MASH Testing and Evaluation of the Flared MGS System

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7:1 Flared W Beam Guardrail

- Crash test with 7:1 and 11:1 flared guardrail indicated that the system does not satisfy MASH crashworthiness criteria
- Simulation effort to identify flared guardrail with potential for passing MASH TL-3

11:1 Flared W Beam Guardrail with Soft Stop

11:1 Flared W Beam Guardrail without Soft Stop

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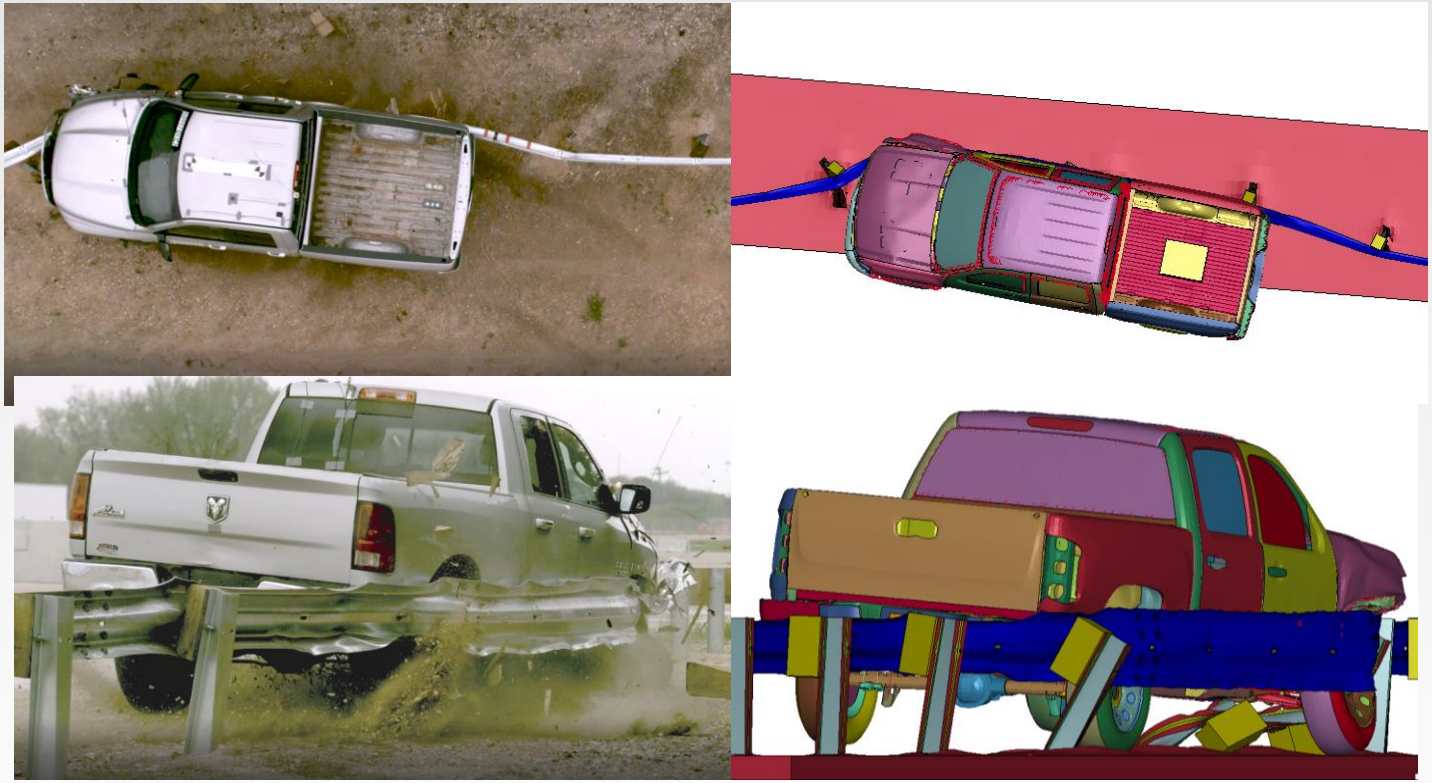
11:1 Flare Simulation compared to actual test



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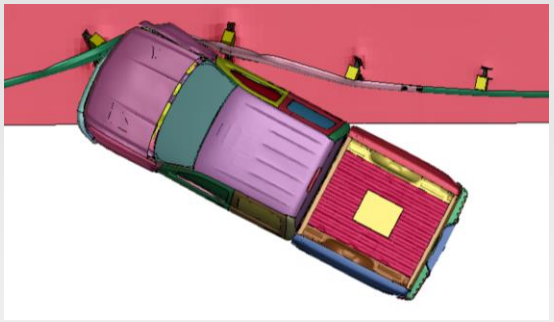
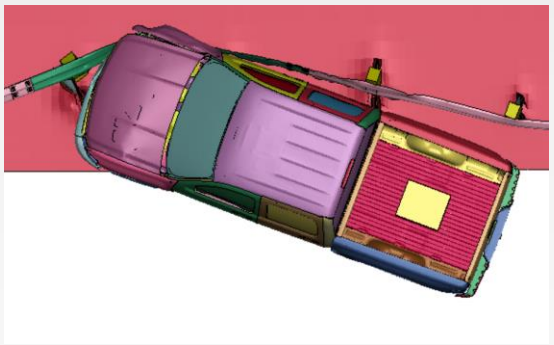
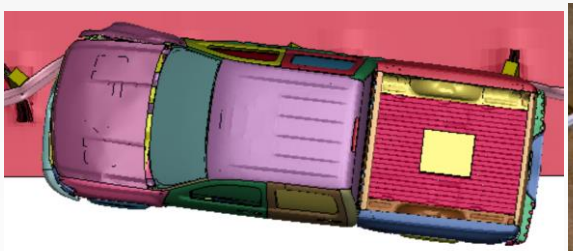
11:1 Flare Simulation compared to actual test

		Simulation	Actual Crash Test
Parameters	**Direction**	**11:1**	**11:1**
OIV (ft/s)	X	21.648	18.69
	Y	17.712	13.77
RA (G's)	X	-6.9	-4.8
	Y	6.5	-4.9
Angles (Degrees)	Roll	3.3	2
	Pitch	0.6	0.6
	Yaw	12.8	-14.5
Deflection (Inches)	Lateral	52.6	53.4







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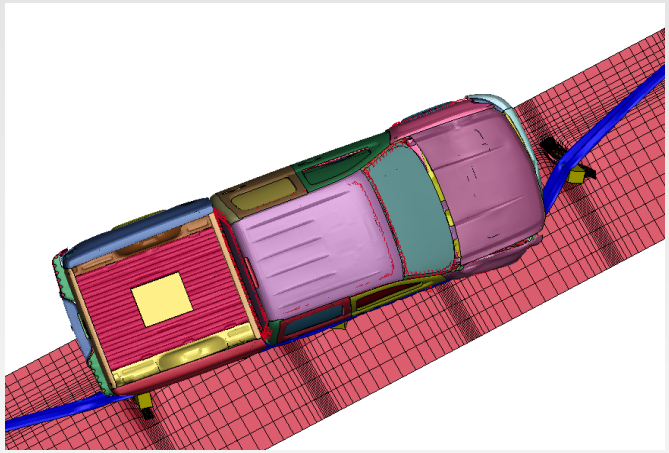
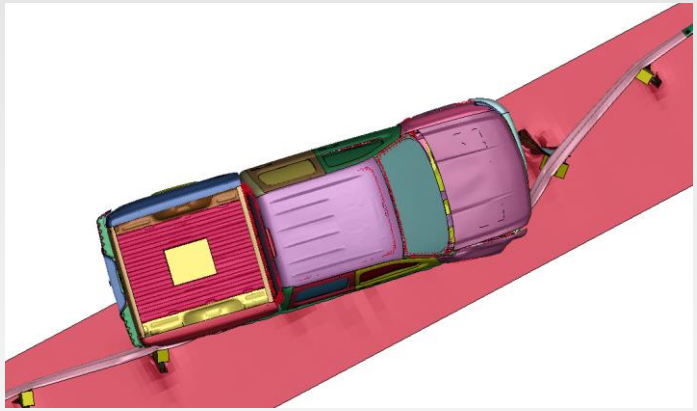
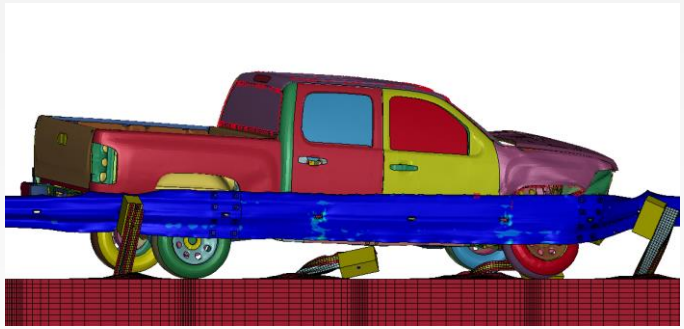
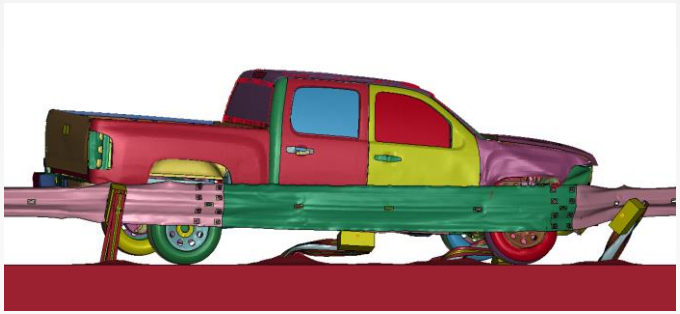
15:1 and 18:1 Flare Simulations Behavior Comparison









15:1 Flare
Effective Angle: 28.84

18:1 Flare
Effective Angle : 28.24

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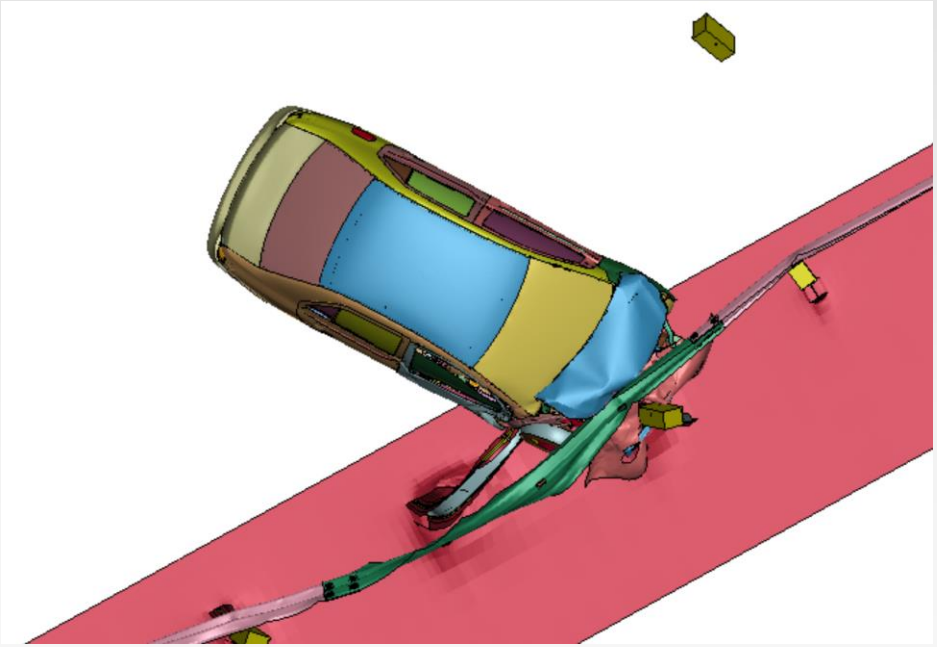
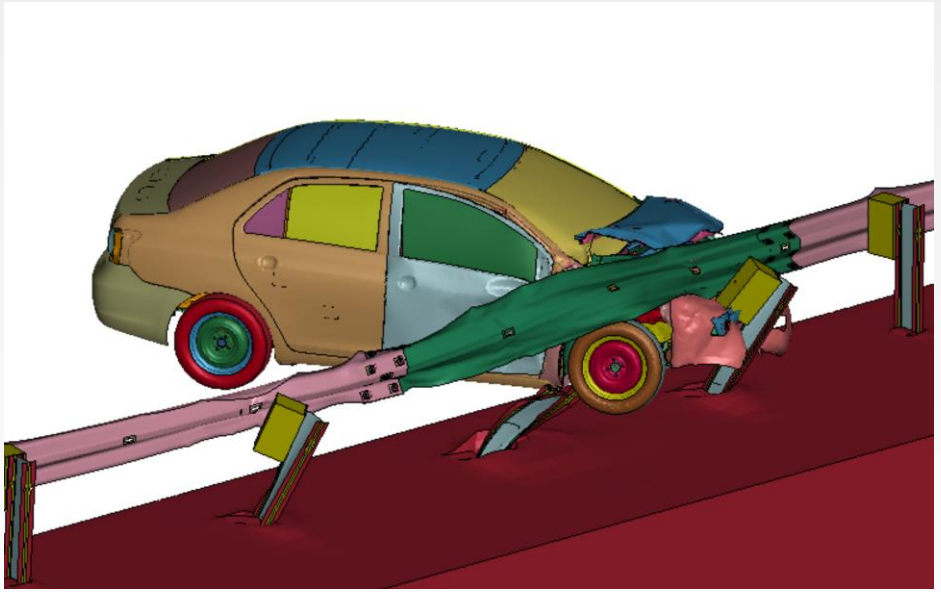


15:1 Flare
Effective Angle: 28.84



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- We were able to calibrate the 11:1 model based on lateral deflection and general behavior of the vehicle based on redirection.
- Two models with flared W beam guardrail were developed as discussed in previous meeting. From the vehicle behavior in the simulations, it can be seen that the results are similar for both 15:1 and 18:1 simulations.
- Simulations with pick up truck were conducted and investigation is still ongoing. Debugging is in process for the passenger car model.