



# MnDOT & MASH

Ethan Peterson | Pavement Marking and Traffic Control Devices  
Engineer

Office of Traffic, Safety and Technology

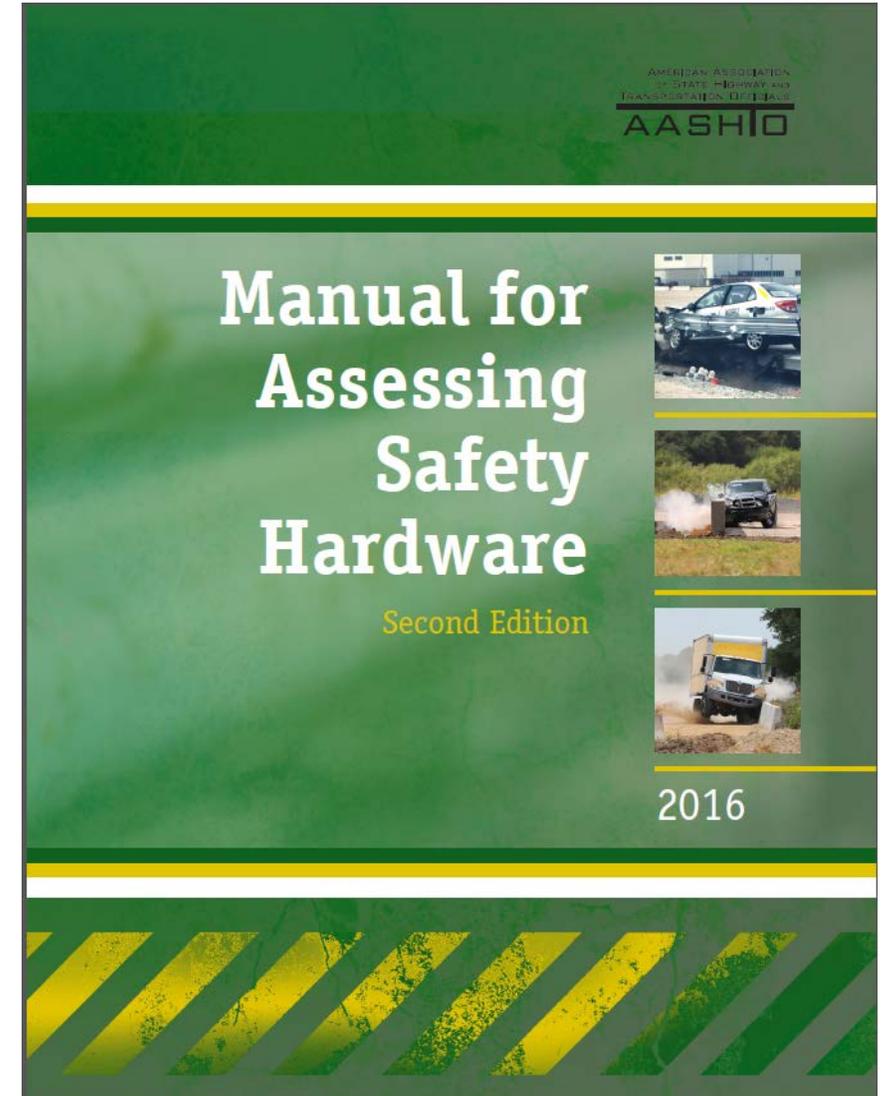
# What is it?

- Manual for Assessing Safety Hardware
- Standards for Crashworthiness

<i>Topic</i>	<i>NCHRP 350</i>	<i>MASH</i>
Small car test vehicle	820C vehicle (1,800 lbs.)	1100C vehicle (2,420 lbs.)
Small car impact angle	20 degrees	25 degrees
Light truck test vehicle	2000P vehicle (4,400 lbs.)	2270P vehicle (5,000 lbs.)
Gating terminals and crash cushion impact angle	15 degrees	5 degrees
Variable message signs and arrow board trailers	No mention	Added to TMA crash test matrix
Support structure and work zone traffic control device testing	Only small car tested	Small car and light truck tested
Windshield damage criteria	Subjective/Qualitative	Objective/Quantitative

# Implementation Dates

- December 31, 2017: w-beam barriers and cast-in-place concrete barriers
- June 30, 2018: w-beam terminals
- December 31, 2018: cable barriers, cable barrier terminals, and crash cushions
- December 31, 2019: bridge rails, transitions, all other longitudinal barriers (including portable barriers installed permanently), all other terminals, sign supports, and all other breakaway hardware

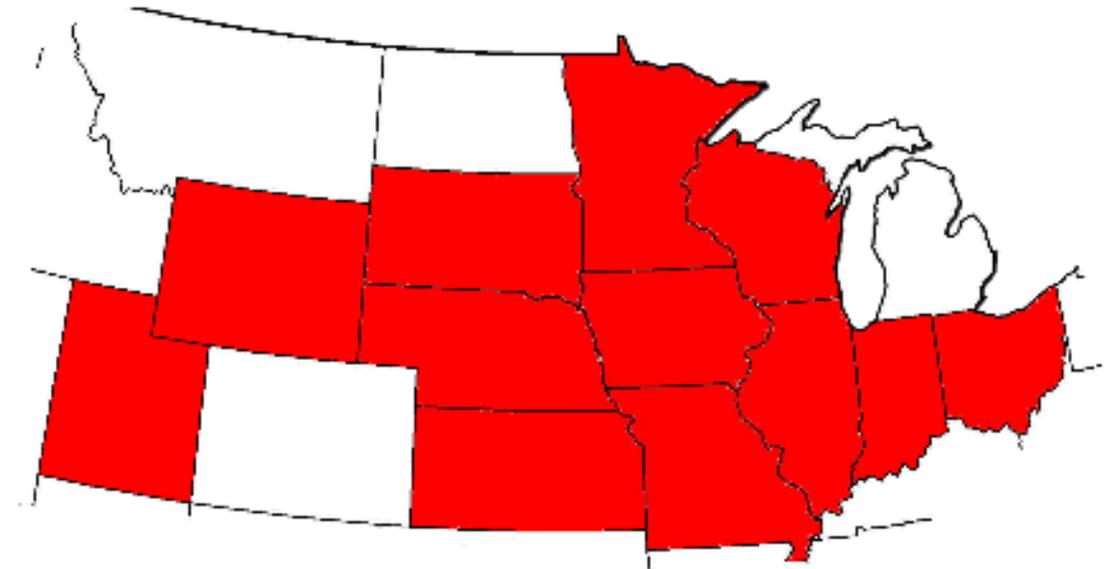


# What does it mean to MnDOT?

- Everything that is installed within the Clear Zone must be re-tested to MASH standards proprietary or not
- Testing is ramping up for Manufacturers, some have eligibility letters already issued:  
[https://safety.fhwa.dot.gov/roadway\\_dept/countermeasures/reduce\\_crash\\_severity/](https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/)
- MnDOT has to decide what non-proprietary hardware should be tested
  - Knee-brace design, portable sign stands, type III barricades, delineator posts, etc.

# How does testing happen?

- After the hardware is selected for testing funding has to be found and a proposal has to be made.
- Are multiple states interested in the hardware?
- Midwest States Pooled Fund (UNL) and Roadside Safety Pooled Fund (TTI)

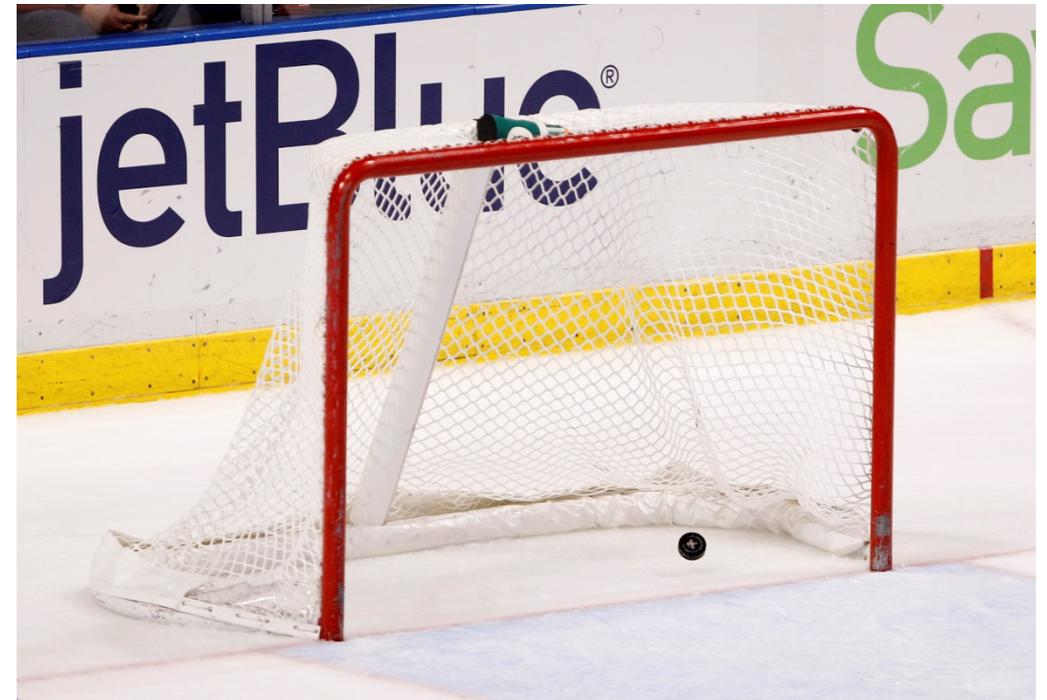


Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, New Jersey, Ohio, South Dakota, Wisconsin, and Wyoming.

# Where are we at now?

- Midwest States Pooled Fund Program is moving forward with testing delineation markers, PCB cover plate span, thrie-beam bullnose.
- Knee Brace Design is getting a proposal
- Portable sign stands and type III barricades are being discussed in house and with other DOTs
- The list for testing is being put together in collaboration with Mike Elle and Michelle Moser anything non-proprietary you can think of?

- The ability to use MASH approved hardware throughout the state by the implementation date
- Have all necessary non-proprietary hardware MASH tested and approved by implementation date
- Populate APL with MASH tested proprietary hardware for use



# Resources

- Ethan Peterson  
Pavement Marking and Traffic Device Engineer  
MnDOT Office of Traffic Safety and Technology  
[ethan.peterson@state.mn.us](mailto:ethan.peterson@state.mn.us)  
651-234-7380

FHWA Eligibility Letters:

[https://safety.fhwa.dot.gov/roadway\\_dept/countermeasures/reduce\\_crash\\_severity/](https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/)

MnDOT Approved Products List:

<http://www.dot.state.mn.us/products/>

# Thank you again!

**Ethan Peterson**

*ethan.peterson@state.mn.us*

651-234-7380