

Appendix 3-1

**STATE OF NEW HAMPSHIRE
INTRA-DEPARTMENT COMMUNICATION**

DATE: January 30, 2017

FROM: Margarete Baldwin, P.E.
Chief of Roadway Section

AT (OFFICE): Department of Transportation
Bureau of Highway Design

THRU: _____
John Butler, P.E.
Geometric SME

SUBJECT: Project
Federal Number
Project Number

TO: Assistant Commissioner, P.E.
Assistant Commissioner

THRU: _____	_____	_____
James Marshall, P.E. Administrator Highway Design	Victoria Chase, P.E. Project Manager	Peter Stamnas, P.E. Director of Project Development

MEMORANDUM

I hereby request that a design exception be approved to allow the use of lanes and shoulders narrower than recommended by the AASHTO Policy on Geometric Design of Highways and Streets for the proposed reconstruction and expansion of NH 101. The attached Design Exception Report outlines the AASHTO design guidelines for this type of facility and my justification for modifying the recommended criteria. Because this project is exempt from Federal Highway Administration oversight, FHWA approval of this design exception is not required.

DESIGN APPROVED:
NOT APPROVED:

William J. Cass, P.E.
Assistant Commissioner

TLR/tlr
Attachments

NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
DESIGN EXCEPTION REPORT

City: Bedford

Project No.: 13953

Route: NH 101

Federal No.: X-A000(143)

I. Project Description

NH 101 – reconstruct and expand roadway to improve traffic operations and safety.

A. Type of Work Proposed

- Full Depth Reconstruction
 3R/4R Rehabilitation
 New Construction

- Resurfacing/Box Widening
 Bridge Replacement/Rehabilitation
 Other: _____

B. Purpose of Project

- Safety Improvements
 Additional Capacity

- Maintenance
 Other: _____

II. Description of Facility

A. Functional Class

- Urban Freeway
 Urban Principal Arterial
 Urban Collector
 Urban Local

- Rural Freeway
 Rural Principal Arterial
 Rural Collector
 Rural Local

NHS

B. Federal Highway Administration approval required?

- Yes
 No

Explanation: Exempt from FHWA oversight

C. Traffic Volume

ADT (2017) 29,000 – 36,000 vpd

ADT (2037) 35,000 – 44,000 vpd

D. Speed

Existing Posted Speed
50 mph

Proposed Design Speed
50 mph

E. Project Context

The project extends along NH 101 approximately two miles from its intersection with Wallace Road on the west to its intersection with NH 114 and Boynton Street on the east. Both of these intersections are signalized as are the intervening intersections with Nashua

Road, Meetinghouse Road, and Old Bedford Road / Constitution Drive. NH 101 is a principal east-west commuter and commerce route and is subject to substantial recurring delays due to its high traffic volumes. The highway segments west of Nashua Road and near Old Bedford Road are heavily developed with retail and office establishments. Much of the rest of the project corridor is residential with access generally from the adjacent Town roads. In addition there are large wetland areas adjacent to the roadway.

III. Indicate Controlling Criteria Requiring A Design Exception

A. Roadway and Bridge Criteria *

- | | |
|--|--|
| <input type="checkbox"/> Design Speed | <input type="checkbox"/> Superelevation Rate |
| <input checked="" type="checkbox"/> Lane Width | <input type="checkbox"/> Stopping Sight Distance |
| <input checked="" type="checkbox"/> Shoulder Width | <input type="checkbox"/> Maximum Grade |
| <input type="checkbox"/> Horizontal Curve Radius | <input type="checkbox"/> Cross Slope |

B. Bridge Only Criteria *

- | | |
|---|---|
| <input type="checkbox"/> Vertical Clearance | <input type="checkbox"/> Design Loading Structural Capacity |
|---|---|

* See [Federal Register \(May 5, 2016\) Docket No. FHWA-2015-0020](#). On NHS facilities with a design speed less than 50 mph, only Design Speed and Design Loading Structural Capacity require a design exception.

AASHTO Policy on Geometric Design of Highways and Streets (2011)
used to develop this report

	STANDARD	PROPOSED	EXCEPTION?
Design Speed			No
Lane Width	12'	11'	Yes
Shoulder Width	8'	2' inner, 4' outer (5' with curb)	Yes
Horizontal Curve Radius			No
Superelevation Rate			No
Stopping Sight Distance			No
Maximum Grade			No
Cross Slope			No
Vertical Clearance			No
Design Loading Structural Capacity			No

IV. Justification

The proposed cross section consists of a four-lane divided highway with 11' lanes, narrow shoulders, a landscaped median, and a curbed sidewalk on one side of the roadway. Median openings will be provided where appropriate for access. The proposed 'boulevard' design will allow the project to achieve the following goals:

- **Traffic calming:** High travel speeds are a common safety concern along this segment of NH 101. Narrowing the lanes by one foot is a proven, although modest, traffic calming measure. The proposed 4' shoulders (5' with curb) will provide adequate width for cyclists while keeping the shoulder width to a minimum as a further traffic calming measure.
- **Access management:** The proposed landscaped median will manage access along the corridor by providing limited openings at strategic locations, thus improving the safety and efficiency of the roadway. In addition the curbing and landscaping of the median will contribute to the traffic calming objective of the design.
- **Natural resource impacts:** The reduced width of the proposed cross section as compared to the AASHTO standards will minimize direct impacts to the extensive abutting wetlands, and will substantially reduce the potential increase in impervious surfaces thus helping to minimize the extent of required water quality treatment that must be constructed.
- **Cost:** The reduced width of the proposed cross section will reduce the cost of construction, ROW acquisition, and environmental mitigation. The cost savings have not been quantified.