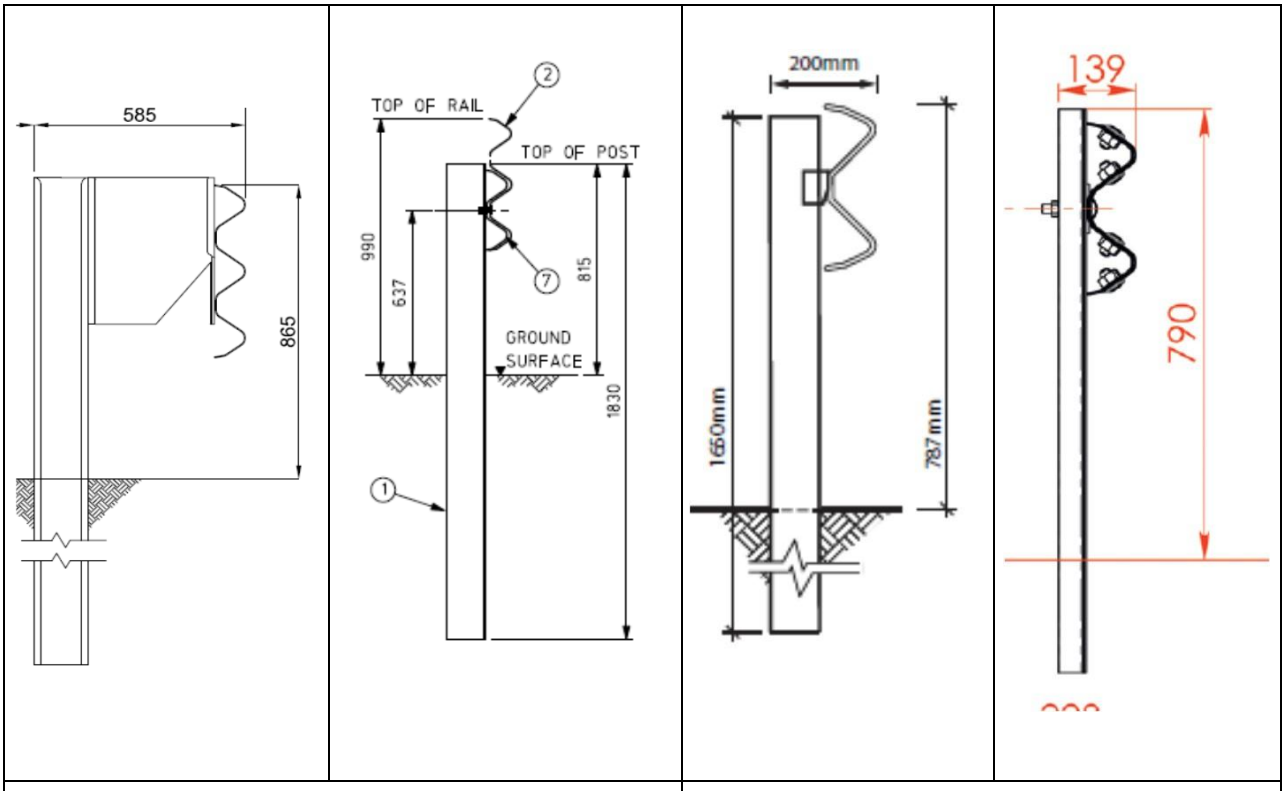
NCHRP350 Test Matrix	**MASH Test Matrix**
4-10 820kg Car 100km/h 20º 4-11 2000kg Pick-up 100km/h 25º 4-12 8000kg Truck 80km/h 15º	4-10 1100kg Car 100km/h 25º 4-11 2270kg Pick-up 100km/h 25º 4-12 10000kg Truck 90km/h 15º
	

Significant Changes in Impact Energy

NCHRP350 Test Matrix		**MASH Test Matrix**		
4-10	37 kJ	4-10	76 kJ	**205%↑**
4-11	138 kJ	4-11	156 kJ	**13%↑**
4-12	132 kJ	4-12	209 kJ	**58%↑**
				



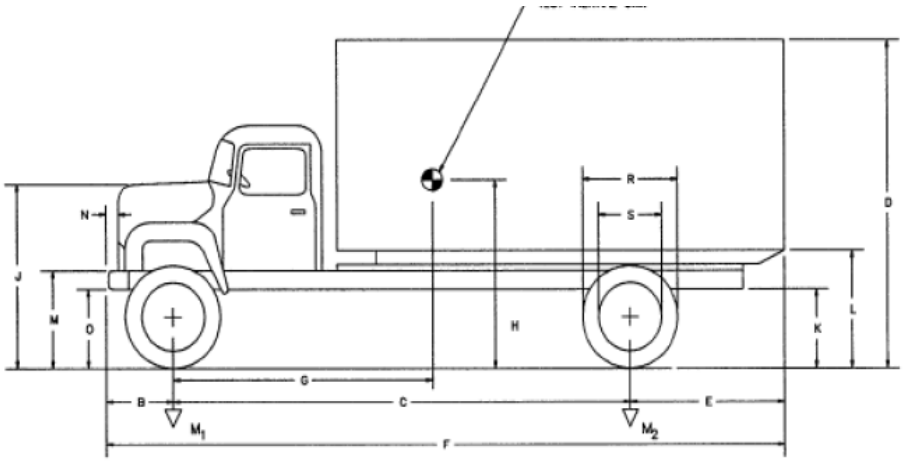
Semi-Flexible NCHRP350 TL4 Systems:



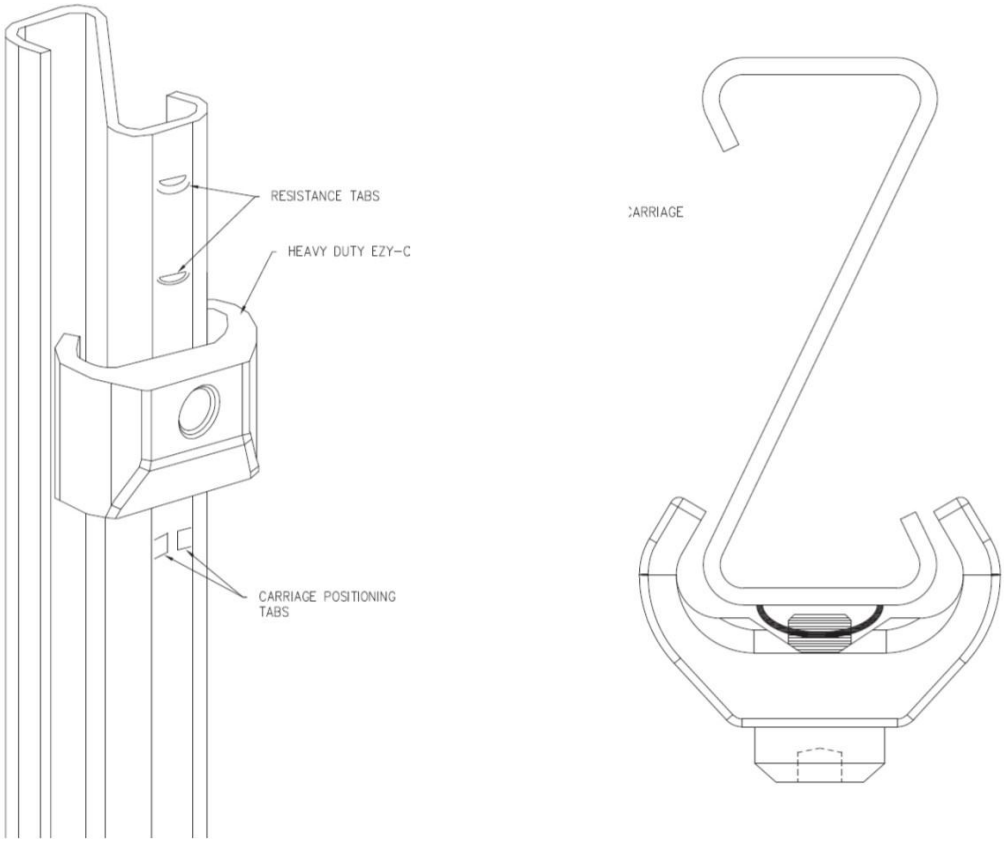
Thrie-Beam Systems 865mm to 990mm TOR	W-Beam Systems 787mm TOR

Challenges to meet MASH TL4

- Increased Impact Energy
- IncreasedSpeedofLargeTruck
- Maintain Low Occupant Severity Risks
- Deliver Feasible Real World Deflection Profile
- Deliver Economical Solutions

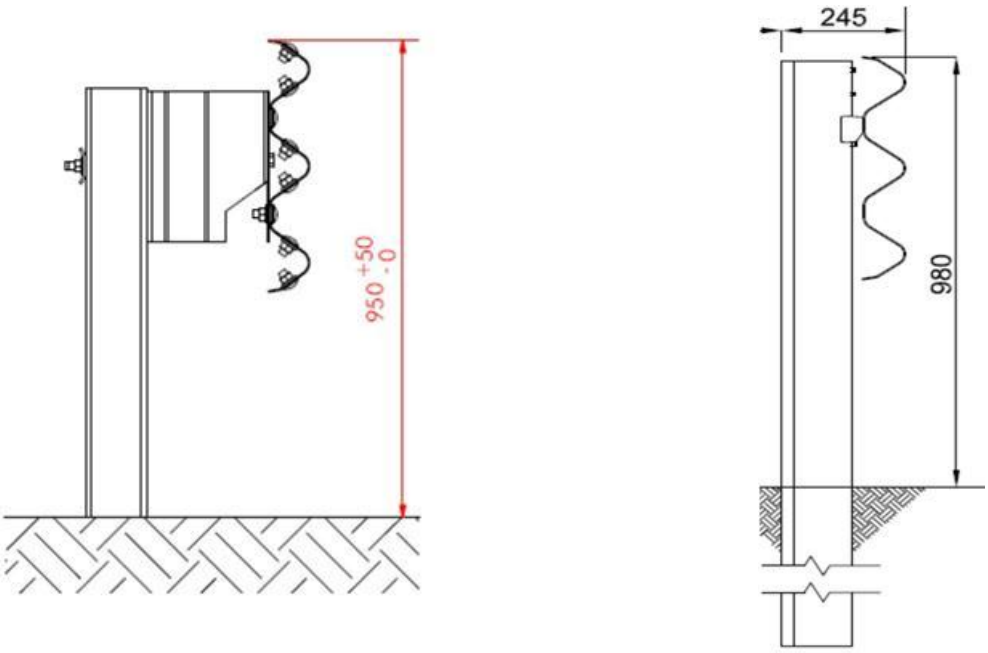


Continued development of NCHRP350 Technology to meet MASH TL4



Continued development of NCHRP350 Technology to meet MASH TL4

Recently Developed MASH TL4 Solutions:



Traditional Thrie-Beam Systems

Traditional Thrie-Beam Systems

- Still suitable for small car 1100kg

ASI for this Thrie-Beam system was 0.8

- Still must meet 2270kg Pick-up criteria

CONCLUSIONS

- MASH TL4 Semi-Flexible systems can be developed utilising traditional components.
- Existing MASH TL3 Semi-Flexible technology can be upgraded to meet MASH TL4 requirements.
- Single stage barrier systems can meet the range of crash testing requirements from 1100kg small cars to 10000kg trucks.
- Governing Dynamic Deflection is now the 10000kg 4-12 test compared to 2000kg 4-11 test under NCHRP350