

# BRIDGES NOT BARRIERS

A Collaborative Bridge Bundle  
Replacement Project

## MERIT CRITERIA NARRATIVE

Better Utilizing Investments to Leverage Development (BUILD) Grant Program

# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

# Merit Criteria Narrative

## Safety

### Safer People

If any of these bridges were to fail, disruptions to the local roadway network would have significant impacts on people due to risks associated with flooding conditions, long detour routes, societal impacts on residents and towns, economic impacts on residents who rely upon these routes to transfer commodities, and increased emissions related to increases in travel distances.

### Crashes

According to collision data provided by the NCDOT, between 2019 and 2024 10 collisions occurred at the 15 bridges, including three with injuries and seven with property damage. Seven involved striking a fixed object, two involved striking an animal, and one involved rear ending another automobile that was slow or stopped. Stack Road Bridge had three collisions, two involving striking a fixed object (in this case the bridge rail or ditch) and one involving striking an animal. When assessing the 0.6 mile area surrounding Stack Road Bridge, there were another three collisions, another striking the ditch and two striking animals. Potters Road Bridge had two collisions, one involved an automobile striking a tree and the other an animal. The remaining collisions with fixed objects were at the Austin Church Grove Road, Bridgeport Road, Lockhart Road, and Monroe-Ansonville Road bridges. The rear end occurred at the Robinson Church Road Bridge.

This project will ensure that the bridges meet current design standards. In support of the USDOT [National Roadway Safety Strategy](#), shoulders will be added or widened and railings on all bridges will be brought up to standard. This includes adding railings to Robinson Road Bridge, Bridgeport Road Bridge, Shannon Road Bridge, and Booger Hollar Road Bridge, which currently lack them. Railing improvements and the addition of shoulder width will reduce the likelihood of cars entering the ditch and provide extra space for drivers to gain control of their vehicles in collision scenarios. In addition, by bringing the structures to standard and avoiding detours, vehicle miles traveled, and the number of conflict points are expected to be minimized, reducing the chances of crashes. The new bridges, and resulting reduction in detour reliance, will avoid an estimated 16 likely crashes, many with injuries to the driver and passengers between 2031 and 2050, as estimated in the project's Benefit-Cost Analysis (see submitted **BCA Narrative** and **BCA Calculations** Attachments).

### Protects Non-motorized Travelers

The majority of these bridges are located in rural areas, and as such, often lack shoulders to NCDOT standards, if shoulders are present at all. Bicyclists and pedestrians must share the roadway with automobiles, with little or no room available to separate themselves from oncoming traffic. The project will bring all the structures to standard, including paved shoulders with space for bicycle and pedestrian users, protecting non-motorized travelers and increasing access to safe, affordable transportation options as development continues in these rural areas.

This is especially pertinent as the NCDOT Integrated Mobility Division (IMD) hosts a comprehensive database of all existing and proposed bicycle and pedestrian facilities called the



# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

Pedestrian and Bicycle Infrastructure Network (PBIN). According to PBIN, five bridges have existing or proposed bicycle or pedestrian facilities adjacent to the proposed bridge replacement projects. More about the bicycle and pedestrian considerations associated with this project can be found under **Mobility and Community Connectivity**.

### Safer Roads

#### Improves Unsafe Structure Conditions

While the bridges are safe for regular motorist usage, the bridges are not up to current design standards and need to be replaced for continued crossing and subsequent community connectivity. Five of the fifteen bridges face challenges due to low water and subsequent overtopping; during any moderate rainfall event, many of these bridges tend to flood, preventing motorist crossing. On some occasions, motorists attempt to cross despite flood waters present on the bridge, posing a significant safety risk. In addition, scour, drift, corrosion and rusting of beams weaken the bridge structure requiring significant maintenance to combat these effects. As a result, the beams of the bridge have issues related to corrosion. Additionally, several bridges have collision histories with automobiles entering the ditch to the side of the bridge. In fact, Stack Road Bridge is recorded as having repeat vehicular accidents with vehicles striking the bridge rail end or entering the ditch.

This project will minimize roadway deficiencies, replace defective structures with bridges that meet current design standards, and minimize lengthy detours. Railings on all bridges, including several with timber railings, will be brought to standard. This includes adding railings to Robinson Road Bridge, Bridgeport Road Bridge, Shannon Road Bridge, and Booger Hollar Road Bridge, which currently lack them. The replacements will improve the structures' conditions and maintain safe structures for bridge users. After the project is completed, safety risks will be decreased because of the structural improvements implemented into the bridge design.

### Environmental Sustainability

#### Resilience in Rural and Poverty-Stricken Areas

Six of the bridges proposed for replacement are located within Areas of Persistent Poverty (Census Tracts 207.01, 209.01, 209.02, 9307, and 9204). These areas are often prioritized below urbanized areas with higher traffic volumes on maintenance schedules and

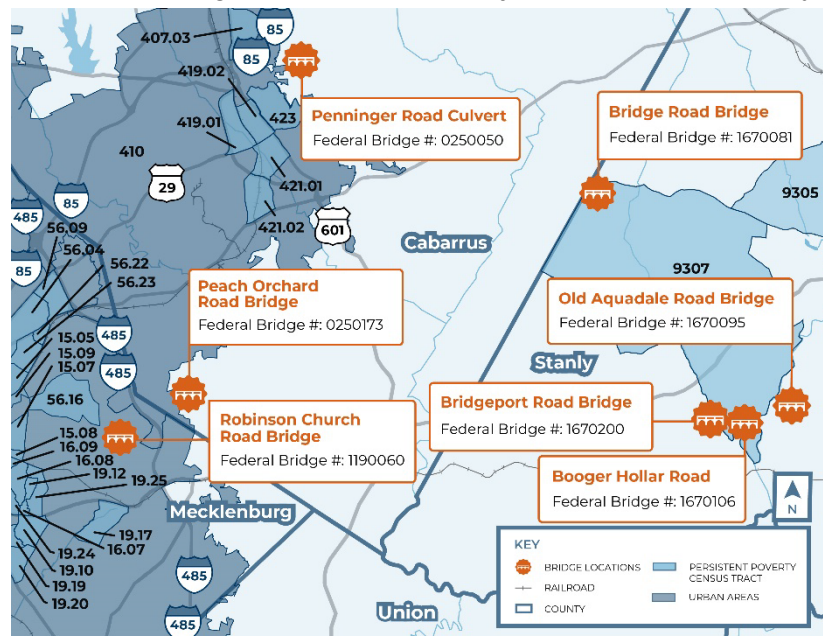


Figure 1 | Persistent Poverty Tracts in Division 10's Northern Counties



# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

regularly feature old infrastructure that is no longer designed to accommodate an area's existing conditions. Many roadways in rural Division 10 are narrow, lack shoulders, and have significant wear and tear from prolonged exposure to automobiles, truck freight, and the elements. These bridges and associated roads are no different, and in many cases, they are damaged or decaying as a result of continual water exposure, increasing potential for bridge failure.

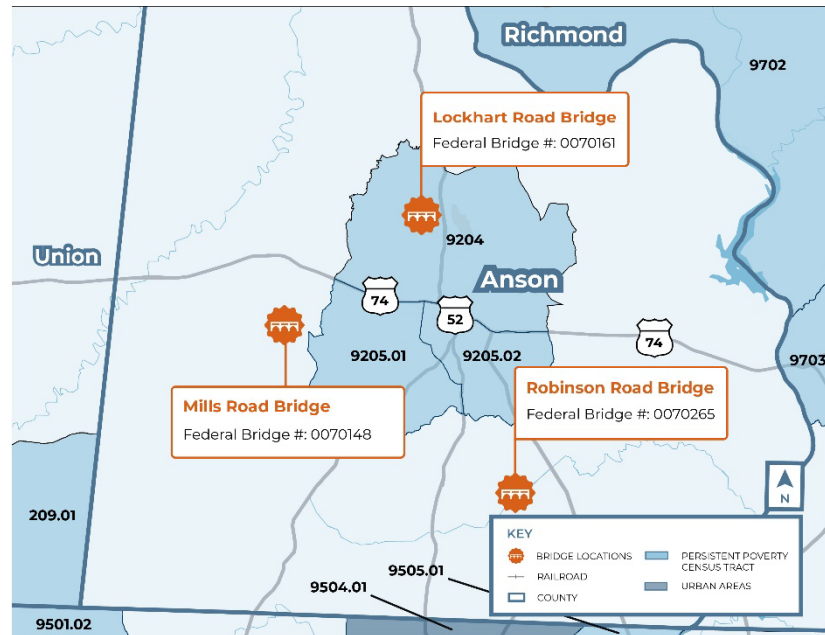


Figure 2 | Persistent Poverty Tracts in Union County

The fifteen bridge structures will be replaced with new structures designed and constructed to updated design standards, improving the resiliency of Division 10 and North Carolina's transportation network. The new structures will better withstand impacts from extreme weather events, maintaining reliable crossings to daily destinations such as medical facilities, grocery stores and retail, and schools. These new bridges will include countermeasures to erosion and scour, which are common causes of bridge failure in the United States.

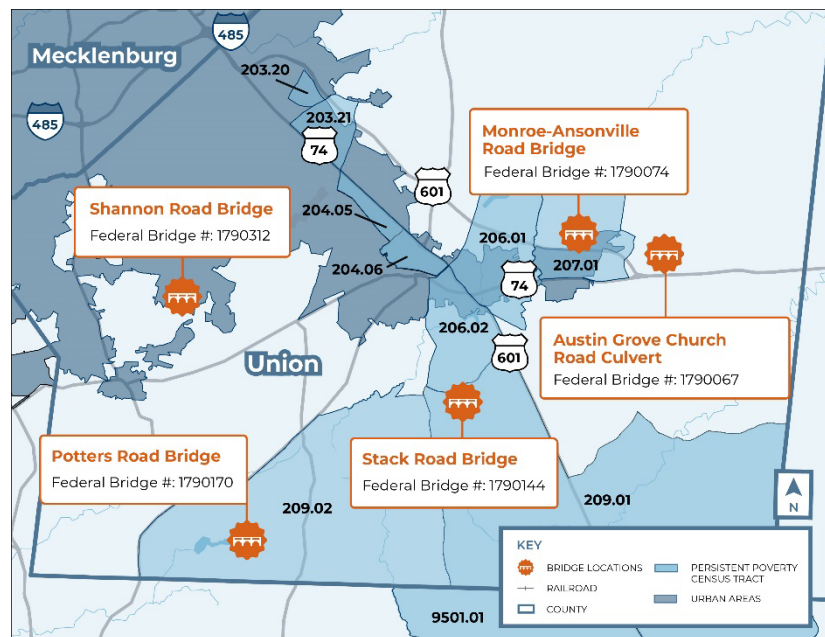


Figure 3 | Persistent Poverty Tracts in Union County

### Emissions Reduction

The project will result in environmental benefits including reduction in carbon dioxide (CO<sub>2</sub>) emission, nitrogen oxide (NO<sub>x</sub>) emissions, sulfur oxide (SO<sub>x</sub>) emissions and particulate matter



# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

2.5 (PM<sub>2.5</sub>) emissions as referenced in Table 1. Implementation of the project will result in a reduction of greenhouse gas emissions due to the reduction of vehicle miles traveled and vehicle emissions due to less reliance on detours.

**Table 1: Emissions Reductions from 2031 - 2050**

Emissions Reductions from 2031-2050			
Emissions	Total Avoided Short Tons	Undiscounted Value of Emissions Avoided	Discounted Value of Emissions Avoided
CO <sub>2</sub>	122,236.9	\$36.46	\$25.02
NO <sub>x</sub>	21.4	\$0.45	\$0.26
PM <sub>2.5</sub>	0.6	\$0.58	\$0.33
SO <sub>2</sub>	0.6	\$0.03	\$0.02

## Quality of Life

### Economic Opportunities

While these rural areas experience lower traffic volumes than their urban counterparts, six to seven percent of the average annual daily traffic (AADT) on each of these bridges is from truck traffic. While none of the bridges are along North Carolina Priority Highway Freight Network (NCPHFN) roadways, seven of the bridges are within five miles of designated NCPHFN roadways including I-485, US-74, US-601 and NC-49. They serve as vital connections to these corridors and, as such, bridge failure would have a significant impact on the movement of goods throughout Division 10 and the State.

These bridges also serve as connections for rural community members to surrounding towns and the City of Charlotte, which are home to many critical community services and resources as North Carolina's largest and most vibrant economic engine. Without these connections, rural community members would lack reliable access to vital economic opportunities in these urban centers, including educational facilities and job opportunities. Maintaining reliable connections to these community assets and economic opportunities will require functional bridge infrastructure that is not susceptible to closure due to weather events or age.

Implementation of the project will bring these structures to standard, replace old materials, and maintain working crossings for rural community members to daily needs, educational opportunities, and job opportunities. Reducing bridge closures will reduce reliance on detours and reduce time spent in automobiles rather than making use of these community assets. Finally, the inclusion of paved shoulders will increase safe, affordable transportation options, further fostering economic opportunities for community members and increasing quality of life benefits. More detail about how the project provides affordable transportation options can be found in the **Mobility and Community Connectivity Section**.



# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

### Improves Access to Daily Destinations

Replacing these bridges will reduce existing vulnerabilities associated with flooding, scour, and drift and will reduce the likelihood of the bridges failing. In the event of bridge failure, detour distances can vary between approximately half a mile to eight miles depending on the location. Many of the bridges are near medical facilities, parks and recreational spaces, and commercial and retail and bridge failure could impact accessibility to these amenities.

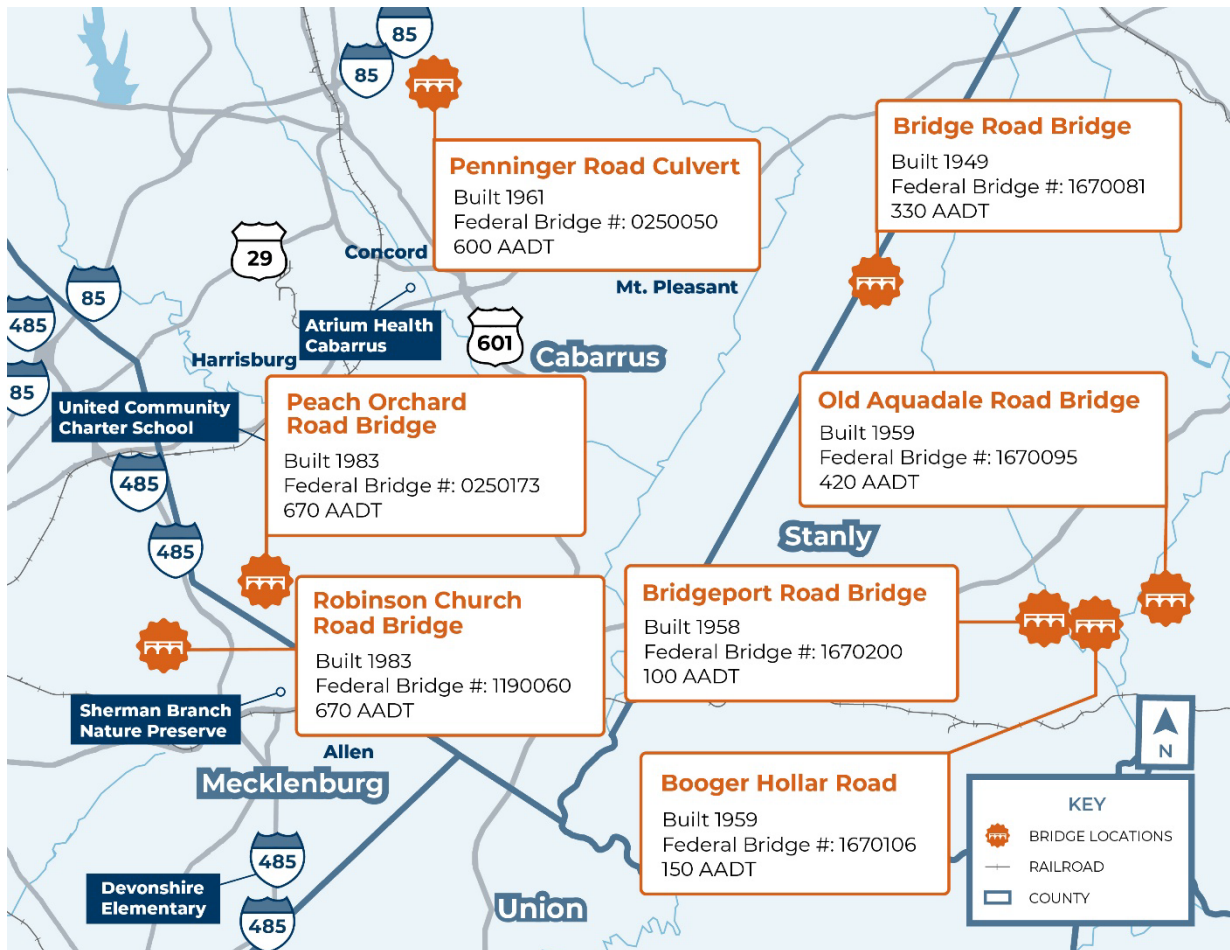


Figure 4 | Division 10 Northern Counties Bridge Proximity to Destinations

The northern counties include the Charlotte Urbanized Area in Mecklenburg, which contains many daily destinations that community members frequent. The seven structures in the northern counties (located at Robinson Church Road, Peach Orchard Road, Penninger Road, Bridge Road, Bridgeport Road, Booger Hollar Road, and Old Aquadale Road) provide access to roadways into Charlotte and to the towns of Mount Pleasant, Concord, and Harrisburg. As with the other structures, failure of these bridges could impact commute times to grocery stores, schools, medical facilities including Atrium Health Carbarrus, and recreational facilities such as Sherman Branch Nature Preserve. Roadway users would face 1- to 9-mile detours in the event of bridge failures. These bridges in context with potential destinations can be referenced in Figure 4.



# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

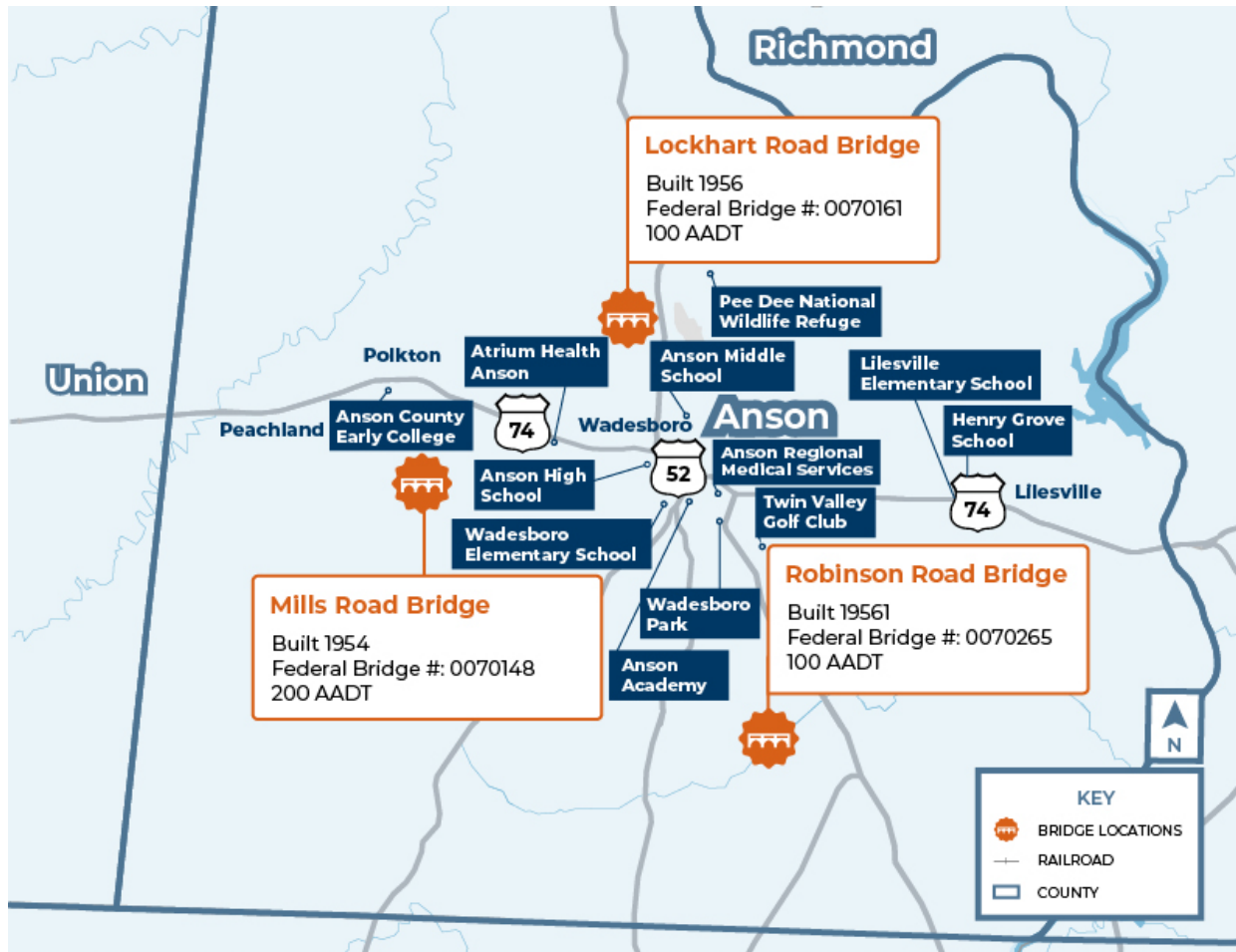


Figure 5 | Anson County Bridge Proximity to Destinations

Three of the bridges (Lockhart Bridge, Mills Road Bridge, and Robinson Road Bridge) are located in Anson County and provide community members crossings to community resources in Wadesboro, Polkton, Peachland, and Linesville. These resources include grocery stores like Food Lion and Wadesboro IGA, medical facilities such as Anson Regional Medical Services and Atrium Health Anson and recreational facilities including the Pee Dee National Wildlife Refuge, Wadesboro Park, and Twin Valley Golf Club. Anson County is also home to several schools, including elementary schools, middle schools and high schools, that are accessible by way of these bridges and can be referenced in **Figure 5**. In the event these bridges fail, community members would be forced to take six- to eight- mile detours to get around the bridges.

# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

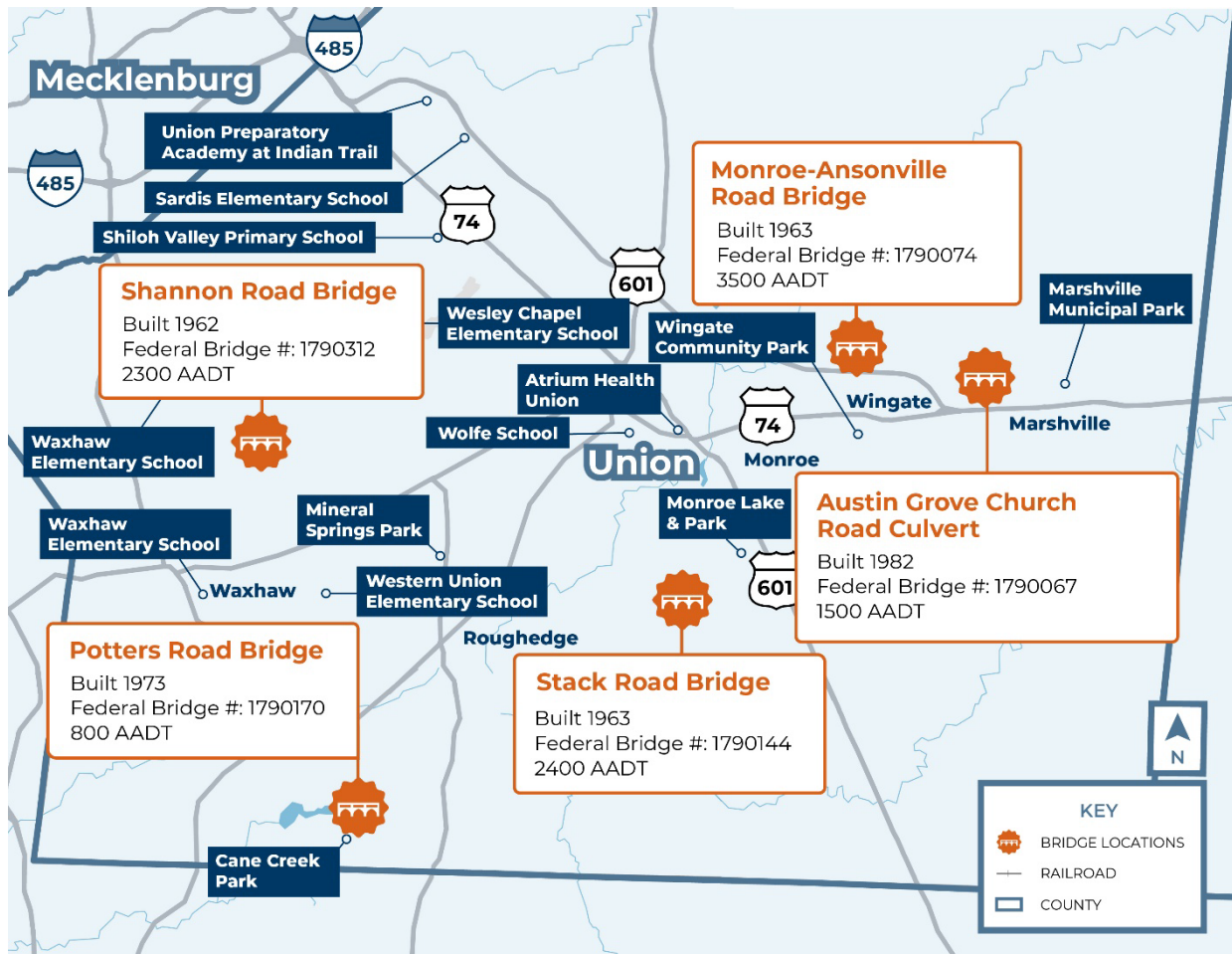


Figure 6 | Union County Bridge Proximity to Destinations

Union County is home to five structures (located on Shannon Road, Potters Road, Stack Road, Monroe-Ansonville Road, and Austin Grove Road) that also would impact timely accessibility to daily destinations in Monroe, Wingate, Marshville, and Waxhaw in the event of failure. These destinations include grocery stores like Food Lion and Harris Teeter and medical facilities including Atrium Health Union, Novant Health Monroe Family Medical, and Centro Medico Latino. There are several schools in Monroe and the north and northwest portions of the county, and the county is home to several parks including Cane Creek Park and Campground, Marshville Municipal Park, Wingate Community Park, Monroe Lake and Park, and Mineral Springs Park. These bridges in context with potential destinations can be referenced in **Figure 6**.

## Mobility and Community Connectivity

### Connectivity and Accessibility to Daily Needs

While the bridges included in the bundle are in rural areas, they continue to provide key connections to important community destinations. Because these bridges are in rural areas,





# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

they serve as key routes for these communities. Oftentimes, detours to community facilities and destinations are miles in length adding significant vehicle miles traveled and travel times for members of the community trying to access key destinations. As previously mentioned, some of these destinations include recreational facilities such as parks and nature preserves, grocery stores, healthcare facilities, schools and universities, retail centers, and worship centers. All of these bridges contribute to accessing key connections and central pillars of everyday life. Replacing these deteriorating bridges will avoid approximately 9.7 million hours of additional travel time and 389 million additional miles due to detours from temporary and permanent closures between 2031 and 2050. See the **BCA Narrative** and **BCA Calculations Attachments** for more information.

### Accessibility for Emergency Response

Bridge failure would also have large impacts on emergency response times in emergency situations. Hospitals and medical facilities in the area are generally located in urban cores and town centers, compared to the rural communities many of these bridges are servicing. The same is true for police stations. Fire stations are generally a little more equally spaced out but are also more prevalent in downtown settings.

Community members and first responders depend on the network of rural roads in Division 10 to get between the smaller towns and Charlotte area. For many, some of these bridges may be the only crossing for some time, resulting in emergency responders likely taking long routes around to find the next closest route. Unlike everyday travel, however, an additional 5 to 8 miles added onto a route can have devastating impacts when someone's health or safety is on the line. The new bridges designed to NCDOT standards will improve structure resilience in extreme weather events, reducing bridge closures and reliance on detours.

### Multimodal Considerations

Each NCDOT project is reviewed and assessed by the NCDOT IMD Complete Streets program whereby recommendations are prepared based on demand estimation, existing and planned facilities within a half mile and three-mile radius of the project, future land use, and bicycle and pedestrian crash occurrences; IMD also seeks input and coordinates with local government agencies to determine the best fit for facility incorporation into every project. The goals of the NCDOT IMD are to increase access to eliminate transportation barriers and ensure all North Carolinians have access to opportunities and services, enhancement in quality of life in offering a convenient multimodal network across the state and ensure safety for bicyclists and pedestrians statewide. While bicycle and pedestrian facilities are currently not present along any of the existing bridges, each project will coordinate with the NCDOT IMD during the project development phase to evaluate the appropriateness of facility type and location of any facilities to be implemented. Given that bridges are designed to be long-term investments, it is anticipated that if there are no designated bicycle or pedestrian facilities implemented, the spans will include paved shoulders with enough space for future facility investments to not preclude bicycle and pedestrian connectivity as these rural areas continue to develop and evolve.

As mentioned under the Safety Merit Criteria, the NCDOT IMD hosts a comprehensive database of all existing and proposed bicycle and pedestrian facilities called PBIN. According to PBIN, five bridges have existing or proposed bicycle or pedestrian facilities adjacent to the proposed bridge replacement projects. The bridges with existing or proposed facilities include:



# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

- Peach Orchard Road Bridge – existing sidewalks along Peach Orchard Road west of the proposed bridge location.
- Robinson Church Road Bridge - proposed sidewalks along Robinson Church Road and a proposed multi-use path runs along Reedy Creek under the bridge.
- Austin Grove Church Road Bridge - proposed multi-use path along Salem Creek. There is also a proposed multi-use path along Traywick Farm Road/Austin Grove Church Road west of the bridge location. A proposed sidewalk is proposed east of the bridge location.
- Monroe-Ansonville Road Bridge - proposed multi-use path along Meadow Branch terminating 0.1 miles south of the bridge location; there are opportunities to connect and continue this multi-use path along Meadow Branch.
- Shannon Road Bridge – proposed multi-use path along the East Fork of Twelve Mile Creek.

## Economic Competitiveness and Opportunity

### Promotes Local Economic Development and Entrepreneurship

Six structures are located within Areas of Persistent Poverty.

The NCDOT features two programs that cater to providing community members opportunities to enter the transportation industry. The NCDOT Office of Civil Rights [On-The-Job \(OTJ\) Training Program](#) is a statewide workforce development program that will be utilized to the extent possible in the implementation of the project. This program's mission is to assist individuals enter the highway construction industry. The program strives to expose youth to the highway construction industry using various forms of outreach including career fairs and other school events. The program works with partner consultants to provide quality training to individuals to ensure they achieve a pre-determined skill level by the conclusion of the program, further building a diverse and well-positioned workforce.

Under this program, NCDOT created the [Highway Construction Trades Academy \(HCTA\)](#) in March 2021. This Academy offers a course for those 18 years of age and above who wish to work in the construction industry. The course provides an opportunity for participating students to earn their Occupational Safety and Health Administration (OSHA) 10, cardiopulmonary resuscitation (CPR), and flagger certification; offers commercial driver's license (CDL) permit preparation; and introduces heavy equipment operation. These courses are offered various times a year in different locations to increase accessibility. Since its start, the Academy has placed dozens in work roles with partner agencies. The program prepares individuals to be able to take on a variety of roles through training in the classroom and in the field, as illustrated in this Success Story video published on the HCTA website. Academy graduates are prepared to work on projects such as the Bridges not Barriers – A Collaborative Bridge Bundle Replacement Project.

## State of Good Repair

### Address Current of Projected Transportation System Vulnerabilities

NCDOT has established maintaining the state's infrastructure in a state of good repair as a priority and actively tracks its progress at maintaining performance measures targets for the



# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

state's transportation network, including bridges. Infrastructure condition is considered vital to the efficient movement of freight and maintaining a healthy local economy. Replacing the old bridges with new structures will eliminate deficiencies, reduce scour, and improve structure reliability. This will ultimately reduce maintenance needs and costs.

A summary of existing conditions and vulnerabilities associated with the existing structures are summarized below:

- 2 structures (Austin Grove Church Road Culvert and Penninger Road Culvert) are culverts that are nearing or in poor condition.
- All but three structures were built before 1975.
- 9 bridges have timber decks or timber in the substructure (Peach Orchard Road Bridge, Mills Road Bridge, Stack Road Bridge, Robinson Road Bridge, Bridgeport Road Bridge, Shannon Road Bridge, Booger Hollar Road Bridge, Lockhart Road Bridge, and Old Aquadale Road Bridge)
- Four bridges have no guard rail (Robinson Road Bridge, Bridgeport Road Bridge, Shannon Road Bridge, and Booger Hollar Road Bridge), providing insufficient protection in the event a roadway user might accidentally go off the edge of the bridge.
- 11 structures are load restricted (Peach Orchard Road Bridge, Mills Road Bridge, Potters Road Bridge, Stack Road Bridge, Monroe-Ansonville Road Bridge, Robinson Road Bridge, Bridgeport Road Bridge, Shannon Road Bridge, Booger Hollar Road Bridge, Bridge Road Bridge, Lockhart Road Bridge, and Robinson Church Road Bridge)
- 2 bridges are single lane structures (Bridgeport Road Bridge and Booger Hollar Road Bridge), resulting in roadway users having to stop and allow others to cross before crossing and introducing opportunities for conflicts on the bridge.
- 7 bridges have a scour plan of action (Peach Orchard Road, Mills Road Bridge, Robinson Road Bridge, Bridgeport Road Bridge, Booger Hollar Road, Bridge Road Bridge, Lockhart Road Bridge)
- 1 bridge needs temporary shoring (Peach Orchard Road Bridge)

### **Peach Orchard Road Bridge (Bridge # 120173, Federal # 0250173)**

Constructed in 1983, Peach Orchard Road Bridge has a sufficiency rating of 49.4 percent. The bridge has timber in the structure. It has a deck rating of 6, a superstructure rating of 5, and a substructure rating of 5. The bridge experiences significant scour and flooding.



Figure 7 | Peach Orchard Road Bridge



# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

### **Mills Road Bridge (Bridge # 030148, Federal # 0070148)**

Constructed in 1954, Mills Road Bridge has a sufficiency rating of 37.1 percent and timber in its structure. It has a deck rating of 7, a superstructure rating of 5, and a substructure rating of 6. The structure experiences significant scour. Vertical and diagonal cracking is present in the concrete end bents, caps, and abutments. Additionally, the bridge has experienced section loss in the beams.



Figure 8 | Stack Road Bridge

### **Potters Road Bridge (Bridge # 890170, Federal # 1790170)**

Constructed in 1973, Potters Road Bridge has a sufficiency rating of 48.7 percent. It has a deck rating of 6, a superstructure rating of 5, and a substructure rating of 4. The structure experiences significant scour issues. Timber piles in the structure are decaying, and rotten wood has been identified in the retaining wall. Concrete separation is present on the deck. Additionally, cables are exposed in the structure's concrete girders.



Figure 9 | Monroe-Ansonville Road Bridge

### **Stack Road Bridge (Bridge # 890144, Federal # 1790144)**

Constructed in 1963, Stack Road Bridge has a sufficiency rating of 47.3 percent with timber in its structure. It has a deck rating of 7, a superstructure rating of 5, and a substructure rating of 5. The bridge has been struck by vehicles on several occasions. The structure's beams also feature extensive corrosion.

### **Monroe-Ansonville Road Bridge (Bridge # 890074, Federal # 1790074)**

Constructed in 1963, Monroe-Ansonville Road Bridge has a sufficiency rating of 51.9 percent. It has a deck rating of 7, a superstructure rating of 5, and a substructure rating of 5. This bridge's abutment is cracked and experiences significant scour. Flooding occurs frequently and rust is present on the structure's steel beams and flooring. Additionally, the structure experiences frequent overtopping.

### **Robinson Road Bridge (Bridge # 590060, Federal # 0070265)**

Constructed in 1956, Robinson Road Bridge has a sufficiency rating of 53.4 percent. There is timber in the structure, and it lacks a guard rail. The bridge has a deck rating of 6, a superstructure rating of 6, and a substructure rating of 5. This is a low water bridge and



## BRIDGES NOT BARRIERS

### A Collaborative Bridge Bundle Replacement Project

experiences significant scour and flooding. The structure's I-beams show signs of section loss, and decay is present on the timber deck, resulting in soft spots.

#### **Bridgeport Road Bridge (Bridge # 830200, Federal # 1670200)**

Constructed in 1958, Bridgeport Road Bridge has a sufficiency rating of 63.9 percent with timber in the structure. It lacks a guard rail and has a deck rating of 6, a superstructure rating of 5, and a substructure rating of 5. The structure is a low water bridge and experiences frequent overtopping. The bridge has issues with significant scour, drift, and flooding.



Figure 10 | Bridgeport Road Bridge

#### **Shannon Road Bridge (Bridge # 890312, Federal # 1790312)**

Constructed in 1962, Shannon Road Bridge has a sufficiency rating of 57.0 percent and timber in the structure. It lacks guard rail and has a deck rating of 7, a superstructure rating of 5, and a substructure rating of 6. The bridge experiences significant drift and flooding, with frequent overtopping. As a result, decay and section loss are present on the structure's timber deck.



Figure 11 | Shannon Road Bridge

#### **Booger Hollar Road Bridge (Bridge # 830106, Federal # 1670106)**

Constructed in 1959, Booger Hollar Road Bridge has a sufficiency rating of 59.7 percent and timber in the structure. The bridge lacks a guard rail and has a deck rating of 7, a superstructure rating of 5, and a substructure rating of 6. The structure is a low water bridge and experiences frequent overtopping, significant scour, drift, and flooding.



Figure 12 | Booger Hollar Road Bridge



## BRIDGES NOT BARRIERS

### A Collaborative Bridge Bundle Replacement Project

#### **Bridge Road Bridge (Bridge # 830081, Federal # 1670081)**

Constructed in 1949, Bridge Road Bridge has a sufficiency rating of 60.3 percent. It has a deck rating of 8, a superstructure rating of 4, and a substructure rating of 8. The bridge is in poor condition with a rusted steel plank floor. The bridge experiences significant scour and flooding.

#### **Lockhart Road Bridge (Bridge # 030161, Federal # 0070161)**

Constructed in 1956, Lockhart Road Bridge has a sufficiency rating of 72.8 percent. The bridge has timber in the structure and has a deck rating of 6, a superstructure rating of 5, and a substructure rating of 6. The bridge experiences significant scour, drift, and flooding. The structure experiences frequent overtopping resulting in decay in the timber decking and rusted I-beams.

#### **Robinson Church Road Bridge (Bridge # 030265, Federal # 1190060)**

Constructed in 1983, Robinson Church Road Bridge has a sufficiency rating of 63.37 percent. It has a deck rating of 4, a superstructure rating of 5, and a substructure rating of 7. The structure experiences significant scour and corrosion is present on the structure's beams. Additionally, undermining is occurring around the abutment due to extensive erosion.

#### **Austin Grove Church Road Culvert (Bridge # 890067, Federal # 1790067)**

Constructed in 1982, Austin Grove Church Road Culvert has a sufficiency rating of 72.5 percent and has a culvert rating of 4. The culvert pipes are experiencing deflection and regularly capture significant amounts of drift.



Figure 13 | Lockhart Road Bridge



Figure 14 | Robinson Church Road Bridge



# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

### Old Aquadale Road Bridge (Bridge # 830095, Federal # 1670095)

Constructed in 1959, Old Aquadale Road Bridge has a sufficiency rating of 49.8 percent and has timber in the structure. It has a deck rating of 5, a superstructure rating of 4, and a substructure rating of 5. Many of the structure's beams are rusted. Additionally, undermining is occurring at the bridge's wingwalls and abutments.

### Penninger Road Culvert (Bridge # 120050, Federal # 0250050)

Constructed in 1961, Penninger Road Culvert has a sufficiency rating of 73.0 percent and has a culvert rating of 4. The structure is experiencing undermining due to significant erosion. Section loss is present in the pipes.



Figure 15 | Austin Grove Road Culvert

### Benefits of Proposed Improvements

Replacement of these structures will result in new bridge decking and will bring shoulder-widths into compliance. Bridges experiencing a design year ADT of 2,000 or greater will receive 6-foot-wide shoulders on either side. Structures experiencing between 400 and 2,000 ADT at the design year will receive 3-foot-wide shoulders and structures experiencing less than 400 ADT will receive 2-foot-wide shoulders on either side. All old materials will be replaced and in good condition at the completion of construction. Two structures are one-lane bridges, requiring cars to stop and wait for others to pass. These structures will be upgraded to one lane in either direction.

### Reduce Construction and Maintenance Burdens

The state currently spends a significant amount on maintaining and repairing these aging bridges to keep them serviceable. Division 10 estimates that it will need to spend \$4.3 million every year between 2025 and 2035 just to keep the bridges operable. See the submitted **BCA Narrative** and **BCA Calculations Attachments** for more information. The new bridges are expected to only need an estimated \$160,000 each year for the 15 bridges combined.

The new bridges will save on repair and maintenance costs from periodic storms. All but two of these bridges are regularly closed after major storms due to damage and/or debris blocking passage. On average, these 15 bridges are closed 71 times a year (average of almost 6 closures per bridge) due to storm damage or debris, which costs the division another \$120,000 a year in additional repair and clean-up costs. The replacement bridges will be higher, reducing the number of times one or more will need to be closed due to storm damage or debris. In fact, only the new Austin Grove Church Road bridge and the Penninger Road bridge (both going over culverts with corrugated pipes) would continue to sustain storm damage and at a lower rate.



# BRIDGES NOT BARRIERS

## A Collaborative Bridge Bundle Replacement Project

### Partnership and Collaboration

The Bridges not Barriers – A Collaborative Bridge Bundle Replacement Project is a collaborative effort with multi-jurisdictional support from leaders across all sectors. A list of supporters has been included and letters of support can be referenced in the **Letters of Support Attachment**.

NCDOT maintains communication with local stakeholders and the public through newsletters, the NCDOT website, and NCDOT social media platforms. NCDOT Division 10 will continue this communication and will bring all bridge designs before local stakeholders, including the Charlotte Regional Transportation Planning Organization (CRTPO), Rocky River Rural Planning Organization (RPO), Cabarrus-Rowan Metropolitan Planning Organization (CRMPO) and the Centralina Regional Council before progressing into right-of-way acquisition and construction. Should a BUILD award be granted, the project will progress through NEPA and will undergo extensive public and stakeholder engagement during this process. Several parties will be involved in the project team as a project progresses through NEPA, including NCDOT and any consultants brought in by NCDOT, FHWA, MPOs and Rural Planning Organizations (RPOs), and professionals from impacted municipalities and counties. These organizations will coordinate to identify existing conditions, potential impacts the bridge replacements could have on the human and natural environment, and document it with the proper class of action. Environmental documents will be made available to the public on NCDOT's website. Public meetings about the bridge replacement projects will be held as necessary.

### *Letters of Support*

City of Charlotte  
Anson County  
Cabarrus County  
Mecklenburg County  
Stanly County  
Union County  
CRTPO  
CRMPO  
Rocky River RPO

### Innovation

#### Innovation Techniques

NCDOT practices recycling asphalt materials in its construction practices and screens recycled mixes before construction to ensure quality, uniform, reclaimed asphalt materials. NCDOT allows for recycled materials to be utilized in asphalt mixes as long as it adheres to [Chapter 8 of the Asphalt QMS Manual](#). This includes the use of recycled asphalt pavement (RAP) and recycled asphalt shingles (RAS). NCDOT specifications will be followed, including submission of mix samples, to ensure mix quality.

#### Innovation Project Delivery

Bridge Bundling is being employed on this project. Project bundling for design and construction contracts streamlines procurement, maximizes design expertise, and increases the speed at which assets are improved to and maintained at a state of good repair. Benefits of project bundling include expedited project delivery, reduced costs through economies of scale, and improved contract efficiency by using a single contract to award several similar projects. NCDOT expects bundling the projects together to attract competitive bids and result in overall cost savings. Implementation of the bridge replacement projects will be completed in three groups to simplify the design and construction process. This will ensure that groups of bridges can be implemented sooner than if all the bridges were sent through the design and letting process at the same time and will ensure funding is available. The bridge replacement projects will be implemented through the traditional design-bid-build construction delivery method.

