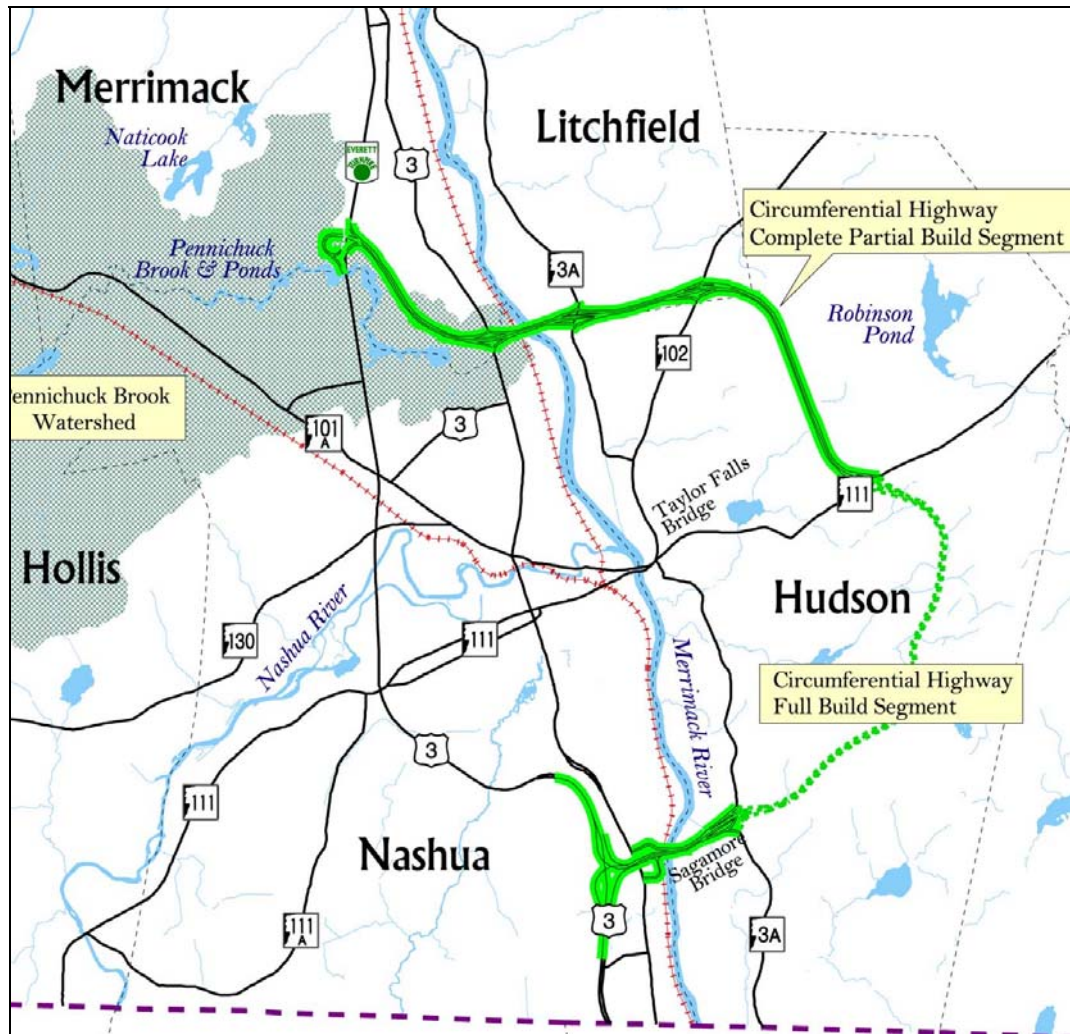




# NASHUA REGIONAL PLANNING COMMISSION

## CIRCUMFERENTIAL HIGHWAY "WHITE PAPER"



September 17, 2003



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#### INTRODUCTION

The Nashua Regional Planning Commission is currently evaluating the proposed Hudson-Nashua Circumferential Highway project. Due to a number of factors, NRPC feels that it is prudent for the affected municipalities (Hudson, Litchfield, Merrimack and Nashua) and the general public to take a step back and reassess to this project.

- 1) The project has been moved out of the first ten years of the State's Ten Year Transportation Improvement Plan ("Ten Year Plan") due to state transportation funding constraints.
- 2) The most expensive part of the project is the portion that connects Route 3/DW Highway in Merrimack with the Everett Turnpike (which is within the Pennichuck Watershed).
- 3) Political support for the project is unclear.
- 4) The permitting process has been long and ongoing, and is not resulting in closure on this controversial project.
- 5) The project as proposed is likely to hit stiff opposition from environmental groups and from communities within the Pennichuck Brook Watershed, as a portion of the highway will be built within that watershed.
- 6) Central Hudson and downtown Nashua continue to experience significant traffic congestion, and a viable relief is needed.
- 7) There have been major changes to the region's transportation plans since the project was originally conceived.
- 8) The NHDOT has acquired right-of-way for the partial build, and Hudson, Litchfield and Merrimack have included the alignment in their master plans. Development proposals are required to accommodate the right-of-way.

In response to these concerns, the NRPC has been re-evaluating project assumptions and alternatives using its traffic model.

It should be noted that the NRPC Commissioners have not taken specific action on these issues. On the contrary, the project has been identified in the agency's Long Range Transportation Plan for at least the past ten years. The purpose of this paper is not to draw conclusions but to identify issues. On August 27, 2003, the NRPC Executive Committee voted to request that the governing body of each affected municipality formally reaffirm their support for the partial build.

#### BACKGROUND

The purpose identified for the Circumferential Highway, since it was first proposed in the late 1950's, has been to provide additional crossings of the Merrimack River and mitigate congestion in downtown Hudson and downtown Nashua. The Merrimack River forms a major barrier in southern New Hampshire separating the eastern part of the state of the central and western portion. Traffic needs to move across southern New Hampshire between the Derry-Salem area along Interstate 93 and the Nashua area along the FEE Turnpike. The Merrimack River flows north to south between the two areas and forces all east-west traffic to cross the river at only two locations:



The Taylor Falls/Veterans Memorial Bridges between downtown Hudson and downtown Nashua, and the Sagamore Bridge between southern Hudson and southern Nashua.

Traffic across the Taylor Falls/Veterans Memorial Bridges has been stable at approximately 37,000 annual average daily trips. Traffic on the Sagamore Bridge between southern Hudson and southern Nashua has been rapidly increasing in recent years. In 1995, approximately 25,000 annual average daily trips crossed the Merrimack River via the Sagamore Bridge. By 2002 this traffic volume had increased to approximately 36,500 annual average daily trips, an increase of 46% or 5.6% increase per year.

Traffic forecasting using NRPC's regional traffic model indicates that traffic across the Merrimack River will continue to increase rapidly. Traffic across the Taylor Falls/Veterans Memorial Bridge between downtown Hudson and downtown Nashua is expected to increase from 37,000 vehicles per day (vpd) today to 53,500 vpd in 2025. This is an increase of 45% at a rate of 1.7% per year. The Sagamore Bridge is expected to increase from 36,500 vpd currently to 61,900 by 2025. This is an increase of 67% at rate of 2.3% per year. It should be noted that these increases will take place despite the development of the Airport Access Road Bridge across the Merrimack River that is expected to be used by at least 20,000 vpd by 2025.

## **PROJECT HISTORY**

The Circumferential Highway project, as originally conceived in the late 1950s, was proposed to begin at the new Exit 2 in Nashua making a full loop north-eastward to Route 111 in Hudson ("Southern Segment"), then north-westward to a new Exit 9 in Merrimack ("Northern Segment"). The project was to be part of the New Hampshire Turnpike System, with funding from toll revenues. In 1982, an alternatives analysis was prepared that evaluated various alignments and was the precursor of the Environmental Impact Statement.

In 1993 an Environmental Impact Statement was prepared for the Full Build. The process was not completed because the US Environmental Protection Agency filed an "intent to veto" because of concerns about impacts to wetlands and wildlife habitat in the Southern Segment between NH3-A and NH 111 in Hudson. That area of Hudson contains one of the three remaining forest blocks greater than 500 acres in the NRPC region.

As a result of discussions between State officials, then Governor Merrill and the EPA, the NHDOT decided to proceed with a Partial Build that included two segments, Exit 2, which forms the link between the Everett Turnpike and Route 3-A in south Hudson (which was subsequently completed in 1999), and the Northern Segment.

Due to the fact that the Full Build was never permitted, a new environmental study called a "Supplemental Environmental Impact Statement" (SEIS) is required. The SEIS is being completed to document the impacts of the Northern Segment as a stand-alone project. The SEIS has been in the preparation stages since 1995.

## **PROJECT BENEFITS**

The "Partial Build" alternative seeks to alleviate congestion in central Hudson and downtown Nashua, particularly on the Taylor Falls Bridge, which currently carries 37,500 vehicles per day (vpd) currently, and is expected to carry 53,505 vpd by 2025. The purpose and need of the



Circumferential Highway project has been identified as reducing traffic congestion in downtown Hudson and Nashua associated with the Merrimack River crossing and to reduce the resulting impacts of that congestion on quality of life and the natural environment.

## **PROJECT ISSUES**

### **Issue #1: Ten Year Plan/Funding Constraints**

The Partial Build was placed in the State's Ten Year Plan in 1999 for the first time. The project is to be financed through toll revenues from the New Hampshire Turnpike system. The eastbound bridge crossing is to have a tollbooth. Other revenue was to be generated through a new toll plaza at Exit 2 in Nashua. In 2002, the New Hampshire legislature voted against the location of the plaza at Exit 2. That reduction in revenue resulted in the conclusion by the NHDOT in 2001 that there was no funding for the project. The Executive Council, in the 2001 Ten Year Plan, voted to keep the project in the plan, even though the funding for the project was not available. Project construction was slated for 2003 in that document, with the review process completed by that time. In the draft of the FY2005 to FY2014 Ten Year Plan, the project has been removed from the first ten years, and into a new section that identifies "future projects".

### **Issue #2: Permitting Process**

The permitting process for the Circumferential Highway has been ongoing since 1993, when the first EIS was released for the project. Following the withdrawal of the Full Build by the State of New Hampshire, it has been understood that environmental work would be forthcoming through the issuance of an SEIS for the Partial Build. Work on the SEIS has been ongoing since 1997. A series of community meetings was held early in this process. The EIS has been scheduled for release most recently in the spring of 2003, however the final document has not been prepared and is now slated for the fall of 2003. Key to the controversy of this project has been the final outcome of the environmental review process, and a lack of closure is simply preventing a solution to the traffic congestion in the area from occurring.

### **Issue #3: Political Support**

In 1993 there was vocal support for the Circumferential Highway project from the Nashua and Hudson business communities. Hundreds of letters of support were submitted from businesses and corporations in the area. Since this time, however, the project has moved out of the forefront. It is our perception and the perception of staff from the four affected towns that most people do not view the project to be a viable one and it is no longer taken seriously.

### **Issue #4: Traffic Congestion**

Downtown Hudson experiences one of the highest levels of traffic congestion in the region. This is due in large part to the presence of the bridges across the Merrimack River and the traffic that flows to and from those bridges on NH 3A, NH 102 and NH 111. Intersection analysis done as part of the recently completed Hudson-Litchfield Traffic Study showed that the intersection of Chase Street/Ferry Street (NH 111)/Derry Street (NH 102) operates at Level of Service F during both the morning and afternoon peak hours. This means that during the main commute hours the intersection fails with very long traffic delays. A symptom of this condition is that fact that daily traffic volume in the corridor has not increased significantly since 1995. Due to the long



delays in the corridor every increasing amounts of traffic has been diverting from the Taylor Falls/Veteran's Memorial Bridges to the Sagamore Bridge. There is sufficient capacity on the Sagamore Bridge to accommodate this traffic diversion. However, the diverted traffic is resulting in heavy traffic on other roads in south and east Hudson including NH 3A, Wason Road and Kimball Hill Road.

#### **Issue #5: Pennichuck Watershed**

The most costly and controversial portion of the project is the stretch between Daniel Webster Highway near the Merrimack/Nashua line and the Everett Turnpike. This portion traverses the edge of the Pennichuck Brook Watershed. The watershed has been subject of considerable attention over the past two years. First, the Mayor of Nashua formed the Pennichuck Brook Watershed Council, a citizen watchdog group for watershed issues. That group, along with other environmental organizations, has stated that they will strongly oppose the Partial Build based upon impacts to the watershed. Second, the City of Nashua has recently voted to acquire the Pennichuck Water Works system, whose primary source of water is from within the Pennichuck Brook Watershed. Sixteen communities have recently signed a "Memorandum of Understanding" to form a regional water district, and legislation has recently passed enabling regional water districts to acquire existing water systems with revenue bonds. The heightened awareness of the watershed resulting from this development will contribute to a complex and controversial permitting process, and it is unclear which side would prevail.

In addition, the portion of the highway between Daniel Webster Highway and the Everett Turnpike is the costliest portion of the proposed partial build. The NHDOT has discussed not constructing this portion of the highway, and the SEIS will evaluate the impacts of the project if this phase is not completed. The Town of Merrimack has voiced objections to terminating a four-lane highway at Daniel Webster Highway due to traffic impacts.

#### **Issue #6: Local Planning**

The planning boards in each of the affected communities have acknowledged the right-of-way for the Circumferential Highway in their master plans and through their development review processes. Hudson in particular has taken steps to ensure that the right-of-way is a meaningful part of their local planning goals, which uses the highway as a "growth boundary" of sorts, with higher density development permitted and encouraged on the inner part of the right-of-way. Several town-wide traffic studies have been conducted all of which assume the relief of the Circumferential Highway. In many ways, the communities have grown up around the assumption that the highway will someday be built. Therefore, the relevance of the right-of-way cannot be discounted when considering future planning for the communities.

### **EVALUATION OF ALTERNATIVES**

NRPC has developed and evaluated a series of alternatives using its traffic modeling program. The purpose of this analysis is to determine if alternatives exist to the North Partial Build that provide significant traffic benefits while resulting in reduced impacts and costs. In particular, project alternatives were identified that had the following characteristics:

- 1) Did not place a new roadway in the watershed for the Pennichuck ponds.



- 2) Had a posted speed of 45 miles per hour and the capacity to two lanes. This reduces the impact on the natural and built environment, as well as reducing the traffic expected on surrounding roads in Litchfield, Hudson, Merrimack and Nashua.
- 3) Limited direct access from abutting properties to the proposed roadway, but included at-grade intersections at the main cross streets. Limiting direct access will reduce the secondary land use impacts from the project and improve the safety of the roadway. Allowing at-grade intersections will reduce the right-of-way requirements, since land will not be needed for interchanges.
- 4) Followed the alignment of the North Partial Build Circumferential Highway. This was done to make use of the environmental review that has previously been conducted for the road on that alignment. In addition, due to the fact that the towns of Hudson and Litchfield have been anticipating the development of a roadway in that alignment, the right-of-way has generally been protected from development.

### Assumptions

Eight new project alternatives have been examined in addition to the No Build alternative and the North Partial Build alternative. All ten alternatives include the same improvements in the other parts of the traffic network. These improvements are as follows:

- **Consistent six lane cross-section of FEE Turnpike from Nashua to Manchester** - Today, the FEE turnpike has four lanes from immediately north of Exit 8 to Exit 10 and then from Exit 11 north to the interchange with I-293 and NH 101 in Bedford. The NRPC traffic model shows that traffic levels will require that these four lane sections be improved to six lanes by 2025. As a result, those improvements have been assumed in all ten alternatives, including the No Build.
- **Broad Street Parkway** - The development of the Broad Street Parkway is assumed in all ten alternatives, including the No Build. In each case, the roadway has been assumed to follow the alignment proposed in the 1997 Broad Street Parkway FEIS, to have a four lane cross section and a 35 mile per hour posted speed. This design, as identified in the Broad Street Parkway FEIS, has recently been re-evaluated by the City of Nashua. An alternative concept in which the Broad Street Parkway will have only two lanes and a 25 mile per hour posted speed was identified in that study and has been supported by the Broad Street Parkway Advisory Committee. Test model runs have shown that the revised Broad Street Parkway concept has no impact on traffic on the Circumferential Highway. There may be minor changes in traffic in downtown Nashua west of Main Street and between Greeley Park on the north and Lake Street on the south. If the revised Broad Street Parkway concept is accepted by the Federal Highway Administration, NRPC will revise the Circumferential Highway alternative models to reflect the revised Broad Street Parkway.
- **NH 101A** - All road improvements proposed in the NH 101A Corridor Master Plan are assumed to be complete and are included in all ten Circumferential Highway alternatives. The most important improvement that is included is the widening of NH 101A to a consistent seven lane cross section (three lanes in each direction with a center turn lane) between Somerset Parkway and Celina Avenue.



- **Manchester Airport Access Road** – The construction of the Manchester Airport Access Road is also assumed in all ten alternatives.

### Analysis of Alternatives

The following describes all ten alternatives, and summarizes the traffic benefits that result from each. All the alternatives have been prepared to represent the traffic in 2025. All ten alternatives anticipate the same land development patterns and the same needs for traffic to move between origin and destination points in the region. **Table 1** shows the traffic forecasts at 21 key locations for the No Build Alternative, the North Partial Build Alternative and the eight new alternatives that NRPC has prepared.

### No Build Alternative

The No Build Alternative serves as the basis for comparison for all the other alternatives. In the No Build alternative, the land use assumptions are the same as those in all the build alternatives. The four roadway improvements described above are included. However, there is no Circumferential Highway in the No Build. As a result, it shows the condition that would exist without any improvement. **Map #1** shows the existing roadway network that has been used to produce the No Build traffic forecast.

As noted above, the traffic forecasts for the No Build Alternative show that traffic across the Merrimack River will continue to increase. These increases are due to both additional land development in the communities in the NRPC region along the river (Nashua, Merrimack, Litchfield and Hudson), and also by increasing demands for east to west travel across southern New Hampshire. This increasing demand will result in ever increasing levels of congestion and reductions in quality of life in the areas of Hudson and Nashua in the immediate area of the Taylor Falls/Veteran's Memorial Bridges. In addition, the increases in traffic that is expected to use the Sagamore Bridge will heavily impact NH 3A (Lowell Road), Wason Road, Kimball Hill Road, Bush Hill Road and others on the south and east side of Hudson.

### North Partial Build

The North Partial Build is the alternative currently under study by the NH DOT in the Supplemental Environmental Impact Statement process. This roadway is a four lane, full access controlled facility extending from FEE Turnpike Exit 9 east and south across the Merrimack River to NH 111 in Hudson. **Map #2** shows the North Partial Build Circumferential Highway as it is currently being studied.

Benefits of the North Partial Build Alternative include:

- Forecasts prepared by NRPC show that the North Partial Build alternative will reduce traffic across the Taylor Falls/Veteran's Memorial Bridge from 53,505 vehicle per day to 37,364 vpd.
- The North Partial Build Alternative reduces traffic on Ferry Street (NH 111) east of Library Street in Hudson by 7,755 vpd. The most any of the other alternatives reduce traffic on Ferry Street is Alternative #3 that reduces traffic by 3,532 vpd.



Issues with the North Partial Build Alternative include:

- It is the most expensive alternative. Cost for the development of the North Partial Build alternative is currently estimated to be \$141 million.
- After twenty years of being in place, traffic volumes on the Taylor Falls Bridge will be similar to what they are today.

### **Alternative #1**

Alternative #1 (see Map #3) is a two lane alternative providing a bridge over the Merrimack River and associated roadways to connect US 3 in Merrimack to NH 3A in Litchfield. The proposed connection is located at the approximate position of the Merrimack River bridge in the North Partial Build Circumferential Highway. It is assumed that the intersections at either end will be at-grade and signalized. Alternative #1 was modeled with a posted speed of 45 miles per hour.

Benefits of Alternative #1 include:

- It is the lowest cost alternative because it only includes the development of a new bridge across the Merrimack River and a minimum of approach roads.
- It has the least impact on the natural and built environments because it is a very limited project, with the smallest possible right-of-way needs.

Issues with Alternative #1 include:

- It does the least to reduce traffic on the Taylor Falls/Veterans Memorial Bridges. Traffic forecasts indicate that Alternative #1 will only reduce traffic on the bridges from 53,505 vpd to 48,909 vpd.
- Due to the fact that Alternative #1 does not include any approach roads, it forces all traffic that uses the proposed bridge to use existing streets and highways. This results in relatively high future traffic volumes expected on NH 3A in Litchfield, Daniel Webster Highway in Merrimack and Concord Street and Henri Burque Highway in Nashua.

### **Alternative #2**

Alternative #2 (See map #4) provides a connection from US 3 near the Merrimack - Nashua line across the Merrimack River extending to NH 102 in Litchfield, with an at grade intersection at NH 3A. Alternative #2 was studied as a two lane facility with access control and a posted speed limit of 45 mph.

Benefits of Alternative #2 include:

- The impacts of traffic on local roads in Litchfield and Nashua around Alternative #2 are not as severe as those in Alternative #1. Traffic on NH 3A in Litchfield is expected to be only slightly higher with Alternative #2 than it would be if no project were constructed.





- This is still a relatively inexpensive alternative compared with the North Partial Build alternative.
- Due to the reduced project scale this project will have fewer impacts on the natural and built environments than the North Partial Build alternative.

Issues with Alternative #2 include:

- It provides little additional traffic reduction on the Taylor Falls/Veteran's Memorial Bridges than Alternative #1.
- Traffic on Daniel Webster Highway in south Merrimack is higher than either the North Partial Build alternative or Alternative #1.

### **Alternative #3**

Alternative #3 (see Map 5) extends from US 3 in Merrimack to NH 111 on the east side of Hudson. It follows the North Partial Build Circumferential Highway alignment exactly, except it does not include the segment between US 3 in Merrimack and the FEE Turnpike. Alternative #3 was modeled as a two lane roadway with access control and a posted speed limit of 45 miles per hour.

Benefits of Alternative #3 include:

- Alternative #3 provides the largest reduction in traffic on the Taylor Falls/Veteran's Memorial Bridges of any of the alternatives without major right-of-way impacts, impacts to the natural environment or the removal of the existing bridges. Alternative #3 is forecast to reduce traffic across the Taylor Falls/Veteran's Memorial Bridges from 53,505 vpd to 46,597 vpd.
- Alternative #3 will result in traffic volumes in 2025 on Canal Street and Amherst Street in downtown Nashua and on Chase Street and Derry Street in downtown Hudson that are at or below current volumes on those same streets.
- Due to the reduced project scale this project will have fewer impacts on the natural and built environments than the North Partial Build alternative.

Issues with Alternative #3 include:

- Traffic volumes forecast on Daniel Webster Highway in south Merrimack are the highest of any of the alternatives considered. Traffic volumes forecast on Concord Street north of Henri Burque Highway and on Henri Burque Highway are higher than would be experienced on those roadways without the development of any project.

### **Alternative #4**

Alternative #4 extends from US 3 in Merrimack to NH 111 on the east side of Hudson and then continues from that point to connect to the short Circumferential Highway segment from the FEE Turnpike Exit 2 to NH 3A in Hudson. Alternative #4 follows the Full Build Circumferential Highway alignment with the exception of the segment from US 3 in Merrimack to intersect the FEE



Turnpike at a proposed Exit 9. Alternative #4 was modeled as a two lane roadway with access control and a posted speed limit of 45 miles per hour.

Benefits of Alternative #4 include:

- Alternative #4 provides somewhat higher reductions in traffic on the Taylor Falls/Veteran's Memorial Bridges, on Derry Street and Chase Street in Hudson, and on Canal Street and Amherst Street in Nashua than Alternative #3.

Issues with Alternative #4 include:

- Alternative #4 includes development of a new roadway on the south Circumferential Highway alignment extending from NH 111 to the existing Circumferential Highway/Sagamore Bridge in south Hudson. This was the alignment that was subject to much contention with regulatory agencies, and which caused the State to drop this portion of the project.
- The environmental impacts to wetlands and habitat in that area with even this reduced concept may be so severe that it will not be approved in the permitting process.
- Even if the segment between NH 111 and Sagamore Bridge can receive permitting, it will be long and expensive segment to build given the relatively minor additional benefit in Alternative #4 over Alternative #3.

## **Alternative #5**

Alternative #5 extends from the east end of Industrial Drive in Merrimack, in a southeasterly direction across the Merrimack River through Litchfield to an intersection with NH 111. At grade intersections with US 3 in Merrimack, NH 3A and NH 102 in Litchfield and NH 111 in Hudson. Between NH 102 and NH 111, Alternative #5 follows the North Partial Build Circumferential Highway alignment. West of NH 102, Alternative #4 generally follows one of the alignments proposed in the 1980's connecting the Circumferential Highway to FEE Turnpike Exit 10 in Merrimack. This alignment was abandoned prior to the current Environmental Impact Statement process due to right-of-way and environmental impacts. Alternative #5 was modeled as a two lane roadway with access control and a posted speed limit of 45 miles per hour.

Benefits of Alternative #5 include:

- This alternative provides a direct connection across the Merrimack River to the FEE Turnpike without the necessity of constructing a new interchange.
- Alternative #5 has the least impact on surrounding roads of any of the alternatives. Traffic volumes on NH 3A in Litchfield, Daniel Webster Highway in south Merrimack, Concord Street and Henri Burque Highway in Nashua are all forecast to be below the traffic expected in 2025 without construction of any project.
- Alternative #5 provides one of the highest levels of benefit to Amherst Street and Canal Street in Nashua and Derry Street and Chase Street in Hudson.



Issues with Alternative #5 include:

- Alternative #5 will have substantial right-of-way impact on agricultural lands and residential development in Litchfield and on the Budweiser property in Merrimack.
- Alternative #5 will also impact important natural resources in the Merrimack River including wetlands and wintering grounds for the bald eagle.

### **Alternative #6**

Alternative #6 has the same beginning and end points and follows the same alignment and has the same design (two lanes, 45 miles per hour posted speed) as Alternative #4. However, in Alternative #6, the Taylor's Falls/Veterans Memorial Bridges that connect downtown Nashua with downtown Hudson are removed. This was modeled for illustrative purposes and to demonstrate the fundamental issue causing congestion in the Hudson-Nashua central areas, which is the convergence of major highways to access the bridges.

Benefits of Alternative #6 include:

- Traffic on Ferry Street east of Library Street in Hudson is forecast to drop from 23,380 vpd without construction of any project to 6,271 vpd with Alternative #6.
- Traffic on Amherst Street in Nashua will drop from 27,930 vpd without construction to 15,657 vpd with Alternative #6. Traffic on Canal Street in Nashua will decrease from 26,512 vpd to 6,967 vpd.

Issues with Alternative #6 include:

- Not feasible to remove the bridge from a social, fiscal and political standpoint. The bridge provides a needed connection between the two downtown areas.
- Alternative #6 includes development of a new roadway on the south Circumferential Highway alignment extending from NH 111 to the existing Circumferential Highway/Sagamore Bridge in south Hudson. This was the alignment that was subject to much contention with regulatory agencies, and which caused the State to drop this portion of the project.
- Alternative #6 results in similar impacts on Daniel Webster Highway in south Merrimack, Concord Street and Henri Burque Highway to the other alternatives previously described.

### **Alternative #7**

Early in the development process the option of connecting the Circumferential Highway to the east end of Henri Burque Highway in Nashua was considered. The recently completed Nashua Downtown Master Plan recommended the connection to Henri Burque Highway as the best traffic and land use alternative. Alternative #7 was developed to test the traffic affects of a roadway that begins at Henri Burque Highway and extends east across the Merrimack River to end at NH 111 on the east side of Hudson. As with the other alternatives described above, Alternative #7 includes at



grade intersections with Concord Street/Henri Burque Highway, NH 3A in Hudson, NH 102, and NH 111. The alternative was studied as a two lane roadway with a posted speed of 45 miles per hour and limited access.

Benefits of Alternative #7 include:

- Traffic across the Taylor Falls/Veteran's Memorial Bridges is expected to be reduced to 45,582 vpd, compared with a No Build traffic forecast of 53,505 vpd or the North Partial Build alternative forecast of 37,364 vpd.
- Alternative #7 provides similar levels of benefit on Amherst Street and Canal Street in Nashua, and Derry Street, Chase Street and Ferry Street in Hudson to Alternatives #3 and #4.

Issues with Alternative #7 include:

- Alternative #7 would pass through existing developed areas in both Nashua and Hudson, resulting in intense right-of-way impacts in existing neighborhoods. The alignment could also potentially affect Alvirne High School in Hudson, and is not considered to be feasible.
- Alternative #7 may require bridging not only the Merrimack River but also the adjacent railroad yard in north Nashua, resulting in a longer bridge and increased costs.
- Due to the direct connection to Henri Burque Highway that would be created, Alternative #7 has the highest impact on that road of any alternative and also has the highest traffic impact on Concord Street in north Nashua of any of the alternatives.

## **Alternative #8**

Alternative #8 analyzes the development of a two lane roadway from US 3 in south Merrimack to NH 111 in east Hudson, similar to Alternative #3, with the removal of the Taylor's Falls/Veterans Memorial bridges as in Alternative #6.

Benefits of Alternative #8 include:

- Due to the removal of the Taylor Falls/Veteran's Memorial Bridges between Nashua and Hudson, this alternative cuts traffic in the downtown areas of both communities to between one half and one quarter of future forecasts for the No Build Alternative.

Issues with Alternative #8 include:

- See Alternative #6



## Conclusions

Based upon the analysis of alternatives, the following conclusions may be drawn:

- The Full and Partial Build of the Circumferential Highway offer the best benefits from a traffic standpoint in the short term. After 20 years, traffic levels will approach what they are today.
- There is a need for a bridge crossing in the NRPC region north of the Taylor Falls Bridge.
- There are traffic benefits associated with the construction of a roadway within the North Partial Build right of way in Hudson and Litchfield.
- No reasonable alternative will completely solve the traffic congestion problems in central Hudson and downtown Nashua. Along with any of the alternatives proposed, it will be necessary to address traffic circulation issues in these locations.
- The Circumferential Highway right-of-way, in particular in Hudson, is a key component of local planning and should be preserved.

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