Design Guides for the National Highway System (NHS) and Design Exceptions

Overall NHS

The requirements of A POLICY should be used for 1) design speed, 2) lane width, 3)shoulder width, 4) horizontal curvature, 5) vertical curvature, 6) grades, 7) superelevation, 8) cross slopes (including edge taper or slough), 9) stopping sight distances, 10) bridge width, 11) structural capacity, 12) horizontal clearances (not including clear zone), 13) vertical clearances. This applies on the NHS regardless of funding source, even if all the funds are non-Federal aid. Additional specific guidance for the Interstate portion of the NHS is provided in the AASHTO publication, AA Policy on Design Standards - Interstate System@ dated July 1991.

Traffic barriers, including bridge rails, installed on the NHS will eventually need to meet the criteria established in NCHRP Report 350, TL-3 or higher. A detailed implementation schedule for NCHRP Report 350 has been adopted by FHWA in cooperation with state and industry partners. See attached table for an abbreviated summary for permanent (non traffic control zone) features.

FHWA recognizes the NDDOT Resurfacing, Restoration, Rehabilitation (RRR) and Preventive Maintenance (PMRRR) Standards dated November 1998. This document applies only to two-lane rural highways and it is not applicable to urban sections or multi-lane highways. This document may be used in lieu of case-by-case design exceptions. Overlays exceeding 1 2 inches must follow the RRR portion of the document.

Interstate Portion of NHS

Where 3R type work is to be done on the Interstate, the standards for horizontal alignment, vertical alignment and widths of median, traveled way, and shoulders may be the standards that were in effect at the time of original construction. In other words, on 3R projects on the Interstate, design exceptions are not required for horizontal alignment, vertical alignment, widths of median, traveled way, and shoulders provided these features met standards when they were built and are not reduced by the project. The remaining design criteria, including traffic barriers, must meet current standards or undergo the design exception process if they do not meet current standards. Where the type of work is reconstruction, current standards are to be applied throughout the project including bridges to remain in place.

Documentation of Design Exceptions on the NHS

FHWA must approve any design exception applicable to projects on which FHWA has full involvement (see Appendix I-13B). Exceptions to design standards are delegated from Washington to the Division Administrator (DA). The DA may not delegate them further in the Division Office.

Where PS&E approval is delegated to NDDOT via exemption, NDDOT must approve the design exception in the same manner as would have been done by FHWA. This applies on the NHS regardless of funding source, even if all funds are non-Federal aid.

Items to consider when evaluating a design exception:

- Crash history to determine any history of operational problems.
- Functional classification of the roadway.
- Effect of the variance from the design standard on safety and operations.
- The degree of the variance from the standard.
- Compatibility with adjacent sections of roadway.
- Should not degrade the relative safety of the roadway.
- Amount and character of the traffic.
- Posted and actual speed on the route.
- Type of project contemplated.
- Cost of attaining full standards (including environmental impacts).
- Cost-effective means of mitigating the reduction in standard.
- Program of future projects, in particular, whether future improvements may more be economically correct the design feature at a later date.
- Engineering discretion

Permanent Traffic Barriers and Bridge Rails (not including work zone devices)

Implementation Schedule to meet NCHRP 350, TL-3 or higher.

Dates given refer to the date a construction project is advertised for bid.

Safety Hardware Type / Feature	NCHRP Report 350 Implementation Dates and Caveats	
	New Installations	3R Projects
Guardrails & median Barriers	October 1,1998	October 1, 1998 except replacement hardware meeting NCHRP 230 is not required.
Bridge Railings	October 1,1998 except previously accepted bridge railings meeting NCHRP 230 MSL-3 or AASHTO PL-2 may be used.	October 1, 1998 except replacement of previously accepted bridge railings meeting NCHRP 230 MSL-3 or AASHTO PL-2 is not required.
Guardrail to Bridge Rail Transitions	October 1, 2002 except effective October 1, 1998 transitions must meet NCHRP 230.	October 1, 2002 except replacement of existing hardware meeting NCHRP 230 is not required.
Guardrail Terminals	October 1, 1998 except cable guardrail terminals where current designs may continue to be used until a 350 tested version is available.	October 1,1998 except replacement of properly installed and maintained NCHRP 230 MELT terminals is not required.
Crash Cushions	October 1,1998	October 1,1998 except replacement of existing hardware meeting NCHRP 230 is not required.
Break Away Devices	October 1, 1998	October 1, 1998
Miscellaneous Hardware	Delayed	Delayed