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**Project Description**

The City of Manchester, New Hampshire is requesting \$25 million in RAISE 2021 Grant funding from the United States Department of Transportation (USDOT) for the **RAISE Manchester: Connecting Communities** project, which includes roadway, bridge, bicycle, and pedestrian infrastructure improvements at a total cost of \$30 million. This includes \$5 million in local match. The project consists of four integrated components:

- A. South Commercial Street Extension: new roadway with bridge over the railroad tracks and grade-separated bicycle and pedestrian path
- B. South Willow Street-Queen City Avenue Intersection Reconfiguration: peanut roundabout with improved bicycle and pedestrian accommodations
- C. Gas Street Extension and Active Transportation Corridor: new roadway connecting South Commercial Street Extension to Willow Street, and utilization of abandoned railroad corridor for bicycle and pedestrian path
- D. Pedestrian Connection Improvements: pedestrian bridge over Granite Street

These interconnected project components create critical system connections that will revitalize the 300-acre project area, including adaptive redevelopment of existing buildings and new construction opportunities totaling over one million square feet of mixed-use development. This public-private opportunity is validation of the investments and substantial progress already achieved by the City, major employers, and local development partners in the revitalization of the Millyard and Downtown Manchester. The project’s integrated transportation infrastructure improvements will mitigate existing traffic congestion, increase driver and pedestrian safety, improve critical rail crossing and freight mobility, and provide improved and accessible transportation options for everyone in the community.

**Project Location**

The Project Area is focused around the South Millyard district, which is located immediately to the southwest of the City’s historic Downtown and Millyard areas.

Geographically, the area is bounded by the:

- Granite Street corridor on the north
- Queen City Avenue corridor on the south
- Elm Street (US Route 3) and Willow Street corridors on the east
- The east bank of the Merrimack River

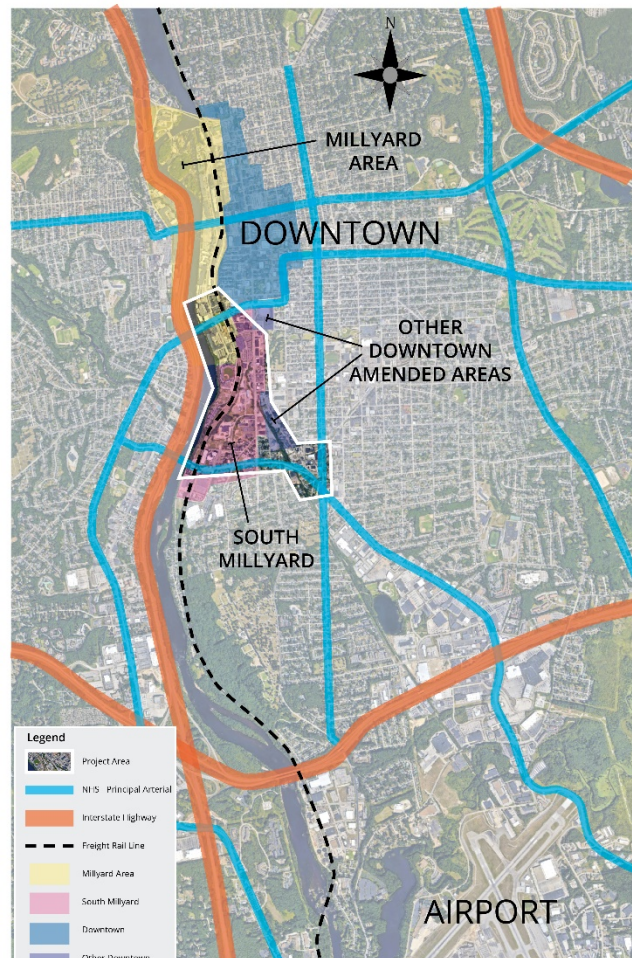


Figure 1: Project Area

The project area includes portions of US Census tracts 14, 15, 19 and 2004, and is located within the boundary of the US Census-designated Urbanized Area 53740 (Manchester, NH), which has a population of less than 200,000 and is considered a rural zone for the purposes of the RAISE Grant application criteria. Based on 2014–2018 Census data and the RAISE Persistent Poverty Project Status Tool, this project area meets the definition as an Area of Persistent Poverty.

**Statement of Work - Detailed Description of Project Components**

An overview of the Project Components and their location is shown in Figure 2. The proposed infrastructure improvements are essential to reconnect the project area with the city and regional transportation network by providing multimodal connectivity for passenger drivers, freight drivers, buses, cyclists, pedestrians, and potential future rail transit. Each proposed improvement reinforces the larger objectives of providing reconnection and creating development opportunities while preserving corridor mobility, enhancing safety, and mitigating congestion.

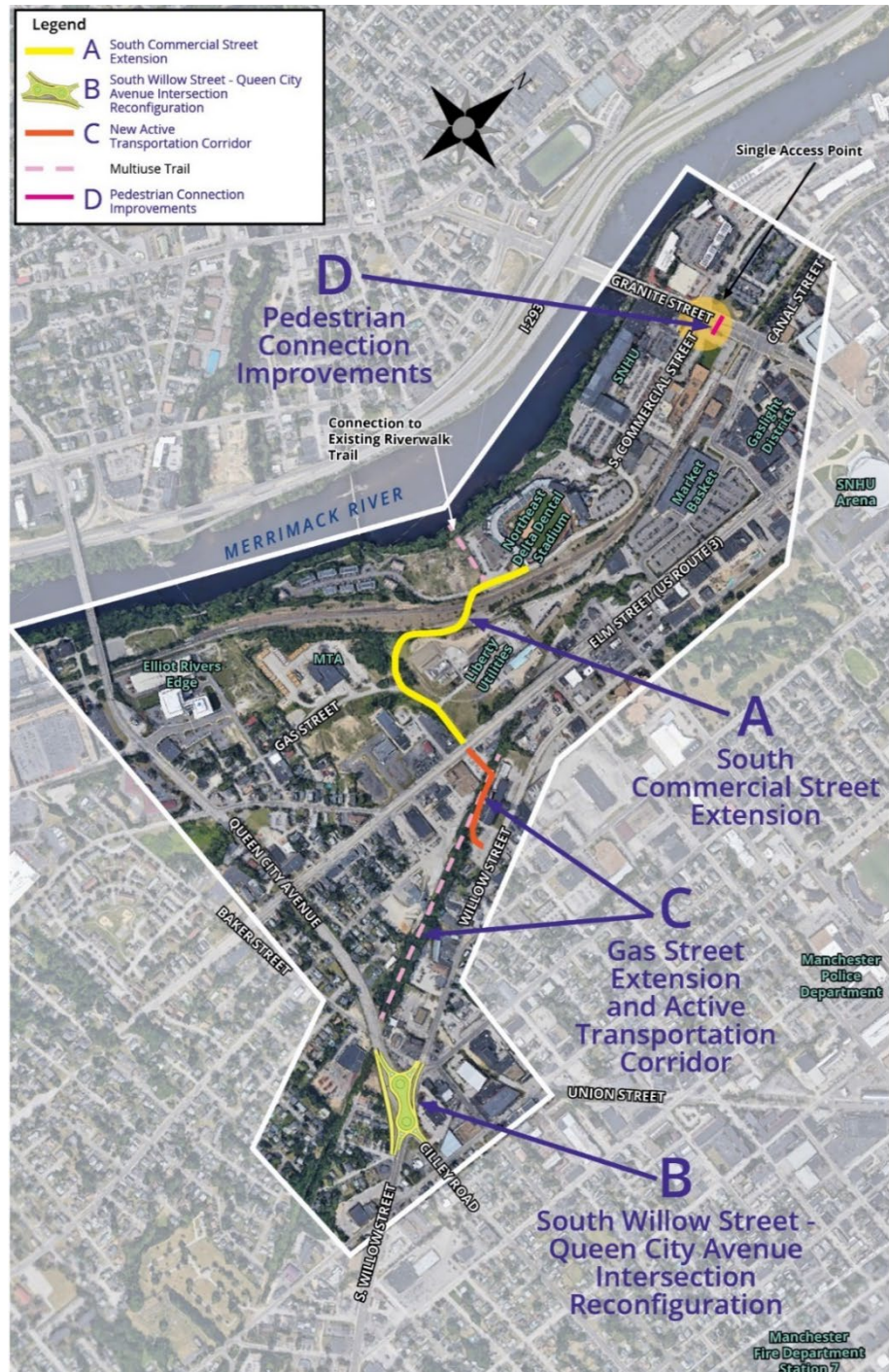


Figure 2: Manchester, NH RAISE Grant Application Project Components

### Project Component A: South Commercial Street Extension

The project will extend the existing dead end of South Commercial Street to create a direct connection to US Route 3 (Elm Street). The street extension will cross the active Pan Am Railroad line with a new above-grade crossing, providing the only above grade crossing in the downtown area. The South Commercial Street Extension will include a grade-separated bicycle and pedestrian path, providing complete street connections and mobility improvements for all users, as shown in the [design plans](#).



Figure 3: Conceptual Improvements to South Commercial Street Extension

Historically, there were [several east-west connections](#) between South Commercial Street and Elm Street that provided multiple means of ingress/egress through the area. Over time, these connections have been eliminated, forcing traffic from South Commercial Street to Granite Street, thus choking off access. The existing rail line currently forms a barrier to east-west movement. The South Commercial Extension provides that missing connection, and will reconnect the city across the barrier of the railroad.

The intersection of South Commercial, Commercial, and Granite Streets is one of the busiest junctions in Manchester, with average daily traffic of 35,000 vehicles. It serves as the primary entrance and exit for both the Downtown and Millyard areas, which are the home to the businesses and institutions that form the heart of Manchester's economy. It is also the only current connection from the South Millyard area to the regional road network. Over time, the South Millyard has developed into a vibrant hub of activity with several high traffic generators, including:

- i. Southern New Hampshire University (SNHU) online education facility and its more than 1,800 employees
- ii. Northeast Delta Dental Stadium (capacity of 7,500) which regularly hosts minor league baseball games and large events/concerts
- iii. Hilton Garden Inn Hotel with 125 rooms
- iv. Riverwalk residential complex with 150 apartments and 42 condominiums
- v. WMUR-TV – the State of New Hampshire's primary television news station

With this density of uses in the South Millyard, and the fact that the Granite Street/Commercial /South Commercial intersection is only 800 feet from the I-293 Exit 5 interchange, gridlock conditions often develop on the ramps of I-293 during peak traffic hours, major events and when a train is at the grade crossing on Granite Street (just 340 feet east of the intersection). The additional entrance and exit of the South Commercial Extension will provide relief to congestion. To fully understand traffic patterns on City streets and supplement traditional traffic signal models for the RAISE Project application, the City has contracted with [StreetLight Data](#), which uses smartphones as sensors and proprietary RouteScience® to interpret and illuminate how vehicles and people interact on Manchester's streets. Based on the resulting StreetLight travel data, from the start of the off-ramp to the project area, it takes vehicles [an average of 12 minutes](#) to travel less than a mile in the peak periods, which is more than double the travel time during non-peak conditions. The

proposed connection will provide alternative access to the South Millyard and increase transportation options for all users.

There are also high levels of congestion on South Commercial Street, Commercial Street, and Elm Street, which is part of the National Highway System. Due to the redistribution of traffic to Elm Street with variable arrival patterns, an adaptive signal system will be extended to all intersections down Elm Street from Granite Street to Queen City Avenue. The City is currently implementing an Adaptive Signal Control (ASC) system on Granite Street, and plans to upgrade the communication between signals with Signal Performance Measures (SPM) on South Willow Street in 2022 through a Congestion Mitigation and Air Quality (CMAQ) Grant. Expanding the ASC system will connect two of the City’s ongoing adaptive signal/signal performance measure systems occurring on Granite Street and South Willow Street. This will help mitigate the increased traffic volumes from rerouting vehicles from Granite Street to Elm Street to access the new South Commercial Street connection.

Currently, the Manchester Transit Authority (MTA) does not provide a route to the South Millyard because the existing road network dead-ends, as there is no way to drive through the area without forcing a U-turn. One of MTA’s strongest routes, the Green DASH, a circulator service connecting the Millyard with Elm Street, has to make a figure 8 loop with two deviations to serve the major destinations. This project will better connect the destinations, streamlining the service and allowing passengers to make the same trip in roughly half the time. With the connection of the South Commercial Extension, there is an opportunity for bus transit into the South Millyard. A shuttle service is currently under study as part of the [City’s Transit Oriented Development \(TOD\) district planning](#).

**Project Component B: South Willow Street-Queen City Avenue Intersection Improvements**

This element will reconfigure this important intersection as a gateway junction, which will include a new roundabout system and opportunities for infill development of mixed-use buildings. The project will improve functionality and clarity of the intersection for all users. This part of the project includes bike lanes and sidewalks, and an integrated connection to the Multimodal Corridor, which connects with the South Millyard area, Downtown, and Millyard beyond, as shown in Figure 4.



Figure 4: Existing and Conceptual Improvements to South Willow St.-Queen City Ave. Intersection

The existing intersection was constructed using design guidelines for infrastructure from the 1980s when larger, higher-speed intersections and feeder roads were seen as the solution to development woes. The wide lane widths and confusing layout of this intersection has led to unsafe conditions. [In the summer of 2019, there was a fatal crash at this intersection](#) which was a result of high speed. The reconfiguration of this intersection to a lower-speed roundabout system will help mitigate this type of crash. Existing roadway conditions are unfriendly for bicyclists and pedestrians due to the lack of crosswalks and sidewalk connectivity, which is also hindered by the presence of many traffic lanes with high design speeds.

Additionally, the [proposed design](#) of this intersection will improve freight operations by reducing signal delay for trucks on National Highway System roads, particularly for trucks accessing Exit 4 off of I-293 and trucks serving the NH Route 28 (South Willow Street) commercial/industrial corridor. StreetLight data currently shows that trucks traveling through this intersection during peak periods experience double the travel time than during non-peak times. By reducing the control delay, the proposed roundabout system will reduce truck delay and enhance freight mobility.

**Project Component C: Gas Street Extension and Active Transportation Corridor**

The historic rail corridors in the project area are underutilized resources. The Manchester-Lawrence Railroad (MLRR) corridor runs from the South Commercial Street area at the baseball stadium south to Queen City Avenue and has been abandoned and neglected for more than 50 years. The 0.68-mile-long segment is currently overgrown with scrub brush, serves as an illegal dumping ground for trash, and is a hidden zone for undesirable behavior. The Concord-Portsmouth Railroad (CPRR) corridor, which parallels the MLRR to the east, is in similar condition.



Figure 5: Conceptual Active Transportation Corridor Configuration

The retired MLRR railbed will be converted to an [Active Transportation Corridor](#) configured for a separated paved path for cyclists and pedestrians, and cutting-edge, nature-based stormwater infrastructure. This is a critical connection for both the City and State, as the South Millyard is slated to become the location for a regional multimodal rail and city shuttle facilities and a surrounding high-density Transit Oriented Development (TOD) District.

There are currently no dedicated north-south facilities through the Central Business District to safely connect the historic Manchester Millyard and downtown to make the area easily accessible for pedestrians and non-motorized users to navigate. For Manchester’s large and active cycling community (both commuting and recreational), the new corridor fills one of the most significant gaps in the [established system of local and regional bike paths and routes](#).

The corridor will link cyclists and pedestrians to the reconfigured gateway at Queen City Avenue/Cilley Road/South Willow Street while providing access to adjacent manufacturing, retail facilities, and the Manchester-Boston Regional Airport. It will also connect to the existing South Manchester Rail Trail which terminates 400 feet to the south of Queen City Avenue. This trail

network includes several sections where engineering and construction are progressing to complete a statewide trail connection to the Massachusetts border. The Granite State Rail Trail (GSRT) aims to provide a contiguous trail network from Salem to Lebanon, NH of approximately 120 miles. Currently the longest section of the trail is the 57 contiguous miles from Lebanon to Boscawen, with the biggest gap in the off road route being from Concord to Manchester, so construction of this rail trail will help fill the gap in the statewide network.

**Project Component D: Pedestrian Connection Improvements**

The City will construct a new pedestrian bridge that provides a north-south crossing of Granite Street, funneling pedestrian traffic to a single safe location with a grade-separated crossing. There are many pedestrians who walk to places of employment and for the large events that take place in the project area. The bridge’s north entry will be integrated into the pedestrian infrastructure of the Millyard, and the south entry will have direct access to the South Millyard and Gaslight District, both providing fully accessible ramp access.



Figure 6: Conceptual Pedestrian Bridge

Currently, the pedestrian crosswalks that run north-south along Commercial Street are the most direct path from the Millyard to the South Millyard areas and attractions, including the 7,500-seat Northeast Delta Dental Stadium, SNHU facilities, hotels, residential developments, and other businesses. In its current form, there are multiple lengthy at-grade pedestrian crossings of Granite Street (more than 100 feet), which are uninviting as they cross up to seven lanes of dense urban traffic. The required pedestrian crossing time allotment within the traffic signal phasing contributes to reduced capacity of the intersection for vehicles and frequent, dangerous queuing of traffic onto the Interstate system. Furthermore, during peak hours, drivers and pedestrians pour out of the busy Millyard district onto local intersections of the street network, causing further congestion in these areas. Based on 2019 counts, there were over 600 pedestrians from 7AM-7PM at the Granite Street and Commercial Street intersection alone, resulting in activation of the long exclusive signal phase every cycle during the peaks.

**Transportation Challenges the Project Addresses**

Manchester has experienced significant success in revitalizing its city center area over the past 30 years. In the past, vacant mills and commercial buildings comprised the area formerly occupied by the Amoskeag Manufacturing Company, now known as the Millyard, which is adjacent to the beautiful Downtown. Thanks to the vision of private entrepreneurs, investors, and city leaders, these areas are now filled with thriving businesses, innovative start-ups, and successful educational institutions. Areas that had been underutilized industrial sites are now popular residential complexes, stadiums and restaurants.

For all of the success in the Millyard area and the Downtown, development of the South Millyard faces significant challenges. Creating private mixed-use development of a dense district requires high-quality transportation options that provide connectivity and congestion mitigation for the increased traffic demand that comes with new development. With success comes the necessity and responsibility to adapt outdated transportation systems to 21<sup>st</sup> century standards to enable continued

job creation, local investment and development. The following identifies the transportation challenges that have resulted from growth and development of downtown:

1. Significant traffic impacts:
  - a. Traffic congestion on Granite Street is significant during peak hours and for downtown events, impacting the safety of drivers, pedestrians, and cyclists. During peak hours, the average travel speed on Granite Street is 16 mph while the posted speed is 30 mph. The Granite/Commercial Street intersection has 140 crashes from 2016-July 2021 and crash rate of 2.0 crashes per million entering vehicles.
  - b. During peak hours, this [congestion affects mobility on the adjacent Interstate System \(I-293\)](#). Granite Street is a Principal Arterial, part of the National Highway System, and is one of the three entrances connecting Downtown Manchester with the Interstate system, as well as one of four critical crossings of the Merrimack River. The Granite/Commercial Street intersection is challenged by the fact that the intersection is only 800 feet from the I-293 Exit 5 interchange. Gridlock conditions often develop on the ramps of I-293 during traffic peak hours and major events which results in traffic congestion that causes queuing onto roadways with high design speeds.
  - c. Canal Street is a high-capacity arterial with a four-lane cross-section that provides access to downtown and the Millyard. It also provides connectivity between the I-293 Exit 5 (Granite Street) and Exit 6 (Amoskeag Circle) interchanges. At the busiest location, as it services 13,000 vehicles a day. There are nine traffic signals in the 0.9 mile segment from North Commercial/West Brooks Street intersection to Granite Street that contributes to corridor delay despite being coordinated with time-based offsets.
  - d. Elm Street (US Route 3) is a Principal Arterial that is part of the National Highway System, and is the main downtown street through Manchester's Central Business District. This area currently experiences significant traffic congestion and is often the site of vehicular accidents; the 0.92 mile segment on Elm Street from Granite to Queen City had 2,573 crashes with a rate of 87.07 crashes per million vehicle miles traveled.
  - e. The Granite Street railroad crossing is located just west of the Granite Street/Canal Street intersection. Freight trains with up to 106 cars travel through Manchester. When this happens the Downtown, [I-293 ramps and mainline are at a standstill](#).
2. Vehicular and pedestrian safety: The Queen City Avenue and South Willow Street intersection experiences safety concerns due to its current configuration and design speed. The crash rate for a radius area of 1,000 feet around the intersection for the five-year period 2016-to July 2021 is 2.82 crashes per million entering with four fatalities and 158 total crashes. Additionally, with no existing crosswalks or pedestrian signals at the intersection, the lack of infrastructure creates a barrier for pedestrians crossing the intersection.
3. Lack of east-west connectivity: Over time, the development of large land parcels and the presence of the Pan Am Railroad have reduced the number of east-west streets that connect the South Millyard with Elm Street (see Figure 7, Page 9). When land uses were less dense in the project area, this condition was inconvenient but tolerable. With redevelopment now spreading southward from Downtown and the Millyard, there is an opportunity for the southern part of Elm Street to become a dense, multi-use corridor with a complete streetscape for all users. Better connections are needed to empower further redevelopment and economic growth, as well as response times for Emergency Services vehicles.



4. Gaps in bicycle infrastructure system: The City has been working to establish an integrated bicycle system through rail trail projects, and improving bike pavement markings on shared roadways. However, there are several “gaps” in the system that prevent cyclists from riding regionally in a safe, direct manner. Several of these missing connections are in the project area, and force cyclists to ride on existing roadways without dedicated cycling infrastructure, that based on a [Bicycle Level of Stress Analysis](#) are appropriate only for exposure-experienced and comfortably confident riders.
5. Implementation of the [Manchester Transit-Oriented Development \(TOD\) Plan](#): The TOD Plan was completed in 2020 and established a vision and broad consensus around the creation of a centralized transportation hub within the RAISE Grant project area. The TOD District cannot be implemented without the transportation improvements in the RAISE Grant project as the location for the creation of a transportation center where rail, bus, auto, bicycle, and pedestrians can connect. The ongoing [Capitol Corridor](#) initiative being led by the NH Department of Transportation has made significant progress to restore passenger rail service linking Manchester and Boston, station locations options in the South Millyard.

The proposed transportation infrastructure improvements of the **RAISE Manchester: Connecting Communities** project will enhance mobility and safety for passenger vehicles, freight, bicycles, and pedestrians, as well as access for public safety and transit vehicles. The improvements will also mitigate congestion, implement proven safety countermeasures, and enable new mixed-use/mixed-income development. The project area and surrounding census tracts have large minority communities and a high percentage of residents living below the poverty level. Creating connections to safe and affordable transportation options, improving housing and economic development opportunities, and mitigating negative environmental conditions can benefit these traditionally underserved communities.

COVID and the Project Area: The City has been using StreetLight to monitor the changes in traffic volumes and peak hour traffic levels during and post COVID. On March 27, 2020, New Hampshire Governor Christopher Sununu invoked Stay-at-Home-Orders and most employees within the project area transitioned to working remotely. Due to the success of the vaccine deployment in New Hampshire, all State Offices re-opened May 10, 2021 and several employers, including SNHU (located in the project area) have stated that employees will be transitioning back to the office. The City has collected Average Annual Daily Traffic (AADT) and hourly volumes and has noticed that daily and PM volumes are returning to pre-COVID levels, while the AM peak hour volume seems to be dispersed over a longer time frame. It is expected that by fall 2021, traffic will return to pre-COVID congestion levels in the Millyard.

### [Project History and Context](#)

Manchester is the social and economic center of southern New Hampshire, and is growing in both population and economic significance. Since 1990, Manchester’s population has grown by more than 13%, from 99,654 in 1990 to a [2019 population of 112,673](#). Economic growth in the life sciences, cutting edge bio-medical engineering, advanced manufacturing, information technology, education, and service industries are supporting new job growth. In addition, Manchester is the most ethnically diverse community in the State, and in northern New England [U.S. Census Bureau].

During the 19<sup>th</sup> century, the Amoskeag Manufacturing Company in Manchester, NH was the industrial heart for the region’s economic success. The Millyard, located along the Merrimack River,

provided jobs for thousands. To the east of the Millyard, Downtown Manchester along Elm Street was the regional urban commercial center. To the south, the area below Granite Street contained important rail lines, heavy industrial sites and warehousing facilities. However, like many manufacturing communities in the United States, Manchester’s original, defining industries were diminished by changes in global and national economics and demographics. After a period of decreased use and decay in the twentieth century, many of Manchester’s vast mills and commercial buildings were underutilized or completely vacant, and became areas of blight.

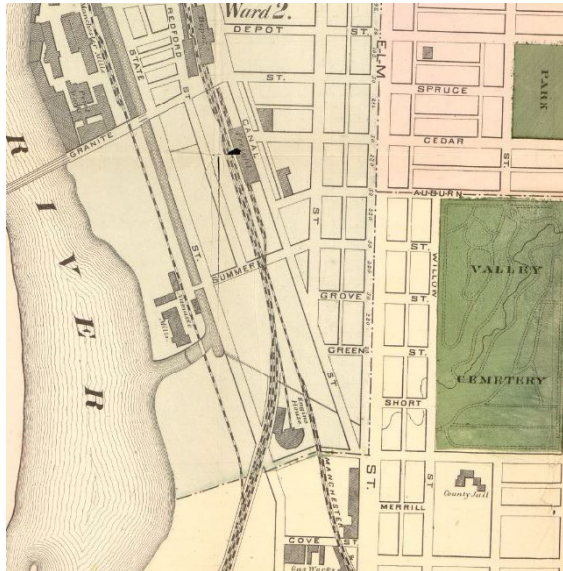


Figure 7: Manchester Street Grid from 1873

Figure 7 is a street map of Manchester from 1873, which shows how the city once had multiple east-west street connections to Elm Street. Now, after years of development and growth, no such connections remain in the South Millyard district, leaving the Granite Street/Commercial Street intersection the only entrance and exit point.

Manchester has reinvented its economy through innovation, persistence and grit. The success of Manchester’s Millyard in particular has been the result of decades of dogged, incremental progress. Mill buildings that were once filled with mechanical fabric looms are now home to offices for companies such as Texas Instruments, Autodesk, Eversource Energy and [DEKA Research and Development](#), which plans to bring a [Vertiport to Manchester](#). Other buildings

are filled with engineering firms, architects, professional offices, college classrooms and restaurants. In response to these improvement areas, the Downtown experienced a 5.1% increase in residents between 2000 and 2020. The [success in business activity](#) and the need for additional housing is attracting developers who see opportunities to build apartments and hotels within the center of the city.

The South Millyard area is slowly evolving with new mixed uses, including educational institutions such as SNHU and the University of New Hampshire-Manchester campus, multi-unit housing, restaurants, shopping, sports and entertainment, among other dynamic activities, making Manchester an attractive place for students and young professionals. The City is actively encouraging this evolution, supported with [actions by both the public and private sectors](#), working in partnership.

### [Planning for Equity in Redevelopment](#)

While some redevelopment is occurring in the project area, there are high levels of disinvestment and poverty in the community. The project area is part of Manchester’s only designated [Opportunity Zone](#). Manchester itself is the most diverse community in New Hampshire and is defined by the Southern New Hampshire Planning Commission (SNHPC) as an Area of Minority Concentration. The census tracts that make up and are adjacent to the project area are among the most diverse in the city with a range of 25.7% to 54.9% minority populations. In terms of economic and family income, the project area is noted by the SNHPC as an Area of Concentrated Poverty and those census tracts are the poorest communities in the city with a range of 25.4% to 44.4% of resident families living below the poverty line. These are the families who are most challenged to commute to work and travel for daily services because a privately owned auto is beyond their means. Therefore,

access to safe and robust infrastructure for walking, cycling and access to transit is critical to their health, safety and access to economic opportunity.

### **Building on Success – Completed Plans and Projects**

This RAISE grant application is the key step towards implementation of the shared vision for a more connected Manchester, and in particular, increased connections to the South Milliard area. The City's 2006 [Downtown Strategic Development Plan](#) and the [2021 Manchester Master Plan](#) articulated many of the central ideas embodied in this RAISE project. The 2017 [Manchester Connects - Multimodal Transportation and Land Use Planning Initiative](#) was initiated by civic leaders, community groups, businesses, non-profit organizations and residents. It was funded through a Public/Private Partnership supported by the SNHPC, and focused on increasing connectivity to help people move within and through the area on foot, by bike, car, bus, and train.

Over the past two decades, the City and its State and regional partners have completed several projects that expanded connectivity and urban livability:

- Construction of 1,700 car parking garage at South Commercial Street, completed July 2019
- Revitalization and improvements to the Elm Street Gaslight District, which included pedestrian and streetscape elements, as well as new curbing and pavement overlay along Elm Street between Granite Street and Green Street, completed 2018
- Rehabilitation of five structurally deficient bridges and improved ramp system connecting Manchester to Interstate 293, completed 2017
- Implementation of bike lanes in Downtown and extending south along Elm Street, made possible by the policy document of the 2016 Manchester Bicycle Plan.
- Widening of Granite Street Bridge, which included the completion of the single-point diamond interchange at Exit 5 of I-293, completed 2008
- Construction of the Hands Across the Merrimack Pedestrian Bridge, the only dedicated multi-use trail currently across the Merrimack River, completed 2008
- Construction of Riverwalks on the east bank of the Merrimack River, completed in phases during the early 2000s

**Mutually Supporting Planning and Implementation**

The 2021 **RAISE Manchester: Connecting Communities** project and its components are the next logical implementation of several large-scale, community-engaged and transit-centric planning initiatives by the City of Manchester and its regional partners. The simultaneous and coordinated planning efforts all work seamlessly together:

- **Manchester Transit Oriented Development (TOD) Plan** was the result of an intensive, community-engaged 18-month planning process to achieve broad consensus. This mobility-focused revitalization strategy encompasses this RAISE grant application project area and the two projects are well-coordinated. The TOD plan creates a framework for new places to live, work, and play with convenient options to walk, bike, or take transit to many daily destinations. The plan envisions \$588 million worth of real estate programming in the form of new apartments, condominiums, offices, shops, parks, and plazas all within a 5 to 10-minute walk of a new shuttle service, new bus hub, and a future commuter rail station. The plan determined that the most feasible location for the new multimodal transportation hub will be within the RAISE grant project area, meaning the benefits of the RAISE grant can have further impact. The plan was led by the SNHPC and supported by the NHDOT Community Technical Assistance Program (CTAP) and private local funders as a strategy to mitigate impacts associated with the expansion of I-93 between Salem and Manchester. The improvements to overall transportation systems and connectivity funded by the RAISE grant is critical infrastructure necessary for transit-oriented development in Manchester.



Figure 8: TOD Plan

- **City of Manchester Master Plan** involved thorough stakeholder and public engagement process over a two year process, and was adopted by the City in June 2021. The Plan dovetails with the TOD Plan and includes specific recommendations for regulatory reform and incentives for medium- to high-density affordable housing, work-force housing and high-density development.
- **New Hampshire Capitol Corridor Project** is a passenger rail development initiative led by the NHDOT, which would extend commuter rail service from Lowell, Massachusetts to Nashua and Manchester, New Hampshire. The effort is currently in the Project Development Phase, which includes design, environmental review, and a financial plan for the capital and operating needs of the proposed service.
- **Workforce Housing Initiative** is the City’s ongoing work to meet the need for affordable housing for the expanding population of all income levels and to combat homelessness. The

Initiative recently issued two Requests For Proposals for personal specific redevelopment workforce housing as well as a \$4.7 million funding opportunity in collaboration with the Department of Housing and Urban Development

All of the project elements that make up Manchester’s 2021 RAISE grant application have been the result of intensive community engagement and enjoy broad support for implementation. In preparation to apply for the projects included within Manchester’s RAISE grant application, the [City convened a day-long charrette](#) in 2019 in which stakeholders, property owners, and the public worked together in a facilitated sessions. The eighty (80) participants learned about ongoing planning and transportation projects, worked in groups to identify key issues in the project area that should be improved, and set priorities for key recommendations in the area.



Figure 9: Participants in the May 23, 2019 BUILD Grant Charrette

The subsequent planning for the Manchester TOD Plan and the Master Plan have engaged hundreds of residents and stakeholders in generating concepts, setting priorities and moving the plans forward to adoption. From September 12-17, 2019 Manchester’s Planning & Community Development staff held their Planapalooza, which featured six different planning and brainstorming sessions, which culminated in a presentation of the findings. One hundred sixteen (116) individuals participated in the various sessions.

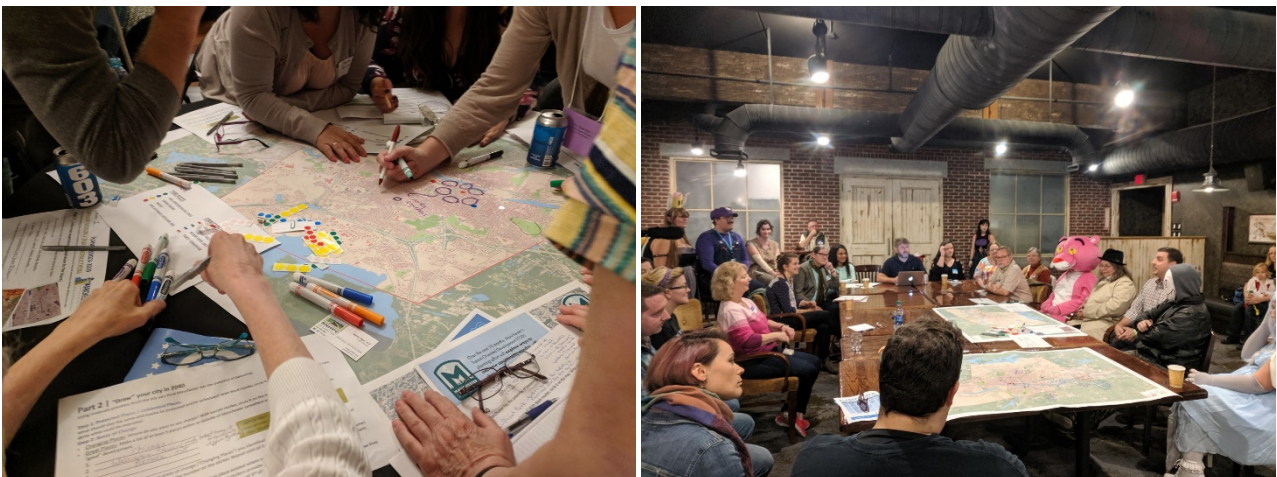
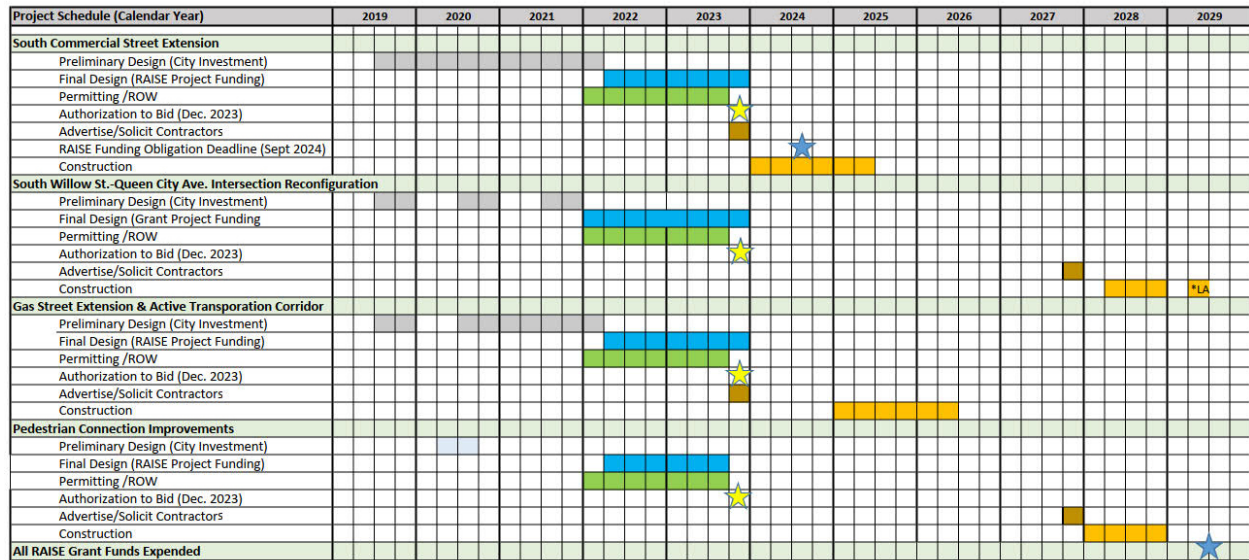


Figure 10: Session during the Manchester Planapalooza; September 15, 2019

**Project Schedule**

The City is positioned to execute the completion of design and permitting to lead to the start of construction in accordance with the funding requirements of the RAISE program. The **RAISE Manchester: Connecting Communities** project will complete all design, permitting, and funding obligation in a timeframe to synchronize with the completion of City plans and improvements. All necessary activities will be complete to allow RAISE grant funds to be obligated sufficiently in advance of the statutory deadline of June 30, 2024. Per requirements, all funds will be expended by June 30, 2029. A detailed Schedule supplied [here](#).



Note: City Investment during 2019-2021 completed Conceptual Design, Preliminary Design and Initial Environmental Coordination  
 Construction Season in New Hampshire is April - November except bridge work  
 \*LA - For landscape work only

Figure 11: Manchester RAISE Grant Project Schedule (Calendar Year)

**Grant Funds, Sources and Uses of all Project Funding**

The City of Manchester seeks USDOT RAISE funding for **RAISE Manchester: Connecting Communities**. In addition to the costs below, the City has already invested \$340,000 toward conceptual and preliminary design along with initial ROW and Environmental coordination, completed in 2019-2021, that are not part of the request under the RAISE Grant. Figure 12 (below) shows the cost and funding allocation of each proposed improvement.

Scope element	Total Cost (millions)	RAISE Grant (millions)	Non-Federal (millions)
South Commercial Street Extension	\$15.27	\$12.73	\$2.54
South Willow Street-Queen City Avenue Intersection Improvements	\$4.95	\$4.12	\$0.83
Gas Street Extension & Active Transportation Connector	\$7.20	\$6.00	\$1.02

<b>Pedestrian Connection Improvements</b>	\$2.58	\$2.15	\$0.43
<b>Total</b>	<b>\$30.0</b>	<b>\$25.0</b>	<b>\$4.82</b>
<b>Percentage</b>	<b>100%</b>	<b>83.3%</b>	<b>16.7%</b>

Figure 12: Manchester RAISE Grant Project Budget

The City has secured the funding commitments totaling 16.7% of the total project cost. The Mayor’s Community Improvement Program for the fiscal year 2020 included \$4 million dollars to move forward with the South Commercial Street Extension and remaining local funds are planned for the 2023 fiscal year to supplement the construction phase. The City has invested \$340,000 for the preliminary design of the RAISE Grant elements along with NEPA and permitting agency outreach and coordination.

<b>Date of funding obligation</b>	<b>Funding Source</b>		
	<b>Total Cost (millions)</b>	<b>RAISE Grant (millions)</b>	<b>Non-Federal (millions)</b>
September 30, 2024	<b>\$30.00</b>	<b>\$25.0</b>	<b>\$5.0</b>
<b>Percentage</b>	<b>100%</b>	<b>83.3%</b>	<b>16.7%</b>

Figure 13: Manchester RAISE Grant Funding Source Allocation

**Summary of Potential Private Investment and Job Creation**

Based on the approved [Manchester Transit-Oriented Development Plan](#), regional and city officials are planning for the redevelopment of existing buildings and construction of new buildings totaling:

- **Office:** 785,000 square feet
- **Retail:** 198,000 square feet
- **Residential (units):** 1,802 units
- **Hotel (rooms):** 154
- **Gross Floor Area (SF gross):** 2.9 million square feet at anticipated 60% build-out
- **Development Value:** \$588.7 million

To support integrated mixed-use development, all components of the **RAISE Manchester: Connecting Communities** project are mutually supportive. Successful commercial, office, retail, educational, entertainment, residential, restaurants and activated public space require pedestrian and vehicular traffic, convenient access, and visibility to thrive. These amenities create value and increase the quality of life for all who live, work, and visit Manchester and the region. Providing multimodal access to a diversity of uses and users ensures the project area remains active at all times of the day, week and year, supporting a sustainable economy.

## Selection Criteria

The **RAISE Manchester: Connecting Communities** project meets the RAISE FY2021 Selection Criteria by providing long-term benefits to the area's transportation systems, improving safety, addressing climate change impacts, providing options for mobility-challenged populations, improving racial equity for traditionally underserved neighborhoods and generating significant economic stimulus.

### **Primary Selection Criteria A: Safety**

The project will improve safety within the project area by constructing key components of the transportation system to enhance the movement of goods and people by improving the roadways, intersections, multimodal connections, and pedestrian and bicycling facilities. In the aggregate, these projects will reduce the number, rate, and consequences of transportation-related injuries, and fatalities, and will provide safer pedestrian access and mobility. Project components that will specifically improve safety:

- South Commercial Street Extension: Current conditions necessitate all traffic moving into and out of the project area through the intersection at Granite and South Commercial Street, resulting in a higher volume of traffic at this intersection and over capacity (LOS F) conditions. The extension of South Commercial Street to Elm Street and beyond will disperse vehicular traffic more efficiently through the project area and will reduce the traffic pressure on this key intersection.
  - From 2017-2021 there were 140 crashes at the intersection with a crash rate of 2.0 per million entering vehicles. Removing traffic and being able to improve coordination of traffic flow on Granite Street can reduce crashes up to 21% (CMF for Coordinate Arterial Roadways).
  - StreetLight data shows that there are currently 4,000 vehicles per day from Granite Street and Commercial Street that cross the at-grade rail crossing on Granite Street going to or from Elm Street. The proposed project would provide a cut through and bridge over the railroad track reducing the number of vehicles crossing a rail line at-grade. The above grade crossing supplies all eastbound traffic at Granite Street/South Commercial Extension and traffic on Elm Street, an option to avoid gridlock during train activity, as well as emergency services access to the South Millyard.
  - The project will provide shorter travel distances from Manchester Police Department headquarters, resulting in significant safety improvements for the general public. Currently, there is only one route into and out of the South Commercial Street area. From 2017-2020, the Manchester Police responded to 605 calls for service on South Commercial Street. This project will reduce their response distance in half, resulting in significant travel time improvements by avoiding already congested corridors.
  - Secondary access will provide the Manchester Fire Department alternative access to the South Millyard which has users with a higher need for emergency services, such as SNHU (with approximately 1,800 employees), Northeast Delta Dental Stadium (capacity of 7,500), and high-density residential developments. It also provides additional access to their only boat ramp south of the Amoskeag Bridge for water rescues on the Merrimack River. For every minute lost in travel time is \$9,000 of property damage due to fire, based on formulas in [FEMA-BCAR Resource](#).



- South Willow Street-Queen City Avenue Intersection Reconfiguration: From 2017-July 2021 there were 158 crashes at this intersection with a crash rate of 2.82 crashes per million entering vehicles. The reconfiguration of this intersection with a roundabout system will have an immediate effect on vehicular safety, since replacement of a signalized intersection with a roundabout in similar locations has been shown to result in a 45% reduction in all crash types (source: Crash Rate Modification Clearinghouse).
- New Gas Street Extension and Active Transportation Corridor: Currently, Elm Street (US Route 3) is the only contiguous north-south through-corridor in the project area, requiring cyclists and pedestrians to use Elm Street to access Downtown and the residential, commercial and institutional uses served by South Willow Street and Queen City Avenue. The construction of the new Gas Street Extension to directly connect South Commercial Street to South Willow Street for vehicles will improve accessibility in the Project Area. The entire Corridor will have a separated multi-use path for cyclists, increasing the capacity for cycling and walking. This will also increase safety for cyclists; [research from 13 years of crash data in several US cities](#) found that providing a separated bike lane on city streets has resulted in 44 percent fewer deaths and 50 percent fewer serious injuries than an average city. The addition of adaptive traffic control (ASC) signals on Elm Street will provide safety and mobility improvements for the corridor. From 2017-July 2021 there were 2,573 crashes along the 0.92 mile segment, with a crash rate of 87.07 crashes per million vehicle miles traveled where, ASC technology is proposed. Addition of ASC can reduce crashes up to 15.7% (CMF for Adaptive Signals).
- Pedestrian Connection Improvements: A primary safety concern is the current condition for pedestrians crossing Granite Street in all directions. This intersection is problematic for both pedestrian safety at a high-volume intersection, and for drivers negotiating the intersection during periods with heavy pedestrian usage. From 2017-2021 there were 140 crashes at this intersection with a crash rate of 2.00 crashes per million entering vehicles, with one bicycle and one pedestrian-related crash. Construction of a pedestrian bridge will provide the opportunity to eliminate the exclusive pedestrian phase and optimize signal timing, which can reduce crashes by 21%.

### **Primary Selection Criteria B: Environmental Sustainability**

The project will improve sustainable transportation infrastructure for cycling, walking and transit riders, allowing residents and commuters to make choices to minimize environmental impacts. Infrastructure in the area will utilize [renewable materials and sustainable operations methods](#) already in use by the City such as LED street light systems and high percentage recycled materials usage in roadway construction and rehabilitation. On a broader scale, the City has been addressing environmental sustainability and climate change by making every step possible to reduce its carbon footprint, as explained by the different City departments in [these videos](#).

The project continues the implementation of the "Green Network"; an integral part of the [Manchester Master Plan](#) (pages 177-84) which calls for a system of integrated green streets, open space, and stormwater infrastructure as amenities in new development and existing neighborhoods. The project area is highlighted in the Master Plan and can be some of the first green streets that benefit the environment through a variety of design and operational treatments, which gives priority to bicycles, pedestrian circulation and stormwater treatment. The project improvements include wider multiuse sidewalks, landscaping, traffic calming, and stormwater tree box filters.

The project will directly support implementation of existing Climate Action plans and policies at the local, regional and state levels. The [2020 Regional Vulnerability Assessment](#) by the SNHPC identifies the primary climate change impact facing the City of Manchester (and the region) as an increase in the frequency and severity of extreme precipitation events, which bring the capacity for localized and watershed-wide flooding impacts. All project components will integrate new stormwater infrastructure (including replacement of several deteriorated and failed culverts) that are sized and configured appropriately to handle these new weather events, and is resilient to future extreme conditions. In addition, they will integrate the best practices in Low Impact Development (LID), and Green Infrastructure (GI) into the overall product design which will utilize nature-based solutions to mitigate stormwater flows.

Environmental and climate change impacts and may disproportionately affect disadvantaged and underrepresented communities. The project builds upon the City's planning and implementation as part of a larger collaborative with the Manchester Environmental Justice Working Group, the Manchester Community Action Coalition and the Conservation Law Foundation.

The RAISE grant components also significantly advance elements of the [New Hampshire Climate Action Plan](#), which is the State's guiding policy document for addressing climate change and advancing long-term environmental sustainability. Specific NH Climate Plan Recommendations that the RAISE project elements directly move towards implementation include:

- 4.5: Encourage Appropriate Land Use Patterns That Reduce Vehicle-Miles Traveled
- 4.6: Reduce Vehicle-Miles Traveled through an Integrated Multi-Modal Transportation System

The project applied environmental justice screening tools in the planning stages; the US EPA's Environmental Justice Screening Tool shows that census tracts in and immediately around the project area rate well above the State and National averages on Traffic Proximity and Volume, Lead Paint Indicator, RMP Proximity and Hazardous Waste Proximity. The community meets the definition as an Overburdened Community which has been exposed to a disproportionate amount of environmental hazards and risks.

The RAISE project components demonstrably reduce emissions, promote energy efficiency and increase resiliency to climate change impacts in a traditionally underserved community. The component BCAs show that reconnection of these neighborhoods will result in direct benefits from improved transportation options. The project yields indirect benefits of remediation of contaminated sites in the project area through associated redevelopment of former manufacturing facilities will improve environmental conditions for the residents of the project area and the city overall.

Project elements will also reduce energy use and air or water pollution through congestion mitigation strategies. The most environmentally sound and economically sustainable community is compact, connected, and complete. Manchester was planned and built as a factory town with manufacturing, commercial and residential uses in close proximity to each other. However, modern transportation systems and large block planning have eroded that walkable fabric and system. As Manchester reconnects its urban fabric, greater development intensity can be achieved to create a community

with land use patterns that reduces energy consumption, generates fewer vehicle miles traveled, and cuts greenhouse gases.

The USDOT/FHWA Emissions Calculator Toolkit was used to determine the expected reduction in congestion-related delay and emissions for specific project components, quantifying reductions in energy use and air and water pollution:

- South Commercial Street Extension: Currently, the majority of traffic is funneled to a single point of ingress and egress, resulting in significant congestion and increases in idling time and congestion-related emissions. With the reduction of traffic volumes at the signalized intersection within the corridor, there will be a reduction in emissions due to the signal synchronization on Granite Street between South Commercial to Elm Street. Optimization of signal operations will result in a reduction of 5.7 kg/day of Carbon Monoxide, 1.1 kg/day nitrogen oxide, and 1.3 kg/day volatile organic compounds.
- South Willow Street-Queen City Avenue Intersection Reconfiguration: This improvement will remove the idling of vehicles/control delay with the removal of the signal, which will result in a reduction of emissions. Installation of a single-lane roundabout at this intersection will result in a total roundabout delay reduction of 250.8 hours a day and a reduction of 0.159 kg/day of Carbon Monoxide, .083 kg/day nitrogen oxide, 0.018 kg/day volatile organic compounds, and 293 kg/day Carbon Dioxide.
- Gas Street Extension and Active Transportation Corridor: The project area is compact and should be readily walkable, but requires improved connections to the existing street grid, and alternative route enhancements to optimize the functionality of the existing infrastructure. These improvements reducing reliance on single-occupant auto use, subsequently reducing energy consumption and improving air quality. By creating a multi-use path providing a direct route to the South Millyard from the Queen City Avenue/Cilley Road area, the mode shift of travel from passenger vehicles to biking and walking will increase by 1% (from the National Average). Additionally, the Alliance for Biking and Walking estimates that there are \$11.80 of benefits for every \$1 invested in biking and walking, emphasizing the importance of alternate modes. Based on evaluation done for the City Master Plan it was found that there has been a 10% increase in walking and a 66% increase in biking between the years of 2000 to 2017 with in Manchester. With the implementation of Adaptive Signals on Elm Street, there will be a reduction in emissions due to the enhanced signal operations, which results in a reduction of 1.36 kg/day of Carbon Monoxide, 0.02 kg/day nitrogen oxide, and 0.01 kg/day volatile organic compounds.
- Pedestrian Connection Improvements: Connecting the project area with the surrounding street grid through two new pedestrian/bicycle routes will provide residents and workers with increased options and improved transportation system connectivity. Improvements to the area's pedestrian systems (especially the Granite Street area) and resulting efficiency at the vehicular intersections will mitigate adverse environmental impacts to air quality through congestion mitigation. With the reduction of exclusive pedestrian phase, there will be a reduction in emissions to Granite Street at the intersection of South Commercial, Canal and Elm Street, which will result in a reduction of 11.2 kg/day of Carbon Monoxide, 2.1 kg/day nitrogen oxide, and 2.7 kg/day volatile organic compounds.

The project will also provide environmental benefits in brownfield redevelopment by increasing access and connectivity to the documented and potential brownfield sites in the project area. There

are 57 identified environmental remediation sites in the project area (NH Department of Environmental Services). Increasing the development potential in the area through improved transportation systems increases the value of the properties, as well as the pace of redevelopment and remediation.

The project will improve water quality and other environmental benefits through innovative stormwater runoff reduction and mitigation. Several of the project components will have integrated green systems in their design and construction. In the Active Transportation Corridor, stormwater management will be an integral part of the corridor design because of its low-lying location. Site developments abutting this corridor have used the abandoned railbed as a drainage swale creating a wetland area, and the project allows for area-wide stormwater management. Wetland survey for this corridor has been completed, and the project design envisions bio-filtering swales and rain gardens to accommodate and treat the stormwater expected from precipitation events in the future. The South Commercial Extension will replace a deteriorated and undersized stone box culvert that during large storm effects cause ponding issues along the rail road tracks and backs up Elm Street closed drainage system.

### **Primary Criteria C: Quality of Life**

The **RAISE Manchester: Connecting Communities** project increases quality of life primarily by increasing transportation choices for individuals to provide more freedom on transportation decisions. During planning for the Manchester Master Plan and TOD Plan, participants remarked that currently the RAISE project area “seemed to be designed only for cars.” The project seeks to encourage social, racial and economic equity by reducing the barriers to opportunity that come from residents and workers being obligated to live, work and care for families in a physical environment where automobile ownership is the norm in order to safely navigate the landscape. [Over 20% of households in and adjacent to the project area do not own an automobile and rely on walking, biking and transit use to get around the community.](#) Implementation of the RAISE project elements will result in an area of Manchester that is interconnected with centers of employment, education, affordable housing, and recreation in ways where automobile ownership is not required and there are mobility choices of rail, bus transit, shuttles, complete streets, linked bicycle trails and lanes, and sidewalks.

Each of the RAISE project components is specifically designed to increase transportation choices while creating safer and more human-scaled environments. The project supports the larger efforts to increase transportation choices in Manchester detailed above. Overall development within the South Millyard, Elm Street, and South Willow Street corridors will be within a quarter-mile walk of the new transportation hub; an extremely important transit-oriented redevelopment opportunity for the City. This new hub will provide new residential and commercial space in close proximity to a station that can have regional bus and rail services. By increasing connectivity to this area, the project improves access for all potential users. The proposed project area falls within Manchester’s designated NH Neighborhood Revitalization Strategy Area (NRSA) as approved by HUD in the City’s Consolidated Plan for 2020-2024.

The project will increase transportation choices for individuals which provides the opportunity to access the areas where jobs are rapidly growing and where housing will be developed. It will also improve access to Manchester’s healthcare facilities. Specific project components that increase transportation choice and access:

- South Commercial Street Extension: The extension of South Commercial Street creates a second connection route between Granite Street and Elm Street while providing direct access that to both for users of the South Millyard. The grade-separated bicycle and pedestrian path provides safe connections for all users. It also provides access to the Riverwalk Trail with an accessible ramp design from the Northeast Delta Dental Stadium parking lot.
- South Willow Street-Queen City Avenue Intersection Reconfiguration: The Queen City Avenue/South Willow Street intersection with a new roundabout system and redeveloped lots will increase the safety and efficiency of travel through the area while also creating a gateway for a sense of arrival to Downtown Manchester. Currently there are no pedestrian or bicycle accommodations at the signalized intersection and limited crossing points. The replacement of a traffic signal with a roundabout creates efficient vehicular traffic flow with an improved pedestrian and bicycle facilities that measurably reduces travel/commute times for those groups.
- Gas Street Extension and Active Transportation Corridor: The new shared-use path between the City's two largest business/employment centers (downtown and the South Willow Street Corridor) creates commutable bicycle access into the project area from the nearby towns of Auburn, Hooksett, Londonderry, and Goffstown via Manchester's trail networks and the regional Granite State Rail Trail.
- Pedestrian Connection Improvements: The construction of the Granite Street pedestrian bridge increases access by creating a safe connection between Downtown, the Millyard and the project area. As shown in the component BCA, this measurably reduces travel/commute times for pedestrians.

Transportation costs play a key role in housing affordability. Improved access to transit is vital for Manchester's population at all income levels. The Manchester housing market currently has a miniscule apartment vacancy rate of 0.5%, compared with a national rate of 7% (2019 New Hampshire Residential Rental Cost Survey, NH Housing), indicating a large unmet demand for quality housing, particularly near the Millyard and Downtown core where employment opportunities are located. By connecting more sites to transportation options, they become more likely for redevelopment, thus allowing for the potential increase of housing supply in the area.

The project area has the capacity to create over 1,800 residential units, based on the City's planning and development vision and development trends. Because of the diversity of lot sizes and street types in the area, the residential program has the potential for a mix of unit sizes and types, and can integrate some affordable and/or workforce housing. Given the location of the project area to the future Transportation Hub and regionally connected bicycle facilities, the housing units will have easy access to multiple modes of transit, and allow vehicle ownership to be optional rather than mandatory. Without the expense of purchasing and maintaining a car, the new residents will have increased options on the size and type of housing they choose.

The project addresses racial equity by seeking to reconnecting neighborhoods in this Area of Persistent Poverty with high percentages of minority residents via transportation systems that do not rely on automobile ownership. Distinct racial and ethnic groups in Manchester and in the project area are disproportionately impacted by poverty. While 13.7% of the White population is living below the poverty level, 27.2% of Black residents, 28.9% of Hispanic/Latino residents, and 18.4% of Asian residents are living below the poverty level in Manchester. By providing safe, direct and

convenient infrastructure for walking, cycling and transit, the City is directly combating automobile dependence as barrier to economic opportunity and improved quality of life.

The project will also increase access and connectivity to the existing fiber and broadband infrastructure systems by facilitating the development of dense land uses around those existing communication systems.

#### **Primary Selection Criteria D: Economic Competitiveness**

Manchester is a dynamic and growing city, located at the geographic and intellectual center of innovation, education, healthcare, and business in northern New England, as well as being within an hour of the Boston metropolitan area. As the largest city in New Hampshire, with a population of 112,673 (2020 US Census), Manchester is the economic center of a broader MSA region of 418,735 people (2020 US Census) where innovation and economic growth are increasing as a result of strong collaboration between private business, educational institutions, City and State government, and non-profit organizations. The growth of Manchester's institutions and industry clusters is important for the economic health of the nation, not just Manchester and New Hampshire. Innovative companies like [PillPack](#) and [Advanced Regenerative Manufacturing Institute \(ARMI\)](#) make the Queen City their home, while [Roxo](#), [Federal Express](#), [autonomous AI-powered robot](#) for short-distance same day deliveries, was prototyped right in the Manchester Millyard as well.

In a historic city such as Manchester, there are limited areas of developable land remaining in the city center in close proximity to major economic drivers and near existing and potential transit hubs. The City needs to encourage development to remain competitive, attract new jobs, and increase the tax base to provide necessary City services for the current residents, while steering development to the right locations to take advantage of the synergistic aspects that have fueled the Millyard's growth.

However, the project area is currently disconnected from the Manchester's economic success because of its outdated transportation infrastructure. It is recognized as an economically-distressed area, and is designated as one of New Hampshire's only Opportunity Zones in order to encourage and enable new construction and redevelopment of underutilized structures/lots. This RAISE project enhances economic competitiveness by unlocking access to land area for redevelopment in close proximity to the already successful Downtown and Millyard areas.

The RAISE project area is central to the employment base of Manchester, and immediately in and around the project area are the other major economic anchors for the region. Directly north is the heart of Manchester and the University of New Hampshire's Manchester campus. To the south and southeast is the South Willow Street commercial corridor, anchored by the Mall of New Hampshire and its surrounding retail facilities, which continue to be resilient in the face of changing retail trends. The Manchester-Boston Regional Airport provides not only passenger air transport, but also freight and logistical support with companies like UPS/Pratt & Whitney and Federal Express, which businesses in the South Millyard project area rely on for goods and services.

As shown by continuing patterns of redevelopment and business location, there is intense interest by the private sector to locate close to the Millyard and the businesses located therein. The so-called "Eds and Meds" (education, medical, bio-science, and research/development) employment sector continues to grow, led by local inventor Dean Kamen's ARMI (Advanced Regenerative Manufacturing Institute) private-public partnership with the United States Department of Defense.

At full build-out, the redeveloped parcels in the project area have the potential to generate more than 7,588 new jobs. Educational opportunities in the vicinity of South Millyard and the overall project area are extensive – there are [nine higher education institutions in Manchester](#).

The City is committed to creating the conditions for growth and investment, and these efforts have achieved positive results. The City’s effective economic development strategy has attracted millions in development projects in the past ten years. These recent developments have included the following recent public and private investments in the areas in and adjacent to the South Millyard:

- SNHU at 33 South Commercial Street
- UNH-Manchester
- Elliot at River’s Edge Medical Center
- Arms Park
- Residences at Riverwalk
- Market Basket Grocery Store
- ARMI (Advanced Regenerative Manufacturing Institute)

The project directly increases economic competitiveness by providing enhanced access that results in travel time savings noted in the Benefit Cost Analyses, specifically:

- South Commercial Street Extension: The South Commercial Street Extension will provide alternative access to the Project Area which will provide drivers options, reducing traffic volumes on Granite Street. Delay reductions in the peak hour are estimated to be 44 seconds per vehicle at the Granite Street intersection.
- South Willow Street-Queen City Avenue Intersection Reconfiguration: Synchro analysis shows that the existing delay at the intersection in the PM Peak hour is 44.4 seconds per vehicle, with all delay related to signal control. Eliminating the signal and building a roundabout will reduce delay to 28.1 seconds/vehicle, improving travel time through the intersection.
- Gas Street Extension and Active Transportation Corridor: Several studies have shown how construction of off-road bicycle facilities will increase bicycle modal split. A [2012 study](#) of bike lanes and bike paths in over 90 American cities showed that the supply of bikeways per capita is a statistically significant predictor of bike commuting. With the anticipated mixed-use development in the project area, it provides opportunity for people to live [close to work and commute via bicycle or walking, reducing the vehicular demand on the roadways](#).
- Granite Street Pedestrian Connection: Constructing a dedicated pedestrian bridge over the intersection also eliminates the exclusive pedestrian phase, which uses 40 seconds during each signal cycle. This will reduce queue due to over 200 pedestrians that use this 100-foot crossing in both the AM and PM peak. Currently, there is a safety issue for vehicles at this intersection as the pedestrian phase creates vehicular and pedestrian conflicts. With just the removal of the pedestrian phase, the overall intersection delay is reduced from 82.7 seconds to 55 seconds.

The project will improve long-term efficiency and reliability of costs in the movement of workers and goods, thereby reducing costs of doing business. In the area of the South Commercial Street Extension, during the AM Peak it currently takes drivers 12 minutes to travel the half mile from the I-293 off-ramp to the Project Area, as opposed to 6 minutes in non-peak periods, per StreetLight data. Travel speeds on average are 16 mph, as opposed to the posted speed limit of 30 mph. According to the Texas Transportation Institute, the cost of traffic congestion is [\\$87.2 billion in wasted fuel and lost productivity](#), which translates to \$750 per traveler. For the area of the South Willow Street-Queen City Avenue Intersection Reconfiguration, StreetLight data shows that trucks

traveling through this intersection during peak periods experience double the travel time than during non-peak times. By reducing the control delay, the roundabout condition will reduce truck delays and enhance mobility.

The project will promote the expansion of private economic development to support local or regional economic competitiveness. There is continued interest from the private sector to locate close to the Millyard's businesses and educational institutions. However, there is limited access to the sites with redevelopment potential in the project area. The development potential can be unlocked by increasing transportation access and options to the area through the construction of the project components.

Direct Benefits:

- The project directly improves freight connectivity, which will help Manchester's industries to compete in a global economy by facilitating efficient and reliable freight movement. Specific project components that will improve freight connectivity:
  - South Commercial Street Extension: Currently, based on StreetLight data, it takes trucks up to 3.5 minutes longer to travel from Granite Street to Elm Street in peak periods than non-peak periods. The new connection will shorten travel distance by approximately 500 feet and reduce the number of signals passed through from four to two, reducing time waiting at signal by approximately two minutes. Additionally, vehicles will save 10.36 minutes traveling from South Commercial Street to where the proposed extension connects to Gas and Elm Street. By improving travel time for trucks, the connection will improve freight mobility and access to the National Highway System.
  - South Willow Street-Queen City Avenue Intersection Reconfiguration: StreetLight data shows that trucks traveling through this intersection during peak periods experience double the travel time than during non-peak times. By reducing the control delay, the roundabout condition will reduce truck delays and enhance mobility.
  - Gas Street Extension and Active Transportation Corridor: For freight traveling from South Willow box store area to Downtown during the peak hour it takes four times longer than during non-peak. By providing the alternative route via this corridor, freight mobility would significantly improve.
  - Pedestrian Connection Improvements: The construction of the new pedestrian bridge will permit the removal of pedestrian phase in the Granite Street intersection, reducing wait times for freight vehicles entering the City.
- Create expanded and improved accessibility to job opportunities by increasing connections that will reduce congestion at key locations in the project area.
- Decrease transportation costs and improve access, especially for the residents of the rural communities outside Manchester who work in the project area, as well as improve/provide non-vehicular transportation options for mobility-challenged populations to the east and south of the project area.

Indirect Benefits:



- Enhance the value of the underutilized parcels (totaling 5.4 million square feet of land area) in the area by extending and creating connecting roadways with access to and from the Elm Street corridor, and frontages within the South Millyard area.

### **Primary Selection Criteria E: State of Good Repair**

A State of Good Repair is defined as “Improving the condition of existing transportation facilities and systems, with particular emphasis on projects that minimize life-cycle costs.” Maintaining a State of Good Repair is essential for historic city centers like Manchester to grow and adjust to changing economic conditions. The roadways in the project area have evolved over time and are not currently well-configured to support the redevelopment and allow the area to fully participate in Manchester’s modern economy. The project ensures the good condition of infrastructure that supports transportation network efficiency, mobility of goods and people, and commerce and economic growth. Specific project components will have measurable impacts on distinct elements of the project area, the city and the region.

The reconfiguration of the South Willow Street-Queen City Avenue Intersection would allow the removal of the existing signal equipment while reducing congestion and improving air quality. This will eliminate the need costs associated with electric consumption by signals, signal retiming, and signal maintenance. The only anticipated added costs are roundabout landscaping and signage maintenance. The Virginia Department of Transportation has estimated that the [operational and maintenance costs of a traffic signal are more than four times the cost of a roundabout](#).

All project components are consistent with relevant plans to maintain transportation facilities or systems in a state of good repair and address current and projected vulnerabilities. The project will use asset management approaches that optimize its long-term cost structure, and the City of Manchester Department of Public Works (DPW) will maintain the transportation infrastructure in a state of good repair. The DPW’s posture on asset management is the foundation built to modernize aging infrastructure in the city. Important tenets of the approach are a focus on critical elements as well as the application of preventive maintenance to manage the lifecycle of an asset. New construction is expensive, but provides an opportunity to apply regular service and lower long term infrastructure costs. With an established asset management program already in place and a consistent commitment to investing in maintenance and capital improvements, this project will benefit from reduced lifecycle costs over a long period of growth.

All multimodal infrastructure items constructed during this project and owned by the City will be captured as assets in the ESRI database and populated in the IBM Maximo Asset Management system. The DPW utilizes this system to conduct predictive, preventative, and corrective maintenance activities for all city assets under its purview. The assets populated are comprehensive and plentiful (130,000 assets and 31,000 locations), and they include roads, bridges, sidewalks, sewers, playground equipment in parks, even boilers and chillers in schools. The asset management system is integrated with the City’s ESRI GIS system using a software engine (GeoWorx) that provides two-way updates on a nightly basis. All work orders, purchasing, cost accounting, permitting and capital projects utilize this system.

Citizens have a mobile application (Manchester, NH Connect) through the See Click Fix platform where reports of problems with trash, graffiti, street light outages, potholes and other related problems are automatically escalated into Maximo service requests and routed to the appropriate

team. Supervisors and superintendents use a mobile iPad solution that includes the fully integrated EZMAX Mobile application to manage open work orders, track resources and labor, update asset history, and inform cost accounting. The Manchester DPW is a national leader in this area and has made presentations on asset management systems for municipalities at the IBM Pulse National Convention, as well as the Maximo for Utilities Work Group (MUWG) National Convention. The assets contemplated for construction within this RAISE grant would be seamlessly integrated into this system, along with the Departments' work process management.

Transportation infrastructure assets are subjected to a robust inspection program to inform a predictive approach to maintenance. The DPW is directly responsible for the maintenance of 403 miles of local streets, 35 municipal bridges, 248 miles of sidewalk, 164 traffic signals, 9,000 street lights, 364 miles of sanitary sewer, and 203 miles of storm drainage. The City uses both regular network and project-specific inspections to document distresses and identify required maintenance.

Over \$18M has been spent in the last five years on [road paving and street preservation](#), with 120 miles of road surface treatments such as paving, chip sealing, microsurfacing, and asphalt recycling, with another 90 miles of crack sealing to preserve recent investments. Plans for 2021 include another 40 miles of surface treatments and crack sealing. A two-year bridge maintenance and repair project was completed in 2019 using \$800,000 in City funds to extend the life of several bridges with a variety of concrete and joint repairs. The City is currently completing two bridge rehabilitation projects with an \$11.5M investment, and another three bridges in the engineering design stage for rehabilitation in the next five years with an estimated \$17M value. These projects are included in the State of New Hampshire Bridge Program for an 80% reimbursement of local costs. Updated capital planning based on 2021 inspections will be used to continue programming preservation projects in the next several years and rehabilitation projects through 2040. As shown in the Benefit Cost Analysis, the City has developed a detailed maintenance milestone plan to maximize the life and performance of these assets.

### **Secondary Criteria A: Partnership**

The project demonstrates strong collaboration among a broad range of stakeholders in the formulation, development, and funding of the **RAISE Manchester: Connecting Communities** project. In particular, the project is being developed through the close coordination of a diverse group of municipal, regional, and State transportation and planning agencies and pursuing interlocking objectives.

- City of Manchester: The City of Manchester will be the grant recipient and be responsible for administering the project. The City's Department of Public Works will be the lead agency for implementation, and will oversee the planning, design and construction of all project components. The City currently has designated and trained professional staff responsible for federal grant administration and reporting procedures. They have experience administrating projects through the NHDOT LPA process and the ROW Bureau with the process and utilization of Uniform Act.
- Southern New Hampshire Planning Commission (SNHPC): As the Metropolitan Planning Organization for Manchester, the SNHPC has collaborated closely with the City of Manchester in regional planning initiatives, urban planning such as Transit-Oriented Development and transportation planning. SNHPC has been a partner in the formulation of the ideas embodied in The **RAISE Manchester: Connecting Communities** project and a

collaborator in the creation of this application, and has committed to getting the project components on the Transportation Improvement Project (TIP).

- NHDOT Bureau of Turnpikes: The Bureau of Turnpikes should coordinate closely with the City on improvements related to Granite Street and the Exit 5 area.

The City has received unequivocal support for the project from political, economic and social leaders, as well as State and regional agencies. [Fifty key leaders across the Granite State](#) view this project as a positive for the local community and State of New Hampshire. This distinguished group includes US Senators and members of Congress, State Senators and Representatives, State transportation agency leaders, transportation and business advocacy groups, rail advocates, local civic organizations, and advocacy groups (See Appendix for Letters of Support). There is also significant support from abutters to the project area.

**Secondary Criteria B: Innovation**  
**Innovative Technology**

The project deploys innovative technology that supports surface transportation to significantly enhance the operational performance of the transportation system. To provide connectivity of these corridors through the Project Area and improve traffic flow with innovation, this project will add adaptive signals and additional detection at five signalized intersections on Elm Street to be able to address variability of traffic flow due to the new access to commercial, retail, residential, and entertainment areas. Several traffic calming measures have been implemented such as bumpouts, narrowing lanes to install on-street angled parking, and even the installation of high-visibility [cat designed crosswalks](#) to add character and slow traffic through the Downtown. By having the ability to make real-time adjustments to traffic patterns, it will enhance the operational performance of the transportation system.

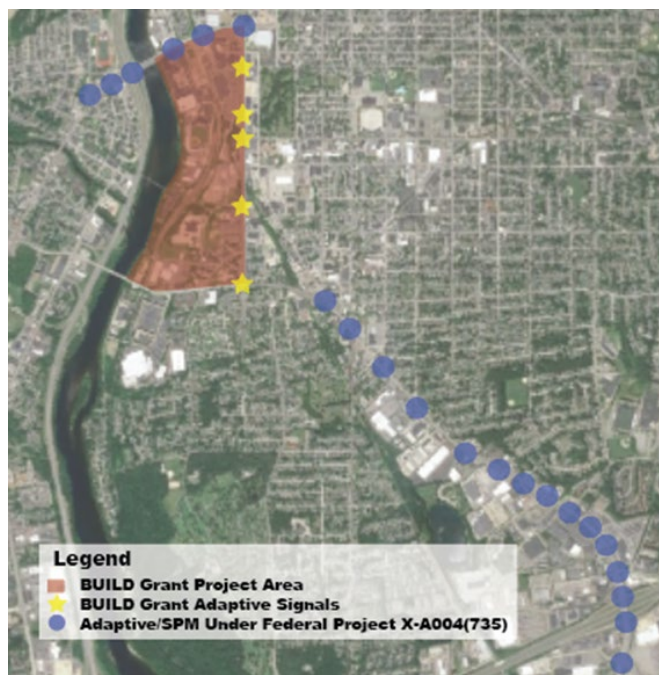


Figure 14: Adaptive Signals within RAISE Grant area

The addition of the adaptive signals along Elm Street as part of the Gas Street Extension will provide a connection between the systems on Granite Street and South Willow. The adaptive signal systems will be compatible with connected vehicle infrastructure, making this system ready for future changes in transportation. The proposed system will have conflict detection with communication to DPW for any detection faults, conflicts, or signal on flash for faster response time to signal issues. There is existing aerial fiber on Elm Street in the project area, so it is anticipated that wireless communication could be implemented for connectivity between the Elm Street adaptive signals and it can tie into the existing fiber network to provide communication back to DPW. Traffic signal controllers on the corridor are primarily Econolite ASC-2 and ASC-3. These will be updated to modern controllers compatible with connected vehicle infrastructure.

The City is aware of United States Department of Transportation (USDOT) requirements described in 23 CFR 940.11, which mandate that a systems engineering analysis be performed for all Intelligent Transportation System (ITS) projects (including traffic signal systems) deployed using Federal/CMAQ funds, and that the level of effort be commensurate with the scale of the project. The City recently completed the Systems Engineering Process for Federal Project X-A004(735) which will be expandable to the project area.

On September 27, 2019, FHWA issued a final rule in the Federal Register rescinding the long-standing regulatory provisions for patented or proprietary products in 23 CFR 635.411(a)-(e). This rule provides greater flexibility and encourages innovation in the selection of proprietary or patented materials. It eliminates the requirements limiting the use of Federal funds in paying for patented or proprietary materials, specifications, or processes. As a result, it is expected that the technology chosen through the ongoing systems engineering study will be able to be used at RAISE Grant intersections without a federal review process.

### **Innovative Financing**

The project incorporates innovations in transportation funding and finance. The City of Manchester is exploring the creation of a Tax Increment Financing (TIF) District to fund infrastructure improvements in the project area, which has recently been successful in the neighboring Towns of Bedford, Hooksett, and Londonderry. This would be used for debt service on bonding, used for up-front capital expenditures for initial construction, and funding the life cycle costs of maintaining the proposed improvements.

### **Planning and Public Outreach**

Planning and transportation initiatives have been taking place over 2019 and 2020, resulting in extensive public participation by a diverse group of stakeholders, business owners and residents. The 2019 South Millyard community charrette brought together more than eighty key stakeholders, business leaders and abutters, as well as the general public to discuss key issues, constraints and ideas for the project area. The City of Manchester Master Plan has involved hundreds of residents and has focused on all of the components of the RAISE Grant Application as part of the Vision for Manchester's future. Finally, the SNHPC Transit Oriented Development project held several planning and design workshops for hundreds of participants and had a robust on-line participation platform. All of these efforts are in synch with the Vision and Project Components of the 2021 RAISE Grant application.

### **Demonstrated Project Readiness**

#### **Environmental Permits and Reviews**

The project's Environmental Risk Assessment shows that the required environmental approvals have a high likelihood of approval in time for project obligation. Through preliminary discussions with the FHWA NH Division Environmental Program Manager, it is anticipated that all of the project components will be classified as individual Categorical Exclusions. Initial outreach and coordination has taken place with all appropriate local and state resource agencies. It has been determined there are no flood land or wildlife and endangered species impacts. There are historic impacts which will be mitigated against through collaboration between the New Hampshire District of Historic Resources (NHDHR), Manchester Historic Society and the City of Manchester as described in the [letter provided from NHDHR](#). The City has selected two certified firms to assist

with mitigation requirements, [Hartgen Archeological Associates, Inc. to perform a Phase 1A Archeological Study](#), and LM Preservation to prepare the Project Area Form and assist with the project effects evaluation as part of Section 106 review.

A full [Environmental Phase 1 Report](#) has been completed along with assembly of over 80 previously performed soil borings along the project corridor. We have a clear understanding of the soil contaminants which is driving infrastructure design decisions, as noted in the Design Report.

Based on project completed ground survey, wetlands are present within the Active Transportation Corridor. A project review with the Army Corps of Engineers, has provided an understanding of permitting requirements. One mitigation measure proposed is re-establishing wetlands in swales by providing proper wetland seed mix. Coordination efforts with Manchester Department of Environmental Protection (DEP) for permitting requirements for stormwater has taken place. The City of Manchester is a Municipal Separate Storm Sewer System (MS4) Community, therefore, the New Hampshire Department of Environmental Services placed the regulatory oversight for the Manchester community in the hands of Manchester DEP.

For meeting the requirements for initial Public Outreach, a community charrette was held, as describe earlier, on page 12. Through preliminary design, abutters have all received further information about the progression of the project elements. Through this outreach the City has received Letters of Support from some of the abutters. The Preferred Alternative was presented to the City of Manchester's Board of Alderman, on May 4, 2021.

### **Technical Capacity**

As the transportation hub of New Hampshire, the City of Manchester is uniquely qualified to support the regulatory and technical aspects of the project. Experienced staff participates in transportation planning efforts in order to maintain and expand a regional network of air, rail, transit, and roadway infrastructure. Important partnerships with the FAA, FTA and the FHWA as well as the NHDOT and SNHPC have been critical to project successes. When combined with a wide variety of locally managed HSIP, TE, CMAQ, SRTS, and TAP-funded projects for road, bridge, and trail, a body of experiences and knowledge is brought to bear. Technical design, regulatory and environmental compliance, right-of-way acquisition, and hazardous material mitigation as well as project and financial management are regular components the Manchester DPW Engineering Division manages in every project. There is also a wealth of nationally-recognized engineering firms with local offices offering expertise in all disciplines of engineering and construction that continue to support the City.

The preliminary design for South Commercial Street Extension, the Gas Street Extension and Active Transportation Corridor, and the South Willow-Queen City Avenue Intersection Reconfiguration have been completed and all elements will continue through to final contract plans by December 2023, with NEPA complete for all grant elements by September 2022, as shown in Figure 11, and outlined in the [detailed project schedule](#).

The pedestrian bridge's structural design requirements will be provided in the construction bid special provisions, and selected bridge fabricator will provide shop drawings for review by the

consultant's structural engineer. Geotechnical data will be collected and provided in the bid documents.

This South Commercial Extension is designed to meet roadway standards for both the City of Manchester and NHDOT, with design speed criteria meeting 30 miles per hour. The City has coordinated with Pan Am Railways and NHDOT Bureau of Rail and Transit Department for bridge clearance.

The location of the Granite Street Pedestrian Bridge is based on the existing grade, which will provide the shortest ramp length while meeting ADA requirements. Adjustments to the Granite Street signal phasing and timing will be included.

### **Financial Capacity**

A total of \$30 million is required to complete the infrastructure improvements for the **RAISE Manchester: Connecting Communities** project. The requested RAISE FY21 Grant funding of \$25 million is matched by a \$5 Million non-Federal local contribution as shown in the Project Budget. The project also demonstrates a substantial positive benefit/cost ratio, as shown in the Benefit-Cost Analysis. The SNHPC has also committed to including this project in its Transportation Improvement Project (TIP) when it receives funding through the RAISE grant program.

### **Assessment of Project Risks and Mitigation Strategies:**

For projects like this, typical risks include potential schedule delays due to permitting approval, Right-of-Way procurement, cost escalation, and public support. The City has mitigated against all of these risks by proactively beginning the design, permitting and property ownership processes, and this work has helped to reduce uncertainties in the project cost estimate, resulting in a higher level of confidence in the cost estimate.

To mitigate against potential delays due to permitting, the City has completed an initial project review with all permitting agencies and anticipated project requirements have been established. With the potential for historical and archeological resources in the project area, the City submitted a request for Project Review and has consulted with the New Hampshire Division of Historic Resources (NHDHR). This has resulted in positive discussions with the NHDHR and an understanding about their preferred methods for investigation, documentation and potential impact mitigation, as explained in "Demonstrated Project Readiness" section.

The City has been proactively meeting with stakeholders and abutters, and abutter feedback has helped to shape the project design. This coordination should help to streamline the ROW process when the project moves to that phase (Please see the Letters of Support provided). Many abutters and stakeholders participated in multiple City events, as explained in "Mutually Supporting Planning and Implementation" section and "Planning and Public Outreach" section. In previous Manchester BUILD Grant applications, Pan Am has provided a letter of support. Due to submitted application to the Surface Transportation Board by [CSX](#), Pan Am is unable to provide a Letter of Support, however they have participated in multiple project design meetings for the South Commercial Extension. Pan Am is pleased that South Commercial Extension preferred alternative is an above grade crossing. The design of the South Commercial Extension accommodates additional track for

future expansion to commuter rail. NHDOT Capitol Corridor Project is currently in preliminary design for the extension of commuter rail service from Boston to Manchester.

Since some affected parcels in the project area are older industrial sites with unknown subsurface conditions, the City has completed a Phase 1 Environmental Report. Historical soil dates from prior projects in the project area has been collected, and as part of final design, a complete Phase 2 Environmental Investigation will be completed. Profiles have been designed to balance cut and fill quantities, to allow for capping of contaminated soils within the roadway fill sections, per NHDES specifications. Cost estimates include specific construction requirements for piles and lightweight fill for the bridge and wall construction and proper disposal of contaminated materials.

With the South Commercial Extension being a new roadway connection, traffic control will not be an issue. For the South Willow-Queen City Avenue Intersection Reconfiguration, traffic control plans have been included in the preliminary design plans. Construction activities will have the proper oversight as outlined in the NHDOT LPA Manual, will follow all OSHA guidelines, and will meet all Manual on Uniform Traffic Control Devices (MUTCD) work zone requirements.

The Contract Bid Book will contain all current documents required for Federal Project, such as Buy America and Davis-Bacon Wage Rates. The City has completed numerous State and Federal-Aid projects over the years and are very familiar with the various contracting requirements that need to be satisfied during the design, bidding and construction phases of the project.