NCHRP Report 350

- Published in 1993
- Formally adopted by FHWA
  - 1994 Federal Rule
  - All newly installed safety features must meet Report 350 criteria
  - Effective in 1998
  - First ever national mandate on safety hardware evaluation criteria
FHWA Mandate

- Many widely used safety features did not meet previous 2 sets of criteria (NCHRP 230 and TRC 191).
- Initially, little funding for testing under 350
- In 1998
  - Some hardware categories could not meet 350
  - Many systems still not tested
- AASHTO/FHWA Task Force convened
  - Revised schedule for Report 350 implementation
  - Gave AASHTO responsibility for future updates
AASHTO-FHWA Agreement

“The Task Force for Roadside Safety of the Highway Subcommittee on Design shall hereby be assigned the responsibility for evaluating and recommending for approval by AASHTO, new procedures for safety performance evaluation of highway features.”

AASHTO requested FHWA to review and approve safety hardware under Report 350.
Need for Update

• NCHRP Report 350
  ➢ Published in 1993
  ➢ Historically updated every 8-10 years
• Highways
  ➢ National speed limit law dropped in 1996
• Vehicles
  ➢ Mass increase
  ➢ ABS & air bags
  ➢ 820C & 2000P vehicles disappearing
Primary Focus

- Update test vehicles & impact conditions
- Eliminate ambiguities
- Reduce inconsistencies
- Refine test matrices to eliminate meaningless tests.
- Tighten reporting procedures
Most Significant Changes

• TL-4, single unit truck test revised:
  - Mass increased from 18000 lb to 22,000 lb
  - Speed increased from 50 mph to 56 mph
  - Height of ballast c.g. reduced from 67” to 63”
  - 32” high barriers not likely to meet TL-4

• P/U & small car masses increased
• Impact angle for small car increased to 25°
• Impact angle for terminals and crash cushions raised to 25°
TL-4 Test of 32” New Jersey Barrier
Most Significant Changes (Continued)

- Critical impact points refined
- Breakaway devices must be tested with both P/U & small car
- Windshield damage & occupant compartment deformation limits relaxed & extended to all tests
- Eliminate marginal category
- Set maximum roll angle to 75°
- Many more minor changes
Proposed Implementation Plan

- The AASHTO TCRS is responsible for developing and maintaining MASH 08.
- FHWA shall review and accept highway safety hardware under MASH 08.
- All hardware accepted under Report 350 can remain in place and new installations can be made.
- Wherever possible, all new safety hardware installations should meet MASH 08 or Report 350.
- Existing safety hardware that is not 350 or MASH 08 approved should be replaced when roadway is reconstructed, subject of a 3R project, or 50% of system is damaged.
Proposed Implementation Plan

• Hardware under development at time of AASHTO acceptance can be completed under Report 350.
• FHWA will not consider applications under Report 350 after January 1, 2010.
• Hardware classes without 350 approved systems can continue to be used until such time as a MASH 08 or Report 350 design becomes available.
Questions?