

*Plaistow-Kingston,  
Reconstruction of NH 125  
MGS-STP-T-X-5375 (010),  
10044B*

Plaistow and Kingston,  
New Hampshire

---

Prepared for **New Hampshire Department of Transportation and  
Federal Highway Administration**



Prepared by **VHB/Vanasse Hangen Brustlin, Inc.  
Bedford, NH**

October 2005



PLAISTOW – KINGSTON  
RECONSTRUCTION OF NH 125  
ROCKINGHAM COUNTY, NEW HAMPSHIRE


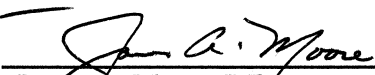
FINAL ENVIRONMENTAL ASSESSMENT & SECTION 4(F) EVALUATION

FHWA PROJECT NO. MGS-STP-T-X-5375(010)  
NHDOT PROJECT NO. 10044B  
Submitted Pursuant to  
49 USC 4332(2) (c), 49 USC 303, 16 USC 470(f), and  
33 USC 1344

by the

U.S. Department of Transportation  
Federal Highway Administration  
and  
New Hampshire Department of Transportation

October 2005

	<u>17 Oct 2005</u>		<u>October 17, 2005</u>
Kathleen O. Laffey Division Administrator Federal Highway Administration	Date	James A. Moore, P.E. Director of Project Development NH Department of Transportation	Date

The following people may be contacted for additional information concerning this document:

William O'Donnell, P.E.  
Environmental Program Manager  
Federal Highway Administration  
19 Chenell Drive, Suite One  
Concord, NH 03301  
603-228-3057, Ext. 101

Marc Laurin  
Senior Environmental Manager  
N.H. Department of Transportation  
PO Box 483  
Concord, NH 03302-0483  
603-271-4044



# Table of Contents

<b>1.0 Introduction .....</b>	<b>1-1</b>
<b>2.0 Proposed Action .....</b>	<b>2-1</b>
2.1 Project Purpose and Need.....	2-1
2.2 Description of Proposed Action.....	2-3
2.2.1 Intersection Designs.....	2-4
2.2.2 Service/Connector Roads .....	2-6
2.2.3 Access Management Elements.....	2-7
2.2.4 Median Widths .....	2-8
2.3 Project Costs.....	2-8
<b>3.0 Alternatives Considered.....</b>	<b>3-1</b>
3.1 Introduction .....	3-1
3.2 No-Build .....	3-1
3.3 Build Alternatives .....	3-2
3.4 Transportation System Management/ Transportation Demand Management .....	3-3
<b>4.0 Environmental Consequences and Identification of Mitigation Measures.....</b>	<b>4-1</b>
4.1 Introduction .....	4-1
4.2 Transportation Evaluation .....	4-1
4.2.1 Existing Traffic and Travel Characteristics .....	4-1
4.2.2 Crash Statistics .....	4-7
4.2.3 Future Traffic Conditions.....	4-9
4.2.4 Summary of Traffic Impacts .....	4-9
4.3 Wetlands.....	4-16
4.3.1 Introduction .....	4-16
4.3.2 Description of Existing Conditions.....	4-17
4.3.3 Summary of Impacts .....	4-23
4.3.4 Mitigation.....	4-26
4.3.4.1 Identification of Potential Compensatory Mitigation Opportunities .....	4-27
4.3.4.2 Development of the Mitigation Package .....	4-28
4.4 Surface Water Resources.....	4-33
4.4.1 Introduction .....	4-33

Gray Shading throughout this Final EA indicates changes made to the Draft EA dated September 2004.

	4.4.2	Description of Existing Conditions.....	4-34
	4.4.3	Summary of Impacts/Mitigation.....	4-35
4.5		Groundwater Resources.....	4-36
	4.5.1	Introduction .....	4-36
	4.5.2	Description of Existing Conditions.....	4-37
	4.5.3	Summary of Impacts/Mitigation.....	4-42
4.6		Floodplains.....	4-44
	4.6.1	Introduction .....	4-44
	4.6.2	Description of Existing Conditions.....	4-44
	4.6.3	Summary of Impacts/Mitigation.....	4-45
4.7		Farmlands.....	4-46
	4.7.1	Introduction .....	4-46
	4.7.2	Important Farmland Soils .....	4-46
	4.7.3	Active Farmlands .....	4-47
	4.7.4	Summary of Impacts/Mitigation.....	4-47
4.8		Wildlife and Fisheries Resources.....	4-48
	4.8.1	Introduction .....	4-48
	4.8.2	Wildlife Resources .....	4-48
	4.8.2.1	Upland Habitat Types .....	4-48
	4.8.2.2	Wetland Habitat Types .....	4-50
	4.8.2.3	Summary of Wildlife Impacts/ Mitigation.....	4-52
	4.8.3	Fisheries Resources .....	4-52
	4.8.3.1	Summary of Fisheries Impacts/Mitigation.....	4-53
4.9		Threatened and Endangered Species .....	4-54
	4.9.1	Introduction .....	4-54
	4.9.2	Description of Existing Conditions.....	4-55
	4.9.3	Summary of Impacts/Mitigation.....	4-55
4.10.		Air Quality .....	4-56
	4.10.1	Introduction .....	4-56
	4.10.2	Modeling Methodology.....	4-56
	4.10.3	Existing Conditions.....	4-58
	4.10.4	Project Impacts .....	4-59
	4.10.5	Construction Impacts .....	4-62
	4.10.6	Summary.....	4-62
4.11		Noise.....	4-63
	4.11.1	Introduction .....	4-63
	4.11.2	Methodology.....	4-65
	4.11.3	Existing Conditions.....	4-67
	4.11.4	Project Impacts .....	4-69
	4.11.5	Construction Noise Impacts .....	4-69
	4.11.6	Mitigation.....	4-71
	4.11.7	Summary.....	4-71
	4.11.8	Future Noise Levels for Planning Purpose.....	4-73
4.12		Parks, Recreation and Conservation Lands .....	4-73
	4.12.1	Introduction .....	4-73

4.12.2	Description of Existing Resources .....	4-74
4.12.3	Summary of Impacts/Mitigation.....	4-74
4.13	Visual Resources .....	4-74
4.13.1	Introduction .....	4-74
4.13.2	Description of Existing Conditions.....	4-74
4.13.3	Summary of Impacts/Mitigation.....	4-75
4.14	Cultural Resources .....	4-75
4.14.1	Regulatory Background.....	4-75
4.14.2	Archaeological Resources .....	4-77
4.14.2.1	Introduction .....	4-77
4.14.2.2	Definitions .....	4-77
4.14.2.3	Methods .....	4-78
4.14.2.4	Previously Recorded Pre-Contact Native American Archaeological Sites .....	4-81
4.14.2.5	Previously Recorded Historic Euro-American Archeological Sites .....	4-89
4.14.2.6	Summary of Impacts/Mitigation .....	4-94
4.14.3	Historic Architectural Resources .....	4-94
4.14.3.1	Methods and Procedures.....	4-94
4.14.3.2	Individual Properties and Historic Districts Eligible for the National Register of Historic Places .....	4-98
4.14.3.3	Properties Requiring Additional Information .....	4-100
4.14.3.4	Summary of Impacts/Mitigation .....	4-101
4.15	Socio-Economic Resources.....	4-105
4.15.1	Introduction .....	4-105
4.15.2	Description of Existing Conditions.....	4-105
4.15.3	Summary of Impacts / Mitigation.....	4-107
4.15.4	Environmental Justice .....	4-109
4.16	Hazardous Materials .....	4-110
4.16.1	Introduction .....	4-110
4.16.2	Description of Existing Conditions.....	4-111
4.16.3	Summary of Impacts/Mitigation.....	4-117
4.17	Construction Impacts .....	4-118
4.18	Summary of Project Impacts .....	4-120
<b>5.0</b>	<b>Section 4(f) Evaluation.....</b>	<b>5-1</b>
5.1	Introduction .....	5-1
5.2	Description of Proposed Action.....	5-1
5.3	Description of Section 4(f) Resources .....	5-2
5.4	Impacts on Section 4(f) Properties.....	5-3
5.5	Avoidance .....	5-4
5.6	Measures to Minimize Harm/Mitigation .....	5-5
5.7	Coordination.....	5-5
5.8	Summary.....	5-6
<b>6.0</b>	<b>Agency Coordination/Public Participation.....</b>	<b>6-1</b>
6.1	Natural Resource Agency Reviews .....	6-1
6.2	Cultural Resources Meetings.....	6-1
6.3	Other Meetings .....	6-2

7.0 References Cited .....7-1

**Figures**

**Appendices**

- Appendix A Wetland Impact Database Summary
- Appendix B Salt Data for Surface Waters and Public Wells, Plaistow and Kingston
- Appendix C Farmland Conversion Impact Rating Form
- Appendix D Consultation Relative to Threatened and Endangered Species, and Exemplary Natural Communities
- Appendix E Historic Resources Documentation
- Appendix F List of Preparers
- Appendix G Project Commitments
- Appendix H Conceptual Relocation Study
- Appendix I Correspondence Relative to Draft EA
- Appendix J Report of the Commissioner
- Appendix K Report of the Special Committee and Meeting Minutes



# Figures

<b>Figure No.</b>	<b>Description</b>
1.0-1	Project Location Map NH 125 Corridor Study
2.2-1 thru 2.2-15	Proposed Action
2.2-16	Typical Section of Improvements NH 125
4.2-1	Daily Traffic Variations NH 125 in Kingston
4.4-2	Hourly Variations in Weekday Traffic NH 125 in Kingston
4.2-3	Hourly Variations in Saturday Traffic NH 125 in Kingston
4.2-4	2001 Existing Conditions Weekday Morning Peak Hour Traffic Volumes
4.2-5	2001 Existing Conditions Weekday Evening Peak Hour Traffic Volumes
4.2-6	2004 No Build Weekday Morning Peak Hour Traffic Volumes
4.2-7	2004 No Build Weekday Evening Peak Hour Traffic Volumes
4.2-8	2024 No Build Weekday Morning Peak Hour Traffic Volumes
4.2-9	2024 No Build Weekday Evening Peak Hour Traffic Volumes
4.2-10	2024 Build Weekday Morning Peak Hour Traffic Volumes
4.2-11	2024 Build Weekday Evening Peak Hour Traffic Volumes
4.3-1	Wetland and Surface Water Resources (2 Sheets)
4.3-2	Sullivan Properties & Bayberry Pond Kingston, New Hampshire
4.3-3	Kelly Brook Watershed Conservation Area Plaistow, New Hampshire
4.3-4	Conceptual Mitigation Design Sullivan Properties (Map R-5, Lot 20) Kingston, New Hampshire
4.5-1	Groundwater Resources (2 Sheets)
4.5-2	Wells and Wellhead Protection Areas (2 Sheets)
4.6-1	Floodplains and Floodways and Watershed Boundaries (2 Sheets)
4.7-1	Important Farmland Soils (2 Sheets)
4.10-1	Air Quality Intersections and Receptor Locations (2 Sheets)
4.11-1	Noise Receptor Areas (2 Sheets)
4.12-1	Conservation Lands (2 Sheets)
4.14-1	Recorded Archaeological Sites in the Vicinity of the NH 125 Project (2 Sheets)
4.14-2	Cultural Resources (2 Sheets)
4.15-1	Existing Zoning (2 Sheets)
4.16-1	Potential Petroleum, Solid Waste and Hazardous Material Sites
5.4-1	Section 4(f) Impacts – Morey Stegmaier House
5.4-2	Section 4(f) Impacts – Tozier House



# Tables

Table No.	Description	Page
4.2-1	NH 125 Traffic Volumes (November/December 2001) .....	4-2
4.2-2	2001 Existing Roadway Segment Capacity Analyses Summary .....	4-5
4.2-3	2001 Existing Signalized Capacity Analyses Summary .....	4-5
4.2-4	2001 Existing Unsignalized Capacity Analyses Summary .....	4-6
4.2-5	NH 125 Crash Summary (1996 – 2002) .....	4-7
4.2-6	Crash Summary by Surface Condition, Season and Year .....	4-8
4.2-7	2004 No-Build Roadway Segment Capacity Analyses Summary .....	4-10
4.2-8	2004 No-Build Signalized Capacity Analyses Summary .....	4-10
4.2-9	2004 No-Build Unsignalized Capacity Analyses Summary .....	4-11
4.2-10	2024 No-Build Roadway Segment Capacity Analyses Summary .....	4-12
4.2-11	2024 No-Build Signalized Capacity Analyses Summary .....	4-12
4.2-12	2024 No-Build Unsignalized Capacity Analyses Summary .....	4-12
4.2-13	2024 Build Roadway Segment Capacity Analyses Summary .....	4-14
4.2-14	2024 Build Signalized Level of Service Summary .....	4-15
4.2-15	2024 Build Unsignalized Level of Service Summary .....	4-15
4.3-1	Summary of Wetland Functions and Values Assessment .....	4-24
4.3-2	Summary of Permanent Wetland Impacts for Which Mitigation Is Proposed.....	4-25
4.3-3	Impacts by Wetland Type .....	4-25
4.5-1	Community (C) and Non-Community/Non-Transient (P) public wells with Drinking Water Protection Areas either crossed or within 500 feet of NH 125.....	4-39
4.5-2	Non-Community, Transient (N) public wells along NH 125.....	4-40
4.5-3	Summary of Groundwater Protection Measures and Applicability .....	4-41
4.8-1	Results of Electroshocking Sampling of Little River, Plaistow, September 20, 1984. ....	4-53
4.8-2	Perennial Stream Impacts Associated With Culvert Crossings.....	4-54
4.10-1	Predicted Maximum 1 Hour CO Concentrations (Parts Per Million) .....	4-59
4.10-2	Predicted Maximum 8 Hour CO Concentrations (Parts Per Million) .....	4-60
4.11-1	Indoor and Outdoor Sound Levels .....	4-64
4.11-2	Noise Abatement Criteria (NAC) One-Hour, A-Weighted Sound Levels in Decibels (dBA).....	4-65
4.11-3	Receptor Areas by Land Use .....	4-66
4.11-4	Comparison of Noise Monitoring and Prediction Data .....	4-67
4.11-5	Sound Levels .....	4-68

4.11-6	Construction Equipment Noise Emissions .....	4-70
4.11-7	Noise Impact Summary.....	4-72
4.14-1	Summary of Archaeological Sites in the Vicinity of the Project Area .....	4-88
4.14-2	Archaeologically Sensitive Areas Requiring Further Phase I-B Investigation .....	4-93
4.14-3	List of Properties over 50 years old along the Study Corridor .....	4-95
4.15-1	Demographic Data for Plaistow and Kingston as Compared to Rockingham County .....	4-105
4.15-2	Racial Makeup (Percent) of Plaistow and Kingston as Compared to Entire County.....	4-106
4.15-3	Occupation Mix (Percent) for Plaistow and Kingston as Compared to Entire County.....	4-106
4.16-1	Results of Hazardous Materials Database Search .....	4-110
4.16-2	LUST Sites Identified in the NHDES Databases for Plaistow .....	4-112
4.16-3	UST Sites Identified in the NHDES Databases for Plaistow .....	4-113
4.16-4	LUST Sites Identified in the NHDES Databases for Kingston .....	4-115
4.16-5	UST Sites Identified in the NHDES Databases for Kingston .....	4-116
4.18-1	Summary of Project Impacts.....	4-120

# 1

## Introduction

This Environmental Assessment (EA) for the Plaistow-Kingston project has been prepared in compliance with the National Environmental Policy Act of 1969. It presents an overview of the project's purpose and need, a detailed description of the Proposed Action (i.e., preferred project alternative), a brief description of other alternatives that were considered, and an evaluation of the environmental consequences of the Proposed Action. Mitigation measures for unavoidable adverse impacts are also described.

This report provides supporting documentation for a wetlands permit from the US Army Corps of Engineers (ACOE) pursuant to Section 404 of the Clean Water Act, as well as for a permit from the New Hampshire Wetlands Bureau under RSA 482-A. This document also fulfills the requirements of Section 106 of the National Historic Preservation Act of 1966, Section 6(f) of the Land and Water Conservation Fund Act, Section 4(f) of the National Transportation Act of 1966, and Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands).

The New Hampshire Department of Transportation (NHDOT) and Federal Highway Administration (FHWA) propose to improve NH 125 within the towns of Plaistow and Kingston. The study area (**Figure 1.0-1**) consists of a 9.6 kilometers (6 miles) corridor along NH 125 extending from the East Road/Joanne Drive intersection in Plaistow to the NH 111 (Main Street) intersection in Kingston.

The project consists of the reconstruction and widening of NH 125 from its current two lanes to four travel lanes, i.e., two through lanes in either direction, from the East Road/Joanne Drive intersection to the Hunt Road/Newton Junction Road intersection – a distance of approximately 5.9 kilometers (3.6 miles). North of Hunt Road/Newton Junction Road - for a distance of approximately 3.7 kilometers (2.4 miles) - the existing two-lane section will, for the most part, be maintained. Modifications to this northern section of the study corridor will include improvements to the highway shoulder area and the provision of a center left-turn lane at key intersections.

The Hunt Road/Newton Junction Road intersection reconstruction and widening (Kingston #10044C) project was separated out of the overall corridor project because of the numerous safety-related issues and a high accident rate associated with the intersection's existing configuration. This improvement had independent utility due

to these safety issues. The communities of Plaistow and Kingston also considered the intersection a high priority and asked that the design and construction of the project be accelerated. As part of the project, Hunt Road and Newton Junction Road will be realigned to form a more conventional four-way, signalized intersection. Two through lanes and an exclusive left-turn lane will also be provided along NH 125 at this intersection. The intersection is currently under construction and is scheduled for completion in 2005. The overall corridor improvements will be designed to match into the Hunt Road/Newton Junction Road project. Impacts related to the project were addressed in the Categorical Exclusion/Section 4(f) Evaluation, June 2003 Revised (NHDOT 2003).

To minimize the overall corridor roadway widening and to extend the functional life of the corridor, the project incorporates a comprehensive access management plan, which improves the efficient movement of traffic while enhancing the safe and efficient access to and from abutting properties. Elements of the access management plan include the use of raised center median throughout the four-lane section, traffic signal control, exclusive left-turn lanes, the construction of connector or service roads, jug-handles, emergency vehicle turnarounds, and directional median openings. Directional median openings are designed to allow motorists to turn left from the corridor onto a side street or driveway (or reverse direction) while prohibiting left-turn movements onto the corridor from the adjacent properties. Additionally, to enhance the character of the corridor and to introduce a "traffic calming" element, the raised center median will be landscaped.

In addition to incorporating these numerous access management elements into the design of the project, the NHDOT has prepared and provided the towns of Plaistow and Kingston a detailed corridor access management manual. The manual provides guidelines on such features as driveway spacing, driveway widths, throat lengths, and shared access connections. The manual also identifies the locations of potential future connector or service roadways. The access management plan provides the towns of Plaistow and Kingston a tool to better manage future growth along the corridor.

## Proposed Action

---

### 2.1 Project Purpose and Need

The State of New Hampshire's plan for transportation improvement projects, known as the "Ten Year Transportation Improvement Program," lists the NH 125 project as the "reconstruction from East Road in Plaistow northerly approximately 9.6 kilometers (6.0 miles) to NH 125 & Main Street intersection in Kingston." To address this deficient segment of the highway, the overall purpose of the project (also referred to as the "Westville Bridge to Kingston Bypass Project") is to improve capacity and safety, relieve traffic congestion, and enhance the safe and efficient access to and from abutting properties along the corridor. This project is consistent with previous improvements that have been made to the southern and northern termini of the project.

NH 125 in Plaistow and Kingston was constructed in the mid 1950's as a two-lane north-south state highway. Since then, some sections of the corridor have been reconstructed or widened in an effort to accommodate traffic growth in the area.

The Kingston Bypass, which now allows through traffic to circumvent Main Street and the village area in Kingston, was constructed in the mid 1960's. The southernmost segment of NH 125 in Plaistow (south of the study area) was widened to a four-lane section in the 1980's. More recently, in 1992, the NHDOT reconstructed the Westville Bridge, which spans the railroad line, just south of East Road. The NHDOT also constructed a new intersection on NH 125 in Kingston at NH 111 in 1996. This new intersection is the northern terminus of the study area. The study corridor, which extends from the Westville Bridge to NH 111, is the remaining unimproved segment of NH 125 in Plaistow and Kingston.

A Feasibility Study for the NH 125 Corridor<sup>1</sup> in Plaistow and Kingston was completed in 1999. The study evaluated the corridor's existing and future transportation needs and developed a comprehensive plan and program of



<sup>1</sup> Feasibility Study NH 125 Plaistow and Kingston, New Hampshire; Vanasse Hangen Brustlin Inc., 1999

improvements and strategies to meet those needs. The study presented both an interim improvement plan and a long-range improvement plan. An important element of the long-term plan was the incorporation of corridor access management strategies.

The NHDOT has constructed three of the interim improvements that were recommended in the Feasibility Study. These improvements in Kingston included the installation of a traffic signal with an exclusive northbound left-turn lane at the New Boston Road intersection and the provision of left-turn and right-turn lanes on NH 125 at Old Coach Road in 2000, and the widening of NH 125 in Plaistow at NH 121A (Main Street) to provide turn lanes on each approach to the intersection in 2001.

Of the long-range improvements, the realignment and signalization of the Hunt Road/Newton Junction Road intersection in Kingston was identified as a high priority project by both Plaistow and Kingston due to the many safety-related deficiencies. As a result, the NHDOT has advanced this intersection project, with construction started in April 2004. The improvement was completed in 2005.

NH 125 has been classified as part of the National Highway System (NHS) as a principal arterial in accordance with its significance as an important transportation link in the state and regional system. The highway is a major commuter route and commercial business and shopping corridor. During the summer months, the highway also serves as a primary travel route for motorists destined to recreational activity further north and east. Truck traffic, which comprises approximately 10 percent of the daily traffic, is also a substantial part of the traffic volume along the corridor. Given the limited corridor capacity of the two-lane highway, there is an inherent conflict between through traffic and local traffic, which is exacerbated by a general lack of access control. Currently, the southern end of the corridor carries approximately 23,000 vehicles per day (vpd), while the northerly end carries approximately 14,000 vpd. Over the next 20 years this volume is expected to increase to approximately 31,000 vpd and 20,000 vpd along the southern and northern ends, respectively.

During peak hours of the day, the corridor currently operates at a poor level of service<sup>2</sup> (LOS D and E) with motorists experiencing congestion particularly along the southern segments of the corridor. Motorists often use local roadways in an effort to avoid the congestion on the corridor. Left-turn exiting movements from most of the driveways and unsignalized side street intersections operate poorly with long delays.

The numerous uncontrolled driveways along the corridor not only adversely impact the efficient flow of traffic along the corridor, but also create a potentially hazardous and confusing condition as motorists enter and exit the highway. The absence of

▼  
2 Level of Service (LOS) is a qualitative measure of traffic operations ranging from LOS A to LOS F with LOS A representing the best operating condition and LOS F representing the worst (failure).



protected left-turn lanes and shoulders often leaves motorists stopped in the high volume through lane waiting to turn left. Additionally, many of the side streets intersect the corridor at skewed angles or at locations where sight lines are limited due to rolling vertical alignment. A review of vehicle crash records for the seven-year period of 1996 through 2002 has shown a total of 457 crashes over the 9.6 kilometers (6.0 miles) section of NH 125 with one of every three crashes involving a personal injury. Two fatal crashes were reported.

NH 125 runs north/south through Rockingham County, which has experienced substantial population growth in the last 30 years. According to the NH Office of Economics and Planning (OEP), the population of Rockingham County has doubled between 1970 and 2000 and is expected to increase by an additional 40 percent between 2000 and 2020. This increase is representative of the communities adjacent to, and surrounding, NH 125.

As development and traffic growth along the corridor continue, traffic operations and safety conditions are expected to continue to deteriorate. In addition to the development of an improved facility, this project provides the towns of Plaistow and Kingston and the NHDOT a unique opportunity to work closely with corridor landowners toward the development of a comprehensive access management plan that, in combination with an improved facility, would increase corridor mobility, preserve corridor capacity, and enhance public safety.

---

## 2.2 Description of Proposed Action

The Proposed Action will provide two through lanes in each direction along NH 125 from East Road in Plaistow north  $\pm$  6.2 km (3.9 miles) to Hunt Road/Newton Junction Road in Kingston. North of Hunt Road/Newton Junction Road, the roadway will transition to a single lane in each direction. A raised center median will separate directional flow throughout the four-lane section with median openings provided to accommodate left-turn movements. Exclusive left-turn lanes, traffic signal control, and full access/egress would be provided at nine major intersections. In addition, a series of access management elements have been incorporated into the plan. These elements include connector or service roads, shared driveways, reverse direction opportunities for trucks and emergency vehicles at jughandles, and directional median openings. Directional median openings allow motorists to turn left from the corridor onto a particular side street or driveway while prohibiting left-turn movements onto the corridor from adjacent properties. To enhance the character of the corridor and to provide a “traffic calming” effect, the raised center median will be landscaped. The access management measures will improve the efficient movement of traffic, while enhancing the safe and efficient access to and from abutting properties. A plan view of the Proposed Action is shown in **Figures 2.2-1 through 2.2-15**.

The Proposed Action will widen NH 125 to a four-lane median divided cross section (**Figure 2.2-16**) beginning at East Road in Plaistow through the Hunt Road/Newton Junction Road project in Kingston. This four-lane section of the roadway will be comprised of two 3.6-meter (12-foot) travel lanes in each direction with a 6-meter (20 feet) median. A 1.5 meter (5 feet) paved shoulder will be provided on each side of the roadway resulting in a total width of 23.4 meters (78 feet) (**Figures 2.2-1 through 2.2-10**). The widening will be constructed equally about the center of the existing roadway, except for the section of NH 125 between Dorre Road and Debra Road, and the area through the Hunt Road/Newton Junction Road intersection (construction completed in 2005). Between Dorre Road and Debra Road the widening has been shifted entirely to the west side (**Figures 2.2-7 and 2.2-8**). This will provide an appropriate grade for the northerly connection to Colonial Road, and avoid impacts to the Happy Hollow Cemetery (**Figure 2.2-7**). The widening was shifted to the east through the Hunt Road/Newton Junction Road intersection to avoid impacts to the Isaac Webster House, which is eligible for the National Register of Historic Places (**Figures 2.2-9 through 2.2-11**).

The Hunt Road/Newton Junction Road intersection improvements will match into the improvements constructed in 2000 at the Old Coach Road intersection (**Figure 2.2-11**). A two-lane cross section (**Figure 2.2-16**) is proposed on NH 125 from the Old Coach Road intersection, northerly approximately 2.1 km (1.3 miles). In this area NH 125, will be widened approximately 1.5 meters (5 feet) to each side to provide two 3.6-meter (12-foot) lanes with 3-meter (10-foot) shoulders for a total width of 13.2 meters (44 feet) (**Figures 2.2-11 through 2.2-15**). A three-lane section will be provided along the segment of NH 125 that extends from 200 meters ( $\pm 650$  feet) south of Meeks Road to 200 meters ( $\pm 650$  feet) north of Stoney Brook Road (**Figures 2.2-12 through 2.2-14**). The proposed roadway width will be the same [13.2 meters (44 feet)] for both the two-lane and three-lane sections. The shoulders will be narrowed to 1.2 meters (4 feet) wherever a center-turn-lane is provided.



---

## 2.2.1 Intersection Designs

Twenty-eight intersecting side roads exist within the project area. Three of these intersections (East Road, NH 121A, and NH 111) are signalized today. All of these intersections were studied to identify improvements necessary to meet the project purpose and need, i.e., improve capacity and safety, relieve traffic congestion, and enhance the safe and efficient access to abutting properties.

The Proposed Action will provide six additional signalized intersections: the proposed service road opposite the old Drive-In site, Danville Road, and Old County Road in Plaistow; and Kingston Road Extension/Roadstone Drive, Debra Road/Colonial Road, and Hunt Road/Newton Junction Road in Kingston. Signal timing will be coordinated where possible. Most of these intersecting side roads will be widened to provide additional turning lanes. Three of these intersections (Kingston Road Extension/Roadstone Drive, Debra Road/Colonial Road, and Hunt

Road/Newton Junction Road) will be realigned to reduce turning conflicts and create four-way intersections. One of these intersections is a new signalized intersection that would access a proposed service road in Plaistow, opposite the old Drive-In Theatre property located approximately 650 meters (0.4 miles) north of the East Road intersection. In addition, two existing side street intersections (Granite Road and the southernmost Colonial Road intersection) will be eliminated.

At the new signalized intersection, which will be constructed opposite the old Drive-In Theatre property, the existing drive that runs between Village Curtain Shops and John Deere properties will be widened to accommodate separate turn lanes at the intersection. This will serve as an access road to a new service road east of, and parallel to, NH 125 that will provide access to the traffic signal controlled intersection for several businesses.

A fourth leg will be provided at the NH 125/Danville Road intersection opposite Danville Road. This will provide access to the traffic signal for the existing Petro King/Dunkin' Donut property and any future development on the adjacent parcel of land on the east side of NH 125 (Figure 2.2-3).

### **Relocated/Reconfigured Intersections**

The Proposed Action will realign five existing "T-type" unsignalized intersections to form three four-way signalized intersections (Figure 2.2-7, 2.2-8 and 2.2-10). The realignment of these intersections will reduce turning conflicts along NH 125 by reducing the number of intersections.

Kingston Road will be realigned (along the existing Granite Road) and relocated approximately 520 meters (1,700 feet) north to intersect opposite Roadstone Drive (Figure 2.2-7). Access to NH 125 at the existing intersection of Kingston Road will be discontinued. Lane use along NH 125 at the new intersection will consist of two through lanes and an exclusive left-turn lane in each direction. Additionally, a slip lane to Kingston Road will be constructed in the northbound direction to allow large trucks on NH 125 to reverse direction and access Kingston Road Extension.

Debra Road will be realigned and relocated approximately 120 meters (400 feet) south to intersect NH 125 opposite the realigned northern end of Colonial Road (Figure 2.2-8). Access to NH 125 at the southern end of Colonial Road will be discontinued. Lane use along NH 125 at the new intersection will consist of two through lanes and an exclusive left-turn in each direction. Traffic flow will be controlled with the installation of a traffic signal. In addition, a slip lane to Debra Road will be provided in the southbound direction to allow large trucks to reverse direction.

The Proposed Action will incorporate all of the recently constructed improvements of the Hunt Road/Newton Junction Road project (Figure 2.2-9 and 2.2-10). As part of that project (Kingston #10044C), Hunt Road and Newton Junction Road were

realigned to form a more conventional four-way, signalized intersection. Hunt Road was shifted approximately 15 meters (50 feet) to the south, while Newton Junction Road was shifted approximately 40 meters (130 feet) to the north. Two through lanes and an exclusive left-turn lane were provided along NH 125 at this intersection. The realignment of these two roadways balances the impacts to resources in the area by minimizing impacts to the historic property (Isaac Webster House) in the southwest quadrant of the intersection and avoiding impacts to the historic district along Newton Junction Road. Specific details on impacts for this project are documented in the Categorical Exclusion/Section 4(f) Evaluation, June 2003 Revised (NHDOT, 2003). This document is on file at NHDOT and is available on request.

## Eliminated Intersections

Access for two side roads that currently intersect with NH 125 will be eliminated by the Proposed Action.

The Granite Road intersection with NH 125 will be discontinued due to the extension/relocation of the Kingston Road along portions of Granite Road to intersect 520 meters (1,700 feet) to the north opposite Roadstone Drive (**Figure 2.2-6**).

The southerly intersection of Colonial Road (**Figure 2.2-8**) will be eliminated. A turnaround will be constructed at the discontinued end of Colonial Drive.

In addition to these eliminated intersections, access and egress from NH 125 will be limited to right-turn only to the new service road, at Old Road, to Rose Avenue, and to Jesse George Road due to the raised center median (**Figures 2.2-2 and 2.2-3**).



---

## 2.2.2 Service/Connector Roads

The Proposed Action will include two service or connector roads. The proposed cross section for these service roads is a two-lane section with 3.6-meter (12-foot) lanes and 1.2-meter (4-foot) shoulders. New driveways will be constructed to the service roads as a part of this project.

The existing driveway that extends between the Village Curtain Shops and John Deere properties, located approximately 650 meters (0.4 miles) north of the East Road intersection, will be widened to accommodate separate turn lanes at the intersection. This will serve as an access road to a new service road that will provide traffic signal controlled access from NH 125 to several businesses in the rear (**Figures 2.2-1 and 2.2-2**). From the access road, the new service road would extend southerly for approximately 200 meters ( $\pm 650$  feet) and northerly approximately 650 meters ( $\pm 1,025$  feet). The service road layout minimizes property and wetland impacts.

The existing connection of Kingston Road will be extended northerly to a new signalized intersection opposite Roadstone Drive (**Figures 2.2-6 and 2.2-7**). The

layout uses a portion of existing Granite Road to minimize impacts to a steep hill on the east side. Kingston Road extension will be widened at the intersection to provide separate turn lanes.



---

### 2.2.3 Access Management Elements

The Proposed Action also includes a series of access management features that are aimed at accommodating truck movement, enhancing emergency vehicle response time, and providing safe and efficient access to commercial properties and businesses. These features consist of the construction of jug-handles, emergency vehicle turnarounds, and directional median openings.

Three jug-handles are proposed to be constructed for trucks to reverse direction along the NH 125 corridor (**Figures 2.2-1, 2.2-4, and 2.2-10**). Jug-handles would be located in the northeast quadrant of the NH 125/Joanne Drive intersection, on the east side of NH 125 opposite Walton Road, and on the west side of NH 125 just north of the Hunt Road/Newton Junction Road intersection.

Slip lanes will be provided at two signalized intersections to provide additional opportunities for large trucks to reverse direction. These slip lanes will be located in the southeast quadrant of the NH 125/Kingston Road Extension intersection (**Figure 2.2-7**) and the northwest quadrant of the NH 125/Debra Road intersection (**Figure 2.2-8**).

Additionally, the Danville Road/Jesse George Road intersection (**Figure 2.2-3**) will be realigned to better accommodate truck turning movements to provide opportunities for northbound trucks to reverse direction along Danville and Jesse George Roads.

Nine directional median openings will be constructed along NH 125 between NH 121A and the Hunt Road/Newton Junction Road intersection in Kingston (**Figures 2.2-4 through 2.2-9**). These median openings will allow left turns to enter selected driveways or side roads, but will not allow left turns to exit these locations.

To provide opportunities for emergency vehicles to reverse direction, four median openings with widened shoulders will be constructed along NH 125 between Old County Road in Plaistow and the Hunt Road/Newton Junction Road intersection in Kingston (**Figures 2.2-5 through 2.2-9**). These median openings will be integrated with other openings (i.e., directional median openings) to provide opportunities to reverse direction and access the opposite side of the highway. Widened pavement will also be provided at the NH 125/Old County Road (**Figures 2.2-5**) and NH 125/Roadstone Drive (**Figures 2.2-7**) intersections to permit emergency vehicles to reverse direction at signalized intersections.



---

## 2.2.4 Median Widths

The Proposed Action provides three different median widths to separate the northbound and southbound traffic along NH 125:

- A 6-meter (20-foot) median, consisting of a 4-meter (16-foot) wide curbed landscaped area with 0.6-meter (2-foot) wide paved shoulders on either side. Within the influence of intersections, the landscaped area will be narrowed to provide a 3-meter (10-foot wide) turning lane. This median is proposed along NH 125 from East Road in Plaistow through the Hunt Road/Newton Junction Road intersection in Kingston, except at the intersection of NH 121A, as described below.
- A 9.6-meter (32-foot) median, consisting of an 8.4-meter (28-foot) wide curbed landscaped area with 0.6-meter (2-foot) wide paved shoulders on either side. This median is proposed along NH 125 at the NH 121A intersection. The additional 3.6-meter (12-foot) width will accommodate two left-turn lanes in the northbound direction, heading westbound on NH 121A.
- A 3.6-meter (12-foot) paved center turn lane. This center-turn-lane is proposed at the approaches to Meeks Road. The overall roadway width will remain 13.2 meters (44 feet). The shoulders will be narrowed from 3 meters (10 feet) to 1.2 meters (4 feet) to provide the additional width for the center-turn-lane.

---

## 2.3 Project Costs

The project is estimated to cost approximately \$31.5 million. The cost includes such elements as construction, preliminary engineering, and right-of-way acquisition.

# Alternatives Considered

---

## 3.1 Introduction

Four Build Alternatives as well as the No-Build Alternative were considered in planning for this project. All of the build alternatives involved widening the existing NH 125 corridor between East Road in Plaistow and Main Street (NH 111) in Kingston with access management enhancements. This section of the EA provides a summary of the alternatives that were considered including possible Transportation Demand Management/Transportation Systems Management measures.

---

## 3.2 No-Build

The No-Build Alternative consists of maintaining the existing roadway of NH 125 from East Road in Plaistow, northerly for a distance of approximately 9.6 kilometers (6 miles), to NH 111 in Kingston.

Existing NH 125 consists of two 3.6-meter (12-foot) travel lanes and shoulder widths that vary from 1.2 meters (4 feet) to 3.0 meters (10 feet). Interim improvements to widen NH 125 to three lanes have been constructed at the intersections of NH 121A in Plaistow and Old Coach Road in Kingston. Additionally, the realignment of the Hunt Road/Newton Junction Road intersection in Kingston, deemed a high priority by both communities, was separated out from the overall project in 2003, with its construction completed in 2005. Environmental impacts for this project were documented in a Categorical Exclusion/Section 4(f) Evaluation, June 2003 Revised (NHDOT, 2003). This document is on file at NHDOT and available on request.

The No-Build Alternative is essentially the continuation and perpetuation of the existing conditions and the shortcomings inherent along the existing corridor. The corridor currently operates at a poor level of service with motorists often using local roadways to avoid the congestion on the corridor. The numerous uncontrolled driveways along the corridor not only adversely impact the efficient flow of traffic along the corridor, but also create a potentially hazardous and confusing condition as motorists enter and exit the highway. A review of vehicle crash records for the seven-year period of 1996 through 2002 reveals a total of 457 crashes over the 9.6-kilometer (6.0-mile) section of NH 125 with one of every three crashes involving a personal injury. Two fatal crashes were reported. As development and traffic

growth along the corridor continue, traffic operations and safety conditions under the No-Build Alternative are expected to continue to deteriorate.

---

### 3.3 Build Alternatives

Four alternative Build alignments were considered for the proposed upgrade of NH 125 in Plaistow and Kingston. These Build Alternatives were:

- **Alternative 1.** Maintaining the existing centerline, and widening equally to the east and west.
- **Alternative 2.** Maintaining the existing edge of pavement on the east side, and widening entirely to the west.
- **Alternative 3.** Maintaining the existing edge of pavement on the west side, and widening entirely to the east.
- **Alternative 4.** Primarily widening equally to both sides of the road, with a shift to the west between Dorre Road and Debra Road, and a shift to the east at the Hunt Road/Newton Junction Road intersection. This alternative is a combination of the first three alternatives.

Alternative 1 was investigated as the logical first step to widening the roadway while minimizing impacts. Due to the proximity of businesses and homes to the highway, this alternative provided the least impact throughout most of the corridor, except for the section of NH 125 between Dorre Road and Debra Road, and the section through the Hunt Road/Newton Junction Road intersection. Widening equally to the east and west would substantially impact both sides of the roadway in these two areas, including businesses, residences, the Happy Hollow Cemetery on the east side of NH 125 opposite Dorre Road, and the Isaac Webster House south of Hunt Road/Newton Junction Road intersection on the west side of NH 125.

Alternative 2, widening entirely to the west, would avoid impacts to Happy Hollow Cemetery, but would impact many businesses and residences on the west side, including the Isaac Webster House. Likewise, Alternative 3 would avoid the Isaac Webster House, but would impact businesses and residences on the east side, including Happy Hollow Cemetery.

Impacts to numerous businesses, residences, and sensitive cultural and natural resources, resulting from Alternatives 1, 2, and 3 were determined to be unacceptable. Alternative 4 was developed as a combined alternative incorporating the best solutions from each. As a consequence, only Alternative 4 was carried forward for additional evaluation



Several options were also considered for each of the intersection locations and service/connector roadways. The descriptions of intersection and service roadway designs provided in Section 2.2 represent the alternatives selected, which best satisfy the needs of access and traffic movement, while avoiding or minimizing environmental impacts wherever possible.

In addition, an important element of the Build alternative was the incorporation of good access management techniques. Access management is “the systematic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway.”<sup>3</sup> Along a busy commercial corridor such as NH 125, a well conceived access management plan would improve the efficient movement of traffic while enhancing the safe and efficient access to and from abutting properties. Some specific benefits of access management include:

- Safer and more efficient access to properties,
- Fewer and less severe automobile crashes,
- Fewer auto/pedestrian conflicts,
- Less congestion,
- Reduced travel delays,
- Reduced fuel consumption,
- Increased and preserved capacity,
- Enhanced corridor aesthetics,
- Enhanced community character, and
- Preserved neighborhood integrity.

Through numerous public meetings and workshops, the towns of Kingston and Plaistow and the NHDOT concluded that any upgrade of the NH 125 corridor should incorporate a comprehensive access management plan. Therefore, the access management elements were incorporated into each of the Build alternatives.

The primary elements of the access management plan include well-spaced traffic signals, a raised center median, connector roadways, directional median openings, jug-handles, and emergency vehicle turnarounds.

Alternative 4, which includes the access management elements, is the Proposed Action and was described in more detail in Section 2.2.

---

### **3.4 Transportation System Management/ Transportation Demand Management**

Short range, moderate cost measures to reduce congestion and enhance safety and capacity on an existing transportation system or roadway network are considered to

▼  
3 Transportation Research Board, Access Management Manual; Washington, D.C. 2003.

be Transportation System Management (TSM) improvements. Such improvements are generally constructed within the existing right-of-way with the goal of improving safety and enhancing roadway capacity. TSM improvements can include construction of turn lanes, minor pavement widening to improve lane width or add shoulders, restriping existing pavement for better utilization, installation or upgrade of traffic signals, turn prohibitions, relocation of on-street parking and access management.

NHDOT has recently constructed three TSM-type upgrades of the corridor. These improvements include the installation of a traffic signal at the New Boston Road intersection in 2000 (900 meters [3,170 feet] north of the project area), the provision of a left-turn lane on NH 125 at Old Coach Road in 2000, and the widening of NH 125 at NH 121A to provide turn lanes on each approach to the intersection in 2001.

Transportation Demand Management (TDM) generally refers to policies, programs, and actions that are directed towards increasing the use of high-occupancy vehicles and the use of bicycling and walking. These can include transit, carpooling and vanpooling, parking management and park and ride lots. TDM can also include activities that encourage commuting outside the daily peak commuting periods. Land use measures include planning activities at the local and regional level in a manner designed to support the use of other modes of transportation other than single-occupancy vehicles. These measures may include the specification of densities and the arrangement of activities in neighborhoods, mixed use centers and major employment centers. Such plans focus particular attention on pedestrian and bicycle amenities and the orientation of land uses to facilitate increased use of transit or decreased dependency on the automobile. Depending on the utilization of such alternatives and the travel demands being met, TDM measures can complement, or in some instances delay the need for physical roadway improvements.

At this time, the likelihood of success in implementing mandatory or overly restrictive TDM strategies for either motorists or employees, or both, is low. Furthermore, even the most aggressive TDM actions would not meet the project's purpose and need. Nevertheless, the project has incorporated a 1.5-meter (5-foot) wide bicycle lane/shoulder into the design of the corridor. In addition, at the request of the town of Plaistow, the project would include the construction of sidewalks along NH 125 from East Road to the NH 121A intersection.