Town of Hudson, NH

Hudson Boulevard

July 2019

BUILD

BUILD - Grant Application

U.S. Department of Transportation
Better Utilizing Investments to Leverage Development

"BUILD"
GRANT APPLICATION PROJECT NARRATIVE REPORT

Project Name:	Hudson Boulevard Project
Project Type:	Roadway Construction
Project Location:	Rural, Hudson, NH
Funds Requested:	$25,000,000 (50.5%)
Other State, Local, and Federal Funds Hudson, NH:	$24,500,000 (49.5%) Local matching funds
Total Design/Construction Costs:	$49,500,000
Contact:	Mr. Elvis Dhima, P.E. Hudson Town Engineer 12 School Street Hudson, NH 03051-4249 Telephone: 603-886-6000 EDhima@hudsonnh.gov
DUNS #:	073993974

NH Route 3A (Lowell Road)
in Hudson, NH

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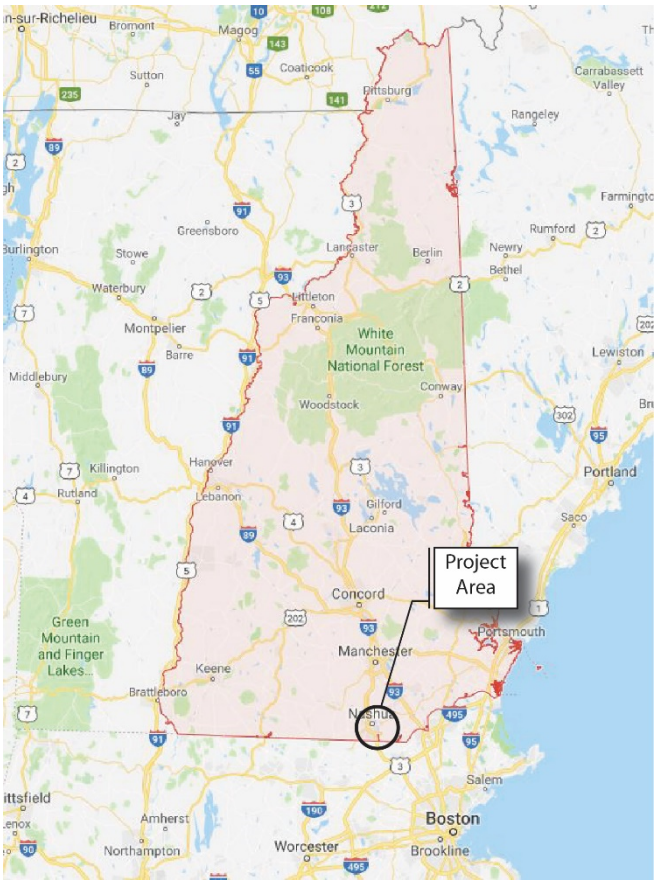
OVERVIEW AND INTRODUCTION

The Town of Hudson, NH (Hudson) is pleased to submit this application requesting $25 million through the Better Utilizing Investments to Leverage Development (BUILD) Discretionary Grant Program. This grant application addresses the critical need to reduce congestion and improve safety within portions of Hudson by creating a new route around the congested portions of the Town. This new roadway would provide a direct connection for vehicles around the center of Town between NH Route 3A at its intersection with Sagamore Bridge Road and NH Route 111 just west of Hudson Park Drive. The current Annual Weekday Daily Traffic (AWDT) volume is over 49,000 vehicles per day on Sagamore Bridge Road which is a critical link between Nashua and Hudson and serves as one of only two crossings of the Merrimack River in this area. The other crossing is several miles north and is known as Taylor Falls/Veterans Memorial bridge. Both crossing go through the Town of Hudson and City of Nashua. However, the Sagamore Bridge and its direct connection to the F.E. Everett Turnpike serves as a vital link to the many vehicles that wish to proceed from one side of the river to the other as part of their normal work commute, shopping trip, or other daily activity. In addition, this roadway connects the F.E. Everett Turnpike to NH Route 111 which is a major east/west connector in southern New Hampshire for commuters, businesses, and freight movements that stretches across the State to Interstate 93.



PROJECT DESCRIPTION

The Circumferential Highway project was originally conceived in the late 1950's by the New Hampshire Department of Transportation (NHDOT) as a new highway that would loop around the City of Nashua and the center of the Town of Hudson to provide a more direct connection to the F.E. Everett Turnpike from NH Route 3A, NH Route 111, and NH Route 102 from other points east of the Merrimack River. The highway was proposed to be constructed and

maintained using NH Turnpike funds and would have become a portion of the New Hampshire Turnpike system, providing a conduit for commuters and travelers to avoid the congested centers of both downtown Nashua and Hudson. As part of the NH Turnpike the Circumferential Highway was proposed to include a toll collection system. The roadway was proposed to be a Limited Access interstate-type roadway design consisting of two separate two-lane roadways with grade-separated interchanges over existing local roadways providing free flow travel along its entire length. In the late 1990's a small portion of the roadway was constructed along the southern portion of the original alignment providing a direct connection from the F.E. Everett Turnpike (Exit 2) across the Merrimack River to an intersection with NH Route 3A south of the Hudson Town Center.

Over time, various attempts have been made by the NHDOT to complete the remainder of the project, but these efforts have failed to result in any other portions being completed; either due to a lack of funding or Legislative backing. However, traffic congestion has continued to increase over the years, and residents of the Town of Hudson have had to bear the burden of increased congestion and reduced safety. Over the last several years, residents have approached the Selectman to complain about increased volume traffic and the number of crashes on their roadways as NH Route 3A becomes more congested and commuters look for alternate routes through Town. They continue to ask why the Circumferential Highway has not been built and why it has not been included within the State's Ten-Year Transportation Improvement Plan, as they believe this will alleviate most of these issues.

Last year the Selectmen listened to the Residents and began moving forward with a plan to build a two-lane version of the Circumferential Highway along the original alignment using local funds. To ensure that they would get the support of the NHDOT, the Town garnered enough Legislative support to get a line item added to the Ten-Year Plan Legislative Bill that authorized the NHDOT to work with the Town to plan, engineer, and construct a new road with Town funds within the existing Right-of-Way for the original Circumferential Highway that was previously purchased by the NHDOT, but remains unused. The proposed new Town roadway will follow a portion of the southern segment of the original Circumferential Highway alignment beginning at NH Route 3A (where the previous project across the river terminated) and continuing to the northeast until it ends at an intersection with NH Route 111 (See Figure 2). As part of the agreement however, the NHDOT has made it clear to the Town that they reserve the right to construct the full four-lane, median divided, Circumferential Highway in the future should they choose to do so. This future roadway would include grade separated interchanges and tolling infrastructure to pay for the construction and maintenance of the overall highway facility.

As part of the design and engineering process completed in 1993, the New Hampshire Department of Transportation acquired the Right-of-Way that was required to construct this southern segment of the overall project. The Right-of-Way varies in width along its entire length, but approaches 400 feet wide in many locations. As mentioned above, the roadway was originally envisioned to be constructed with an interstate-type configuration, including two 12-foot wide travel lanes in each direction, 10-foot wide shoulders on the right, 4-foot wide shoulders on the left, and a wide grassed median in between the two roadways. The highway was envisioned of having a design speed of between 60 to 70 mph with all grade separated intersections.

Wason Road winding its way through a residential neighborhood in Hudson

The proposed Town project, known as "Hudson Boulevard," will construct one barrel of the originally conceived roadway, providing one 12-foot wide travel lane in each direction with 4-foot wide shoulders on each side. A grade separated Single Point Urban Intersection (SPUI) will be constructed at NH Route 3A as originally designed and an at-grade intersection will be provided at the east end of the project at NH Route 111. Unlike the originally proposed project, the new roadway will cross four existing local roads, by providing at-grade intersections utilizing traffic signals including: Musquash Road, Bush Hill Road, Speare Road, and Kimball Hill Road. No intersection will be provided at Trigate Road. Instead, the new roadway would be depressed, and a bridge will be constructed to carry Trigate road over Hudson Boulevard. The new roadway will be designed to meet current state and federal design standards and will include exclusive turn lanes where warranted, along with items such as centerline and edge line rumble strips to improve safety throughout the new corridor.

The project is scheduled to begin construction in 2021 and would be completed by no later than 2026. It is projected that portions of Hudson Boulevard will carry over 20,000 vehicles a day when fully open to traffic and serve over 23,000 vehicles by the 2041 design year. With the construction of the new roadway, it is expected that the existing roadways within the area will see a decrease in traffic volumes as the more direct route will be less congested and will contain no driveway access points to adjacent traffic allowing better overall free flow movement. NH Route 3A north of the Sagamore Bridges, Wason Road, Bush Hill Road, and Kimball Road will all see reduced traffic volumes due to the diversion of traffic to Hudson Boulevard. The Taylor Falls/Veterans Memorial Bridges connecting Nashua and Hudson will also see a reduction in traffic volumes during most times of the day, but especially during the peak hours. By the same token, the Sagamore Bridges will see an increase in traffic volumes as

more commuters will use these bridges to avoid the congested areas near the center of Hudson. However it should be noted that the existing Sagamore bridges were built to highway standards and include two travel lanes in each direction with grade separated intersections at Route 3 and F.E. Everett Turnpike.

Taylor Falls/Veterans Memorial Bridge over the Merrimack River at the Nashua/Hudson Town Line

As mentioned above, Hudson Boulevard would be located within a Right-of-Way corridor that was established over twenty years ago. This corridor traverses a relatively rural area that is largely forested and bounded by mostly residential areas. Commercial land uses are currently restricted along the corridor to each end of the project. A number of small ponds and wetlands exist along the proposed route and some would be impacted by the construction, either directly or indirectly. Indirect impacts would be mitigated by providing treatment of the stormwater runoff from the newly paved areas while direct impacts to wetlands would be mitigated by acquiring additional areas for preservation and/or enhancement.

The new roadway would improve and enhance the existing roadway system in this area by providing an alternate route for commuters, travelers, and commercial vehicles to utilize in the east/west direction.

PROJECT LOCATION

The proposed Hudson Boulevard project is located in southern New Hampshire near the Massachusetts border. As described above, the project is located entirely within the Town of Hudson, NH which is directly adjacent to the City of Nashua, NH. The project begins at the intersection of Sagamore Bridge Road and NH Route 3A and extends east along a new alignment approximately 4.8 miles, intersecting Burns Hill Road, passing over Trigate Road, intersecting Bush Hill Road, and intersecting Kimball Hill Road before ending at a new intersection with NH Route 111 just west of Hudson Park Drive. A plan of the proposed road in relation to the surrounding roadways is shown on Figure 2. The southwestern terminus of the project is located at Lat 42°43'44.74"N Long 71°25'30.11"W and the northeastern terminus is located at Lat 42°46'31.83"N Long 71°23'59.37"W.

According to the 2010 Census a portion of the project is located within the Nashua, NH Urban Area (61165 UA) which has a population of approximately 226,000 individuals and a land area of approximately 182 square miles. The new road is 4.8 miles long, of which approximately 2.8 miles is located just outside the Nashua Urban Area (See Figure 3). Therefore, this project would be defined by DOT as being in a "rural area" because more than one half of the project money will be spent within the rural area.

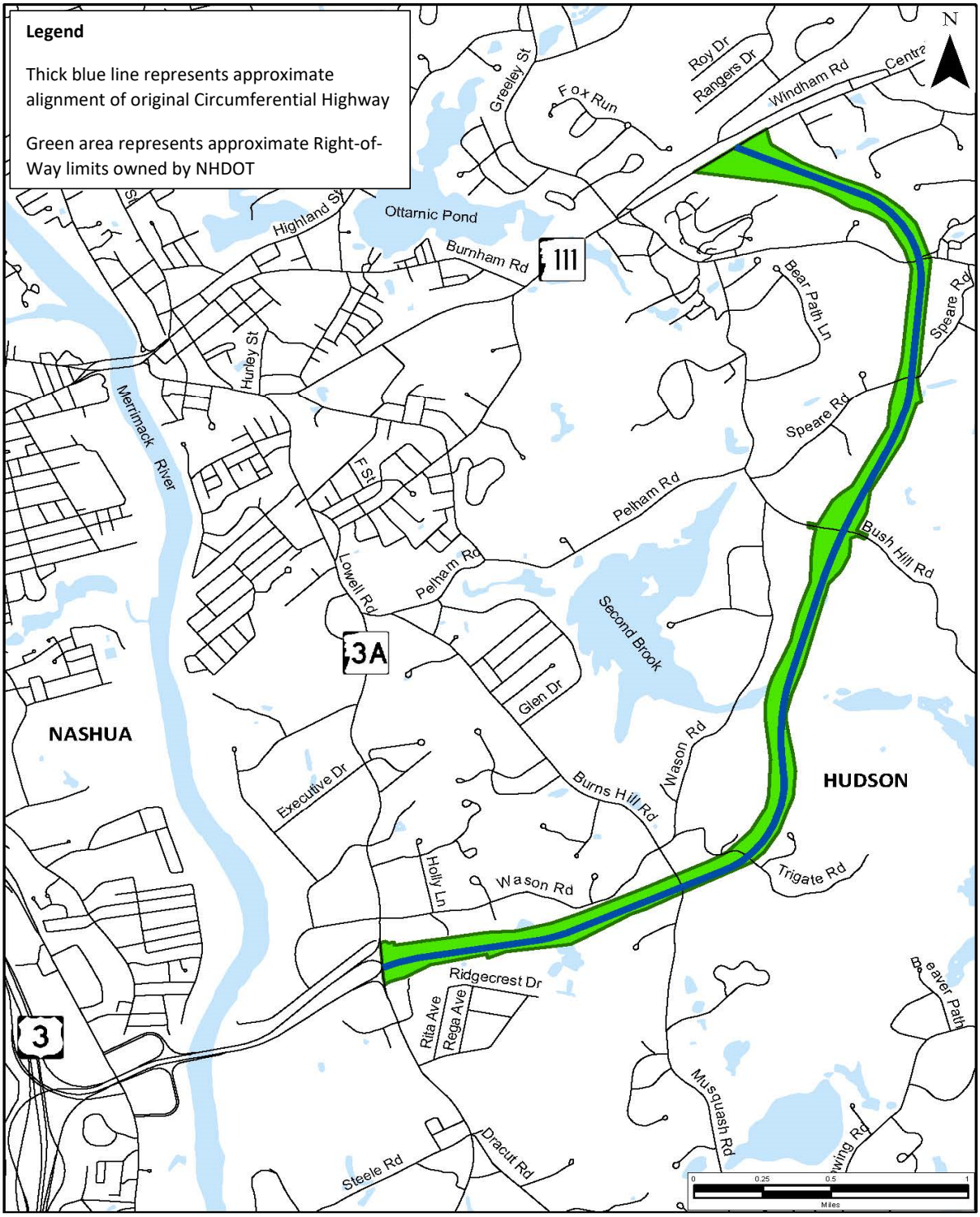


FIGURE 2 – Location Map

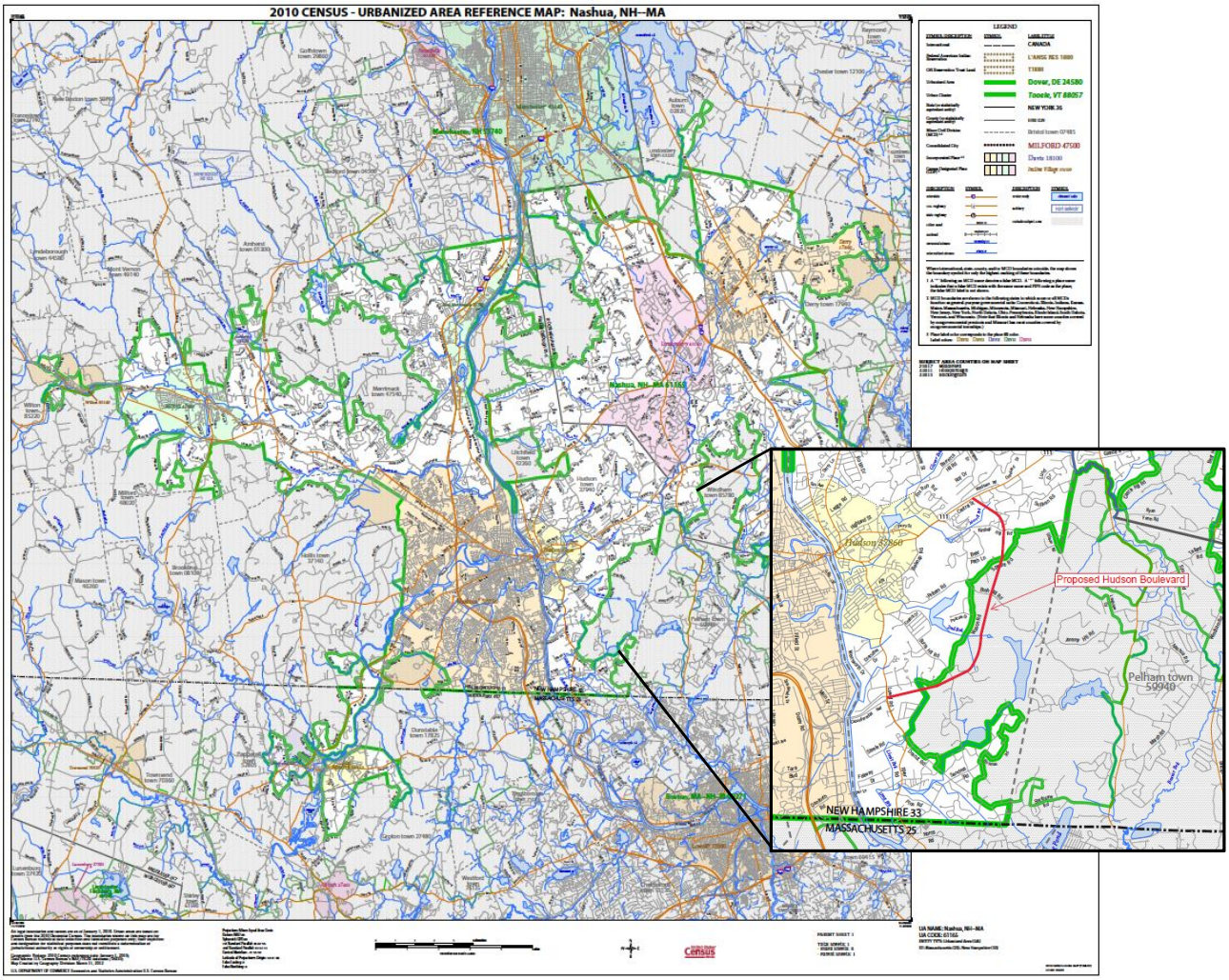


FIGURE 3 – Census Map with Hudson Boulevard Overlay on Inset Map

GRANT FUNDS, SOURCES AND USES OF PROJECT FUNDS

The estimated cost for this project is $49,500,000. The original opinion of probable cost It was developed as part of a 2009 report prepared by the Nashua Regional Planning Commission (NRPC) at the request of the Town of Hudson and updated in 2019 to reflect current prices for construction projects within New Hampshire, as well as the engineer's past experience with projects of this type. The costs provided include an estimate of all construction costs as well as the costs for all engineering, environmental documentation, and permitting. A detailed breakout of these costs is included in the Appendix of the Benefit Cost Analysis.

The funding for this project will come from two sources. The Town of Hudson is funding approximately $24,500,000, while the remainder of the funding will come from the BUILD grant which is requested at $25,000,000. It should be noted that it is anticipated that there will be no

Right-of-Way costs for this project because all of the Right-of-Way that is needed to construct the project was acquired previously by the New Hampshire Department of Transportation for the Circumferential Highway Project.

At this time, it is assumed that the Town will bond their portion of the project cost including the design, the consultant program manager to assist with the review of the design and inspection, and a portion of the construction while the BUILD grant will fund the remainder of the construction.

Total Construction Cost Breakdown

	PE	ROW	Construction	Mitigation	Total
BUILD Grant	$0	$0	$24,557,620	$442,380	$25,000,000
Town of Hudson	$4,818,000	$0	$19,248,380	$433,620	$24,500,000
Total	$4,818,000	$0	$43,806,000	$876,000	$49,500,000

CRITERIA

Safety

Improving the safety of the entire roadway system is always an important goal of any project. In this case, the congestion that occurs throughout the Town of Hudson and the City of Nashua is significant. It leads to a number of crashes and near misses throughout both municipalities. It also leads to motorists using alternate routes to avoid the congestion that occurs along the state roads, as well as the main roadways in the Town of Hudson and City of Nashua. Vehicles are diverting through residential streets, including those adjacent to the proposed project to avoid congestion and reduce travel times. It is expected, based on the 2018 Traffic Assessment prepared by the NRPC, that Wason Road, Bush Hill Road, Kimball Hill Road, and NH Route 3A north of the proposed connection with the proposed Hudson Boulevard will all experience a reduction in traffic volumes and a corresponding reduction in crashes with the construction of the new roadway. In addition, the Traffic Assessment also indicated that a number of other local roadways in Hudson will also see a reduction in traffic volumes and thus a reduction in vehicle crashes.

Kimball Hill Road in Hudson

Each of the local roads noted above is located within a decidedly residential environment and have narrow cross sections that were not designed to handle large volumes of commuter traffic or other through vehicles. There have even been reports of some through trucks using these roadways to avoid the congestion within Hudson. In addition, two Hudson Schools are located directly on roadways being used by cut through traffic, which increases congestion in this area and reduces the safety for students, faculty and parents arriving or departing school. Many residents no longer walk or bike on these roadways because of the increased traffic volumes, higher speeds, and reduced safety. Reducing the volume of traffic using these residential streets during the morning and evening peak hours will have an important effect on the number of crashes within the region, will provide a safer environment for all users including

Burns Hill Road in Hudson

bikers and walkers, and will return the rural character of these neighborhoods back to the residents. Along the three major travel routes used to traverse through Hudson from NH Route 3A to NH Route 111, there were a total of 359 reported crashes at the major intersections with 61 injuries crashes and one fatality in the period between January 2013 and June 2019. If a full report was compiled of all the crashes that have occurred along these three major roadways within the Town over the same time period, including all intersections, driveways, and roadway segments, it is assumed this number would be much higher. However, for the Benefit Cost Analysis (BCA) only the crashes at these major intersections were reviewed because statistics show that most crashes occur at major intersections were vehicle right-of-way is shared.

The proposed Hudson Boulevard will also improve the overall safety of the region as it will be designed to current standards and will provide proper sight distance appropriate to the proposed design speed of 35 mph, have 4-foot wide shoulders, and provide recoverable side slopes where practical and guardrail in areas where recoverable slopes cannot be maintained. These wider shoulders provide a safer environment for all users as shown in the Highway Safety Manual and by the appropriate Crash Modification Factor data. The limited access nature of this roadway will also reduce the conflict point where driveways would normally intersect the roadway so turning traffic would be confined to side street intersection, improving overall safety. In addition, this project will provide exclusive turn lanes at the proposed signalized intersections along Hudson Boulevard allowing for safer turning movements and queue storage. Finally, the installation of traffic signals with emergency vehicle preemption at the new at grade intersections should provide safer access for vehicles attempting to enter the roadway from the local cross streets. Each of these items reduces the potential for crashes, injuries, and fatalities.

State of Good Repair

Since this is a new project, there is currently no on-going maintenance needed and the construction of the project will require the use of existing funding to maintain it in a state of good repair moving forward. The Town of Hudson has made the commitment to maintain the new roadway once it is in service and under traffic. In order to reduce the maintenance required to maintain the project, it will be constructed following NHDOT Specifications and will be built to NHDOT design standards. This means that the pavement section will include a deep base of crushed stone, gravel, and sand, providing a strong base that will be less susceptible to the problems sometimes caused by the freeze/thaw cycles that are a part of the harsh winters common to New Hampshire.

In addition, the roadway will be designed and constructed with proper drainage facilities built to NHDOT standards, including properly sized cross culverts and underdrain pipes in areas of

roadway cuts utilizing the most up to date resiliency standards in order to provide a long term system that can resist the more severe weather events that have occurred in New England over the last few years. Providing adequate drainage of the roadway surface and subbase makes a significant difference in the cost of long-term maintenance. As has been seen on many of the roadways maintained by the NHDOT, those roadways require less overall maintenance over the long term if a small investment in crack sealing, pavement overlays or other surface treatments are provided to keep water from entering the subbase materials over time. The cost of these surface treatments has been included in the Benefit-Cost Analysis.

The construction of this new roadway will also have a positive impact on the local roads and regional routes within both Hudson and Nashua, as these routes are now carrying more traffic than originally envisioned. Reducing the traffic volumes on these roadways will have a positive impact on the condition of these roadways, as less traffic results in less wear and tear.

One other fact that should be noted. Should the NHDOT ever build the full Circumferential Highway (i.e. both barrels of the grade separated highway) they are committed to taking over the long-term maintenance of the facility. At that point, Hudson Boulevard would be turned over to the State of New Hampshire and become part of the Turnpike system, including the installation of a toll collection system, to pay down the debt service on the additional construction cost for the full buildout of the Circumferential Highway, as well as the future maintenance cost of the overall facility. The New Hampshire Turnpike is one of the most fiscally sound transportation systems in the entire country with an A+ bond credit rating.

If this project were to be delay or worse, not constructed, the congestion within the region will continue to severely impact the existing roadway system in Nashua and Hudson. Traffic will continue to be congested through the center of Hudson and portions of Nashua, making it difficult to reconstruct or rehabilitate those existing roadways without significant traffic delays or long detours. In fact, the Town of Hudson is in the process of planning for the future by engaging in the inspection of the concrete deck on the Taylor Falls/Veterans Memorial Bridge to determine the future timeframe for rehabilitation and/or reconstruction requirements. Should major work be required before the construction of Hudson Boulevard, the lack of any viable detour route will make this work especially painful for all travelers, but especially commuters. The disruption that will be caused by this bridge work

Sagamore Bridge over the Merrimack River at the Nashua/Hudson Town Line

would be significant, since the Sagamore Bridges are the only viable alternate route and most of the traffic would need to go through downtown Hudson to get there. The next closest crossings of the Merrimack River are in Tyngsborough, MA and Londonderry, NH, each at least ten miles distant.

Economic Competitiveness

This project provides a new route for both commuters and goods and services to move more freely through the greater Nashua-Hudson area. Currently, businesses located within downtown Hudson or the area of Nashua just west of the Taylor Falls/Veterans Memorial Bridges are very much at the mercy of traffic congestion. Removing vehicles from the east-west traffic stream will provide much needed relief to those businesses. The new Hudson Boulevard will provide improved levels of service and more consistent travel speeds throughout the entire region. Improving the ability of vehicles to traverse this area in a more efficient manner will result in a reduction of travel times and maintenance costs and will allow local and regional commercial users to reduce transportation costs, improve their logistics practices, and expand their customer base (See the attached Benefit-Cost Analysis).

Economic benefits will also accrue from the safety component of this project. Savings from avoided crashes directly affect the local communities that provide emergency service response. The savings associated with fewer emergency response calls may result in lower property taxes, allowing the communities to stay competitive in attracting and retaining businesses and homeowners.

A sign on a congested portion of NH Route 3A (Lowell Road) listing 88.6 Acres of commercial land that has been for sale for several years

In addition to the obvious benefits that accrue from moving goods and services, the ability to move quickly and easily between Nashua and Hudson and the surrounding communities or even connect to the F.E. Everett Turnpike to points further north in NH or south in Massachusetts provides flexibility within the work force. This allows employees to live and work where they are happiest and most needed. It also allows businesses to locate on either side of the Merrimack River, basing their decision on factors other than shortcomings within the transportation system. A stable and efficient transportation system enhances long term job creation and market stability. In the short run this project is anticipated to create more than 150 jobs in construction and engineering services.

The Hudson and Nashua area has been reshaped considerably in the past few decades. Formerly a manufacturing hub, the region has transitioned to a mix of professional services, high tech industrial manufacturing and various other service industries. The availability of a strong transportation infrastructure linking communities, states, local businesses, and the world in general, has helped facilitate this transformation. However, the area outside of the urban hub remains very rural in nature and for those people, Hudson Boulevard would provide an important option to move more easily around the region. Their connection to not only economic opportunities, but cultural and recreational opportunities, is largely dependent on the roadways and bridges that make up our transportation system. A strong and efficient transportation system is also critical to attracting and keeping new businesses, especially privately-owned businesses, that can grow and keep the economy thriving. Delaying the construction of new roadway corridors like Hudson Boulevard sends a strong message that Hudson, Nashua, and southern New Hampshire are not "open for business." A recent letter from the Nashua Regional Planning Commission noted that "the Hudson Boulevard project has the potential to unlock the economic development potential of some of the most significant commercial and industrial sites in southern New Hampshire resulting in the creation of close to 6 million square feet of commercial and industrial development, over 6,000 new jobs, new business and investment opportunities and additional tax revenues for the town". See the Benefit-Cost Analysis Appendix for a full copy of the letter.

Environmental Protection

The project includes components that will improve water quality and avoid and mitigate environmental impacts. In its previous incarnation, the Circumferential Highway project was progressed to the point that a Final Environmental Impact Statement (FEIS) was developed and submitted to the Army Corp of Engineers (ACOE). On this project the ACOE was acting as the lead federal agency in the review process. The National Environmental Policy Act (NEPA) process was started, but never completed, because the Environmental Protection Agency (EPA) issued a notice of intent that they would veto the project based on concerns related to wetlands, surface waters, and groundwater impacts of the original project, including areas within both the present project and areas further north along the extended portion of the Circumferential Highway. Even though the project did not complete the NEPA process, the public hearing that was held allowed the NHDOT to acquire the Right-of-Way corridor that exists to this day. This is the corridor that now encompasses the proposed construction alignment for Hudson Boulevard.

The Circumferential Highway would have been much like an interstate highway with grade separated interchanges or bridges at each local road crossing, creating a high-speed roadway with the accompanying environmental impacts. The Hudson Boulevard project that is now proposed would have a smaller footprint, and thus less impact. Work on the environmental

documentation and permitting that would be needed for this project has not been started, but a few general assumptions can be made.

First, the new project would, as mentioned above, have much less impact on the environment than the original 4-lane wide, grade separated roadway. Second, since the Right-of-Way for the original roadway corridor was already purchased and that land has been preserved, whereby no changes have occurred within that corridor over the last twenty years. No new structures or other facilities have been added within the existing Right-of-Way. Third, the existing EIS can be used as a basis for beginning work on the environmental documents going forward. Fourth, some of the mitigation required in the original FIES, such as that on the old Benson Animal Farm property, has already been completed. However, the original permitting documents are too old to be simply "updated" and a completely new document will need to be created.

In addition, many of the environmental regulations have changed substantially and more so, the interpretation of those regulations has changed. It will be important for any new work to develop a complete evaluation of each potential impact to all affected environmental resources. Items such as noise, air quality, and wetlands will need a thorough evaluation. Lastly, items such as stormwater treatment and stream crossings have much more rigorous rules to follow, as much has changed in 25 years.

Some general commitments about the environment can be assumed. The new Hudson Boulevard will need to include several stormwater treatment facilities to handle stormwater runoff from the newly paved roadway surfaces. The Town of Hudson is in currently in compliance with all MS-4 regulations and proposed water quality improvements for this project will be designed to meet MS-4 requirements, designed to be state of the art by encompassing all the improvements in stormwater treatment that have been researched over the last 25 years, and designed to require little to no maintenance over its lifetime. With these improvements in place, the water quality of the highway runoff to the Merrimack River watershed should be greatly improved.

Since the project is being funded by the Town of Hudson, their desire is to utilize the Design-Build process to advance this project to completion as soon as possible, which is further described below in the Innovation Section. For this to happen, the first step will be to begin the preliminary design and NEPA permitting process as soon as possible, once the funding has been secured, with the goal of finalizing the NEPA process and obligating the necessary funds for construction prior to the September 30, 2021 deadline. This proposed schedule is aggressive, but the Town is highly optimistic that they can meet this schedule. They believe the key to meeting this schedule will be to obtain early commitments from the Resource Agencies to work out a plan to streamline the permitting process on this important regional project. Having the benefit of the information contained in the FEIS, combined with the fact that some of the original mitigation for the project has already been constructed, should help expedite the

overall permitting process. Once the initial contact with the Resource Agencies has been made, regular meetings will be scheduled to keep them informed of the project progress so that issues can be addressed as they arise, rather than waiting for milestone submission points, with a common goal of keeping the project moving. This streamlined approach will not only allow the project to remain on schedule, but should reduce the permitting requirements, as impacts can be avoided or addressed early in the process, rather than requiring extensive mitigation later in the design.

Quality of Life

This project improves the quality of life of area residents by supporting three of the six 'Livability Principles' developed by USDOT, along with the Department of Housing and Urban Development (HUD) and the Environmental Protection Agency (EPA) as part of the Partnership for Sustainable Communities – 1) Enhancing Economic Competitiveness, 2) Supporting Existing Communities, and 3) Values of Communities and Neighborhoods.

Southern NH Medical Center in Nashua relies on the Taylor Falls/Veterans Memorial Bridge for access to the region

Livability and community cohesion go hand in hand. The quality of relationships among people in a community, as indicated by the frequency of positive interactions, the number of neighborhood friends and acquaintances, and one's sense of community connection, is a significant indicator of a region's livability. Both Hudson and Nashua have vibrant downtown and commercial areas and well-established neighborhoods. The bridges over the Merrimack River connect these communities and contribute to their overall livability by linking the downtown areas, businesses, organizations, civic groups, and individuals. Providing easier access to both the Sagamore Bridges and the Taylor Falls/Veterans Memorial Bridges enhance the quality of life in both communities.

Providing Hudson Boulevard, linking NH Route 3A and NH Route 111, will have a positive impact on travel through this area for business and personal endeavors including work, shopping, school, medical treatment, and recreational activities. Currently, no hospital exists within the Town of Hudson, so access to the two hospitals located in Nashua is critical to the health and well-being of its residents. Both hospitals are located along NH Route 111, but each is difficult to reach at certain times of the day due to congestion on the Taylor Falls/Veterans Memorial Bridges which carries NH Route 111 west over the Merrimack River. The new Hudson

Boulevard would provide an alternate route for commuters that would be much quicker during the morning and afternoon peak hour thus reducing the travel demand on Taylor Falls/Veterans Memorial Bridge by as much as 10%, providing a much-needed congestion relief and assuring that Hudson residents and visitors to the region can obtain safe, efficient access to these facilities and obtain excellent medical care.

Since this area serves as a hub for the surrounding farms and homes, the new Hudson Boulevard can provide essential access to commodities that are also only available from the retail establishments located within the commercial areas near the Sagamore Bridges and across the river in Nashua. Without easy access to these businesses, the many people that live in the rural areas to the east of the Nashua Urban Area would lose more time during their week simply trying to obtain the day to day items that every family needs; reducing the time available for work or play. This new corridor would help ease travel to these everyday destinations and increase opportunities for families to spend time together enjoying recreational and social activities within their community.

St. Joseph's Hospital in Nashua also relies on the Taylor Falls/Veterans Memorials Bridge for access to the region

Innovation

In order to move this project as quickly as possible to construction, the Town of Hudson will use a Design-Build project delivery process. Within this process, the design and construction process are overlapping which typically fast tracks the overall process. This process can also lead to cost efficiencies through value engineering, less change orders, and less litigation since the contractor and designer are working together through the entire process. In addition, this process enables the owner to place much higher emphasis on the qualifications of the Design-Build team than in tradition low-bid procurement methods, which can lead to higher project success and in many cases improved innovation. To aid them in this process the Town has indicated that they would hire a qualified consulting team to act as the Owners Project Manager to oversee the design, construction, and testing for the project. This will give the Town additional technical staff to manage a project of this size and complexity.

With regards to safety, the proposed intersections will be equipped with the most up to date Intelligent Transportation System architecture and equipment available that is compliant with both local and state technologies and systems, allowing communication with the Town's

existing traffic signal systems and the State's Traffic Management Center enabling the signals to be monitored, enhancing their ability to move traffic in times of peak congestion. Currently the NHDOT does not have a required planning system in place to accommodate Connected and Autonomous Vehicles, however, the Town of Hudson will work with the NHDOT at the time of design and construction to provide as much flexibility into the traffic signal systems and roadside systems to allow for future integration of V2I or V2V communication for Connected and Autonomous vehicles. Flexibility with respect to the future will also be included in any traffic signal control equipment as changes are occurring on an almost daily basis in the industry. This technology can provide measurable benefits in improving safety along highway corridors and must be included on any new transportation corridor.

Partnership

The Hudson Boulevard Project is unique in that it brings both state and local government together to design and construct an important portion of a long-delayed roadway corridor that was initially envisioned to be a state government project. The Town of Hudson, in trying to resolve a long-standing congestion problem within the Town, is looking into the future to develop a transportation link that will serve both the Town and the overall region. The link that this portion of the original Circumferential Highway provides will serve not only commuters and commercial traffic, but also visitors to the State, as it will allow east-west motorists to bypass the congestion in both Hudson and Nashua to gain access to major north-south corridors such as I-93 and F.E. Everett Turnpike. This was the original intent of the NHDOT when the Circumferential Highway was proposed.

Traffic backups at Central Street and NH Route 3A (Lowell Road) Intersection

Now the NHDOT is partnering with the Town to facilitate the construction of a portion of the southeastern quadrant of the original design. The State of New Hampshire, through the Department of Transportation, is providing access to the Right-of-Way that was previously purchased for the Circumferential Highway that is necessary for the proposed project. The design and construction of the Circumferential Highway by NHDOT, however, is not currently included in the State's Ten-Year Transportation Improvement Plan. If funding becomes available to complete the original four lane Circumferential Highway in the future, the NHDOT indicated that they will construct it and take over the maintenance of the entire highway facility, including the installation of a toll collection system. For the time being, based on the needs of the region to reduce congestion and improve safety, the Town will provide the design and construction of the two-lane facility within the already purchased Right-of-Way. This

arrangement allows the Town to obtain a badly needed transportation facility much sooner than would be possible based on current NHDOT funding, while the NHDOT receives the long-term benefit of using badly needed funding for other projects unencumbered by the Hudson Boulevard Project. Eventually, should the NHDOT build the Circumferential Highway, the Town will avoid the maintenance of a facility that has a strong regional utility. The construction of this new roadway is a "win-win" for both entities.

Both the Department and the Town are willing partners in support of completing this project as soon as possible. This application enjoys widespread support from many stakeholders in these communities and elected officials at all levels of state and local government (See the attached Letters of Support).

Non-Federal Revenue for Transportation Infrastructure Investment

The Town of Hudson will generate its portion of the necessary funding by issuing bonds for the design and construction of the project. The Town has not secured the required bond at this time and will be work locally in October of 2019 to get a Warrant Article added to the March 2020 Town Meeting for approval of the bond. The Town Selectboard is behind the project and is committed to raising the necessary funding required to match the BUILD grant funds.

The project cannot be constructed without the receipt of sufficient funding through the BUILD grant program as the project cost exceeds the financial limitations of the Town system. To that end, the Town is prepared to begin work immediately upon notification of award of the grant. There are no apparent technical or environmental feasibility issues.

Project Readiness

Technical Feasibility

This project will be based on the original Circumferential Highway layout that was designed and began permitting back in the early 1990's. The Right-of-Way for this original layout has already been purchased based on the assumption that all roadway crossings would be grade separated. The Hudson Boulevard design will be based on the original design with the exception that the roadway crossings will be at-grade intersections, so the Right-of-Way impacts will be less. In addition, it is anticipated that the proposed design will result in less environmental impacts as the at-grade intersections will require less cut and fill slopes. These conditions were utilized to prepare the proposed conceptual project cost estimate as shown on Figure 4.

The NHDOT has requested that the Town plan, engineer, and construct the roadway to meet Turnpike standards and meet the original construction alignment to the extent practical except for the at-grade roadway crossings, therefore the overall scope of the project poses little overall design change risk as the layout has already been established. Appropriate

contingencies for a conceptual level cost estimate have been utilized, consistent with other large-scale roadway construction projects under design and permitting in New Hampshire, such as the Interstate 93 Bow-Concord widening project.

HUDSON BOULEVARD

CONCEPTUAL COST ESTIMATE
June 28, 2019

Weston & Sampson
7 Perimeter Road, Manchester, NH 03103
Tel: 603.263.9296

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
COMMON EXCAVATION	CY	168,500	$28	$4,633,750
ROCK EXCAVATION	CY	8,500	$55	$467,500
EMBANKMENT-IN-PLACE	CY	37,300	$17	$615,450
SAND	CY	41,600	$28	$1,144,000
CRUSHED STONE (FINE GRADATION)	CY	41,600	$39	$1,601,600
CRUSHED STONE (COARSE GRADATION)	CY	41,600	$39	$1,601,600
HOT BITUMINOUS PAVEMENT, MACHINE METHOD	T	46,300	$99	$4,583,700
			MAJOR ITEM SUB-TOTAL COST	$14,647,600
DRAINAGE ITEMS*			30.00%	$4,394,280
TRAFFIC CONTROL*			10.00%	$1,464,760
OTHER ITEMS AND CONTINGENCIES*			50.00%	$7,323,800
			HIGHWAY SUB-TOTAL COST	$27,830,440
TRAFFIC SIGNALS	U	5	$ 192,500	$962,500
BRIDGES				
ROAD CROSSING LOC. 1 - 65' SPAN	LS	1	$ 687,500	$687,500
WETLAND CROSSING LOC. 1 - 40' SPAN	LS	1	$ 423,500	$423,500
WETLAND CROSSING LOC. 2 - 40' SPAN	LS	1	$ 423,500	$423,500
WETLAND CROSSING LOC. 3 - 20' SPAN	LS	1	$ 214,500	$214,500
WETLAND CROSSING LOC. 4 - 50' SPAN	LS	1	$ 528,000	$528,000
WETLAND CROSSING LOC. 6 - 500' SPAN	LS	1	$ 5,280,000	$5,280,000
SPUI - 180' SPAN	LS	1	$ 1,903,000	$1,903,000
			BRIDGE AND HIGHWAY SUB-TOTAL COST	$38,252,940
MOBILIZATION			7.00%	$2,677,706
			CONSTRUCTION SUB-TOTAL COST	$40,930,646
CONSTRUCTION ENGINEERNG			7.00%	$2,865,145
			TOTAL CONSTRUCTION COST	***$43,795,791***
			USE	***$43,800,000***
DESIGN ENGINEERING			11%	$4,818,000
MITIGATION			2%	$876,000
			TOTAL PROJECT COST	***$49,494,000***
			USE	***$49,500,000***

*Based on percentages calculated from representative projects bid results

FIGURE 4 – Conceptual Cost Estimate

Project Schedule

The following project schedule has been developed based on previous experience and conversations with Town staff:

- July 2019 - Submit BUILD Grant Application
- October 2019 - Place Warrant Article for Construction Bond onto Town Ballot for March Town Meeting
- February 2019 – Award of BUILD Grants announced
- March 2019 – Town Meeting to Vote on Construction Bond
- April 2019 - August 2021 – Begin Preliminary Design and NEPA Process
- September 2021– December 2021 - Design-Build Team Procurement Process/Award
- January 2021 – Begin Design-Build and Construction Process
- September 1, 2026 - Project Completion

This schedule shows that all funds would be obligated by the mandatory September 30, 2021 deadline and that all construction would be completed prior to September 30, 2026. No Right-of-Way acquisition is required for this project so there is no risk of project delays as a result.

Required Approvals

As mentioned above, a Final Environmental Impact Statement for the entire Circumferential Highway was completed in 1993. The approval of this document allowed the NHDOT to hold the public hearings and acquire the Right-of-Way corridor that exists to this day. This section is the corridor to be utilized for the construction of Hudson Boulevard. Obviously, the original environmental document is too old to be simply updated as noted earlier, but it does provide a starting point for a new document. This new document would most likely be an Environmental Assessment requiring detailed studies of the impacts on existing wetlands and streams, noise and air quality impacts, threatened and endangered species, historical and archeological resource impacts, and other environmental impacts. A review of the original document shows that the largest project impacts were to wetlands and streams within the corridor, so most of the work in refining the original design will occur in these areas. Since much time has passed, the regulatory requirements in almost all areas have changed substantially and the evaluation of each resource will require detailed study to understand the existing resource as well as the impacts to it. It is assumed that, as with previous TIGER grants, the FHWA will be the lead federal agency for any environmental reviews.

Once the NEPA document is completed and approved, work on developing and obtaining the required environmental permits will begin. The Army Corps of Engineers (ACOE) and the New Hampshire Department of Environmental Services (NHDES) will play key roles in the permitting process. Based on the original document the ACOE will require that an Individual 404 Permit be

required due to expected impacts to wetlands and streams. They will also require a Section 401 Water Quality Certification. NHDES will require a Dredge and Fill Permit as well as an Alteration of Terrain and Shoreland Protection Permit. Additional permits that may be needed are an MS-4 Permit, Section 106 Certification, and an NPDES Permit for stormwater impacts during construction. There are most likely no threatened or endangered species within the project corridor, but there may be the presence of the Northern Long Eared Bat. This species has struggled recently but appears to be recovering and the requirements for avoidance or mitigation may be changing.

Extensive public outreach occurred in conjunction with the original environmental document in the early '90s. Since that time there have been various attempts to revive the project, but no significant efforts have occurred within the last decade. As part of this project, a strong public outreach effort will be required to re-educate the public on the pros and cons of the project and the Town of Hudson is committed to this effort. As mentioned above, the Town supports the project and is fully committed to meeting all the environmental regulations, including the need for public outreach, going forward. In addition, the project has been included off and on in the master plans generated by the Nashua Regional Planning Commission, the regional metropolitan planning organization for many years. Project funding has been the key element in whether the project remains feasible or not.

Legislative Approvals

New Hampshire Department of Transportation's (NHDOT) current Ten-Year Transportation Improvement Plan does not include the original Circumferential Highway, however the recently passed Legislative House Bill (HB2018) does include language that authorizes the NHDOT "to work with the Town of Hudson to plan, engineer, and construct a roadway compatible with turnpike standards within the southern portion of a circumferential highway right-of-way between N.H. Route 3A and N.H. Route 111 in Hudson". No other Legislative approval is required for funding since the Town will not use state or federal funding sources. Only local approval of the proposed funding will be required.

State and Local Approvals

Since no State funding will be used, no planning approval or inclusion in state level Transportation Improvement Programs is required. State approvals will be limited to coordination with the NHDOT on the planning and engineering design efforts and Resources Agencies on the environmental approvals. Local support for the project has been gaining momentum over the last few years as congestion has increased and residents have approached the Selectboard for a long-term solution to the "traffic problem" in Town. Additional approval of the construction bond will be required at Town Meeting to secure the Town portion of the engineering design and construction funds.

BENEFIT-COST ANALYSIS

A Benefit-Cost Analysis was performed using the guidelines of the Benefit-Cost Analysis Guidance for Discretionary Grant Programs. The analysis focuses on the construction of Hudson Boulevard from NH Route 3A to NH Route 111. The project is evaluated by comparing the existing conditions, which is considered the baseline, and a future scenario where the roadway provides a reduction in traffic on several local and regional routes. It is anticipated that if Hudson Boulevard is not constructed these roadways would only continue to suffer from increased traffic volumes, resulting in more congestion and the accompanying increased crashes and frustrated users. In the long term, the existing transportation system is unsustainable.

The evaluation period of the benefits and costs of a project are typically for a period that includes the construction of the project and the operational period, which is 20-50 years on average. Using these criteria, the analysis period includes the project development stage with the construction anticipated to begin in 2021 and be completed in 2026 with a 16-year operation life which was chosen to correspond with the Traffic Assessment prepared by the Nashua Regional Planning Commission to be consistent with their existing traffic model which goes to 2041.

The construction of Hudson Boulevard results in a Benefit-Cost Ratio (BCR) of 1.37, with a BCR of 0.70 at a 7 percent discount rate, and a BCR of 1.02 at a 3 percent discount rate. Please refer to the attached Benefit-Cost Analysis for more detail.

FEDERAL WAGE RATE CERTIFICATIONS

The Town of Hudson acknowledges that they will be required to adhere to all federal wage rate requirements for this project as a condition of the acceptance of the BUILD Grant funds.