Guidance on NHS Design Standards and Design Exceptions

1. Are there design standards that apply to the National Highway System (NHS)?

Yes. The Federal Highway Administration (FHWA) has adopted design standards for the NHS (as specified in 23 USC 109(c)).

2. What design standards has FHWA adopted?

The FHWA has adopted standards for roadway geometrics, bridges and structures, erosion and sediment control, hydraulics, traffic noise, materials, and accessible pedestrian design. These standards are listed in 23 CFR 625.4 and 49 CFR 37.9.

3. Do FHWA-adopted design requirements apply to all projects on the NHS?

Yes. The FHWA adopted design requirements of 23 CFR 625 and 49 CFR 37.9 apply to projects on the NHS, including routes added to the NHS by MAP-21.

The geometric design standards adopted by FHWA apply to new and reconstruction type of projects on the NHS. The NHS standards for the geometric design of highways include the American Association of State Highway and Transportation Officials’ (AASHTO) A Policy on Design Standards Interstate System (January 2005) and A Policy on Geometric Design of Highways and Streets (2001 or 2004).

For resurfacing, restoration, and rehabilitation (3R) projects, design standards that have been agreed to by the State DOT and FHWA Division Administrator will apply. More information about developing geometric design standards for 3R projects is available in the Transportation Research Board publication Designing Safer Roads: Practices for Resurfacing, Rehabilitation, and Restoration and the FHWA Technical Advisory Developing Geometric Design Criteria and Processes for Non-freeway RRR Projects.

4. Do NHS standards apply to projects that do not use Federal-Aid Highway Program (FAHP) funding?

Yes. These FHWA-adopted or approved design standards apply to all street and highway projects on the NHS, regardless of the funding source for the project.

5. For projects on highways added to the NHS under MAP-21, what is the effective date that these projects are required to comply with the NHS design requirements and standards?

The effective date was October 1, 2012. If the applicable Federal and State or locally required environmental finding, determination, or decision (as specified in 23 CFR 771 or equivalent State or local requirements) was completed prior to October 1, 2012, projects on highways added to the NHS will not need to comply with NHS design requirements and standards. If a Federal and State or local environmental review is not required for the project and its final design was completed prior to October 1, 2012, the project will not need to comply with NHS design requirements and
standards. All other projects must comply with NHS standards or receive approval for design exceptions.

6. What flexibilities are allowed with NHS design standards?

NHS geometric design standards provide a range of acceptable values for highway features, and FHWA encourages the use of this flexibility to achieve a design which best suits the desires of the community while satisfying the purpose for the project and needs of its users.

Design values should be selected based on an evaluation of the context of the facility, needs of all the various project users, safety, mobility (i.e., traffic performance), human and natural environmental impacts, and project costs. For most situations, there is sufficient flexibility within the range of acceptable values to achieve a balanced design. However, when this is not possible, a design exception may be considered and be appropriate.

7. Can projects on the NHS deviate from the NHS design standards?

Yes. State and local agencies may consider designs that deviate from the NHS design standards when warranted based on the conditions, context, and consequences of the proposed projects.

A design exception states the reason(s) for a specific deviation from an established standard for a specific highway feature and may also include features to mitigate any negative effects. For additional information on design exceptions, please refer to the FHWA publication Mitigation Strategies for Design Exceptions.

8. What justification is required to evaluate, review, and approve design exceptions on the NHS?

All proposed design exceptions should be thoroughly analyzed and the potential impacts understood before approval (as specified in 23 CFR 625.3). The process to evaluate and justify design exceptions must be based on an evaluation of the context of the facility (e.g., community values), needs of all the various project users, safety, mobility (i.e., traffic performance), human and environmental impacts, project costs, and other impacts.

Design exception processes vary, but the fundamental steps should include: determining the cost and impacts of meeting the design criteria, developing and evaluating the potential consequences and risks of alternatives that may fall outside of established minimum values, evaluating potential mitigation features, reviewing, documenting, and approving the use of proposed exceptions. The approved design exception procedures and design standards of State DOTs or local agencies will identify what information may be required for design exceptions subject to FHWA approval. More information and guidance on the information that should be documented is available in the FHWA publication Mitigation Strategies for Design Exceptions.

9. Are design exceptions approved on a project-by-project basis?

Yes. Design exceptions must be approved for all projects on the NHS. Each design exception must be thoroughly evaluated to ensure the implications are understood and potential mitigation
features considered before making any decisions when the design of a roadway feature falls outside of the established minimum values. As a result, design exceptions cannot be approved for general application to an entire corridor or geographic region.

10. At what point in the development of a project should design exceptions for a project on the NHS be reviewed and approved?

Design exceptions may be approved at any time prior to finalizing the design of a project. However, agencies are encouraged to review and approve design exceptions as soon as sufficient analyses have been conducted and implication of these exceptions identified. The early consideration, evaluation, and decision on design exceptions will ensure more informed decision-making occurs early in the project development process, reducing the risk and cost of delays resulting from changes later in the process. Design exceptions are typically reviewed in conjunction with the overall review and approval of the plans, specifications, and estimates for a project on the NHS.

11. What variances from NHS standards require FHWA review and approval of design exceptions?

FHWA requires the review and approval of design exceptions on the NHS for 13 controlling criteria: design speed, lane width, shoulder width, bridge width, horizontal alignment, superelevation, vertical alignment, grade, stopping sight distance, cross slope, vertical clearance, lateral offset to obstruction, and structural capacity (as specified in 23 CFR 625.3(f)). While FHWA only requires the approval of design exceptions for these 13 controlling criteria, agencies are encouraged to develop and implement procedures to analyze, evaluate, document, and approve all types of design variances.

12. Who approves design exceptions for projects on the NHS?

Design exceptions from NHS standards for the 13 controlling criteria must be approved by FHWA or on behalf of FHWA by a State DOT or local agency (as specified in 23 CFR 625.3(f)).

On those projects where the State DOT has assumed FHWA’s stewardship and oversight responsibilities for FHWA (as specified in the State DOT-FHWA Stewardship Agreement), the State DOT must evaluate, approve and document design exceptions as if they were approved by FHWA. In instances where a project on the NHS does not use FAHP funding, the State DOT or local agency must review and approve design exceptions in a manner consistent with the procedures the State DOT has developed and FHWA has approved.

13. Does a State DOT or local agency’s approval of design exceptions on behalf of FHWA constitute a Federal Action?

Yes. The approval of design exception for any project on the NHS by FHWA is a Federal Action (that requires the evaluation and documentation of any environmental implications prior to taking any formal action or granting approval of these exceptions. The approval of design exceptions is a Federal Action regardless of the source of funding (e.g., State, local, private, FAHP) or if a State DOT or local agency approves the design exceptions on behalf of FHWA. If
a project on the NHS does not use FAHP funding, the approval of design exceptions may be the only action or decision that may involve a State DOT or FHWA on these projects.

14. Do design exceptions meet the criteria to be classified as a Categorical Exclusion (CE)?

Typically, yes. The selection of the appropriate environmental review, documentation, and approval of FHWA’s decision-making process will usually be based on the type and scope of the project. Design exceptions by themselves normally do not result in a change in the scope of a project or cause any significant impacts. FHWA Division Offices are encouraged to review and amend their programmatic CE agreements with their State DOTs to include design exceptions, as appropriate.

Additional information and resources to support the environmental review, documentation and approval that may be required on a project are available in FHWA’s Environmental Review Toolkit.

15. What information must State DOTs or local agencies review to determine if a proposed design exception can be classified as a CE?

The review, consideration, and approval of design exceptions generally occurs after the impacts of a project’s design has been reviewed and approved in compliance with the applicable Federal and State or locally-required environmental finding, determination, or decision (as specified in 23 CFR 771 and any equivalent State or local requirements). A re-evaluation would be conducted to confirm that the applicable Federal and State or locally required environmental finding, determination or decision remained valid after the design exceptions were proposed. Typically design exceptions by themselves do not involve unusual circumstances or result in significant environmental impacts, making it highly unlikely that design exceptions alone would require an environmental review and documentation other than what is required for a CE action. For a project where the only Federal involvement is the approval of design exceptions, a CE would likely satisfy the NEPA evaluation and documentation requirements (as specified in 23 CFR 771).

FHWA Division Offices, State, or local agencies reviewing design exceptions also need to confirm proposed design exceptions are consistent with the project’s previously completed environmental review and any commitments that were made, for the purpose of complying with applicable environmental requirements (as specified in 23 CFR 771 and any equivalent State or local requirements).

The review and approval of design exceptions as a CE must be conducted in accordance with the State DOT-FHWA Stewardship and Oversight Agreement, any State DOT-FHWA CE Agreement, the State DOT’s design policies, and FHWA approval standards. Based on past experience, the review of design exceptions must verify they do not involve significant environmental impacts or unusual circumstances (as specified in 23 CFR 771.117(a) and (b)). The documentation of this information may vary based on the procedures and practices of each agency (i.e., Design Study Reports and Project Fact Sheets).