



BRIDGES NOT BARRIERS

A Collaborative Bridge Bundle Replacement Project

MERIT CRITERIA NARRATIVE

Better Utilizing Investments to Leverage Development (BUILD) Grant Program

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Merit Criteria Narrative

Safety

Documented Safety Problems

Safety is a primary purpose of this project. If any of these bridges were to fail, disruptions to the local roadway network would have significant impacts on motorized and non-motorized travelers. Impacts would include safety 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 vehicle miles traveled related to increases in travel distances. Replacing these bridges would result in clear, data driven, and exceptional benefits further outlined below.

Reduction in Fatalities and Serious Injuries

According to NCDOT crash data between 2020 and 2025, 17 collisions occurred at the 15 bridges, including two fatalities, three with injuries, and twelve with property damage. Ten involved striking a fixed object, one striking an animal, two involved an angle collision from a left turn, two involved side swipes, and another two involved rearending another automobile. Mountain Creek Road Bridge had five collisions, two with fixed objects, two sideswipes, and one involving a left turn. Stack Road Bridge had three collisions, two striking a fixed object and one rear end. Austin Grove Church Road bridge had two collisions with fixed objects and Monroe-Ansonville Road Bridge also had two collisions with fixed objects, one of which was fatal. The second fatality occurred at the Shannon Road Bridge. The remaining collisions with fixed objects were at the Bridgeport Road, and Lockhart Road bridges, and the collision with an animal occurred at the Potter Road Bridge.

This project will ensure that the bridges meet current design standards. To improve motorized and non-motorized user safety, 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 Bogger Hollar Road Bridge. Railing improvements and the addition of shoulder widths will reduce the likelihood of cars entering the ditch and provide extra space for drivers to gain control of their vehicles in collision scenarios. Furthermore, 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 62 likely crashes, and in turn injuries to the driver and passengers, between 2030 and 2050, as estimated in the project's Benefit-Cost Analysis (see submitted **BCA Narrative** and **BCA Calculations Attachments**).

Protects Motorized and Non-motorized Travelers

Most of these bridges are in rural areas and often lack shoulders that meet NCDOT standards, if shoulders are present at all. Automobiles, bicyclists, and pedestrians must share the roadway with little or no room available to separate them. The project will upgrade all structures to current standards, including adding paved shoulders, which will create additional space for



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bicycle and pedestrian travel without disrupting vehicle flow. These improvements will enhance safety for both motorized and non-motorized users and expand access to safe, affordable transportation options as development continues in these rural areas. Crash Modifications Factors (CMFs), as referenced from the FHWA [Crash Modification Clearing House](#), were used in calculating the Crash Reduction Factors (CRFs) to quantify the expected percentage reduction in crashes after implementing a specific safety countermeasure. The Benefit-Cost Analysis includes the CRFs for widening paved (and unpaved) shoulders from 0 to 4 feet for rural areas and installing guard rails. Depending on the characteristics for each bridge, the CRFs range from 0.66 – 0.71 for crashes of all severity.

This increase in safety 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 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**.

Finally, the project will implement water-level monitoring gauges on each of the bridges, which will provide continuous data allowing engineers, emergency managers and the general public to observe river behavior in real time and evaluate how rising water affects roads, bridges, and culverts. Two of North Carolina's Flood Warning System's tools rely on this gage data: FIMAN (Flood Inundation Mapping and Alert Network) and BridgeWatch. When a gage reports a particular stage, FIMAN automatically displays the corresponding inundation footprint, showing which roads are overtopped, which bridge approaches are underwater, and how deep the flooding is at each location, better protecting motorized and non-motorized bridge users.

When water levels approach or exceed set thresholds, the BridgeWatch system automatically issues alerts to NCDOT maintenance staff, bridge inspectors, and emergency managers. This allows NCDOT to prioritize inspections, close roads proactively, and deploy resources efficiently during storm events. Because the alerts are tied directly to observed water levels rather than forecasts or generalized conditions, they provide a highly reliable indicator of when a structure is at risk. More information about these gauges can be found in the **Environmental Sustainability** and **Innovation** sections below.

Mitigates Risk by Improving 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.



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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 in the bridge design.

Environmental Sustainability

Resilience of At-Risk Infrastructure

Many roadways in rural Division 10 are narrow, lack shoulders, and have significant wear from prolonged exposure to automobiles, truck freight, and weather conditions. These bridges and connecting roads face similar challenges, and in many cases, ongoing water exposure has led to damage and deterioration, increasing the risk of future bridge failure.

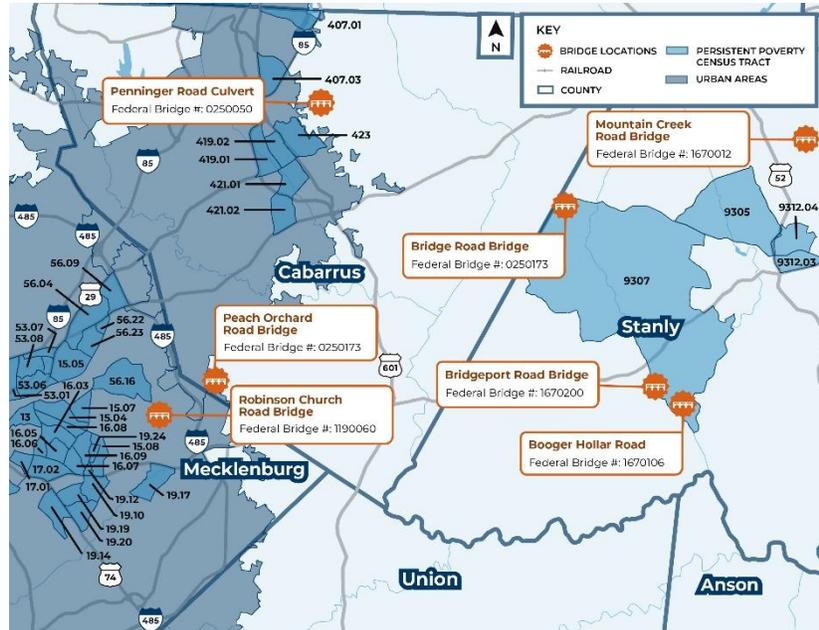


Figure 1 | APPs in Division 10's Northern Counties

The fifteen structures will be replaced with new structures designed and constructed to updated design standards, improving their resiliency and reducing their high risk of failure, and Division 10 and North Carolina's transportation network overall. They will include countermeasures to erosion and scour, which are common causes of bridge failure in the United States. 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.



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Additionally, the previously mentioned gauge monitoring system will strengthen the statewide monitoring network and improve NCDOT’s ability to understand flood behavior at a finer level of detail. New gauges enable the creation of inundation libraries, which can be used to assess upstream and downstream impacts for future storms using hydraulic models to map water levels of flood extents at half-foot increments. For example, during Helene, gage-driven modeling accurately predicted the overtopping of a one-mile section of I-40 outside Asheville more than a day in advance—a clear demonstration of the value of this monitoring network.

This ability to accurately predict the impact of hazardous events is crucial, considering that 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 regularly feature old infrastructure that is no longer designed to accommodate an area’s existing conditions. The ability to accurately predict the impacts of a

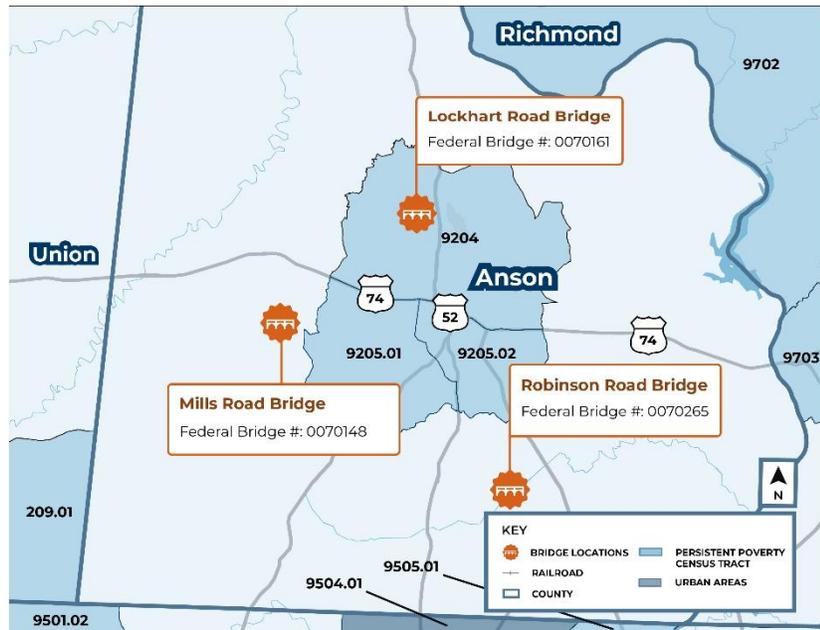


Figure 2 | APP Census Tracts in Anson County

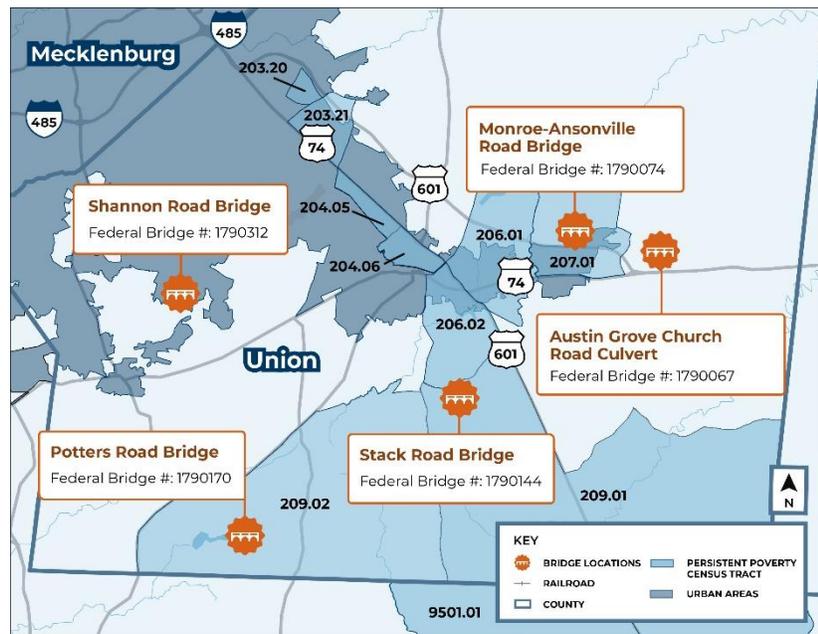


Figure 3 | APP Census Tracts in Union County



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hazardous event on communities can result in reduction in potential damages and better protection for families and business owners in these areas.

Incorporation of Vegetated Swales and Slopes

The project will be constructed to maintain drainage on site. Projects will be graded to slow water and increase infiltration before it hits nearby waterways, including implementing native seed mixes along slopes to increase soil stability. Stream buffer rules will be followed which will include the incorporation of grass swales to maximum extent practicable and discharging drainage outside of stream buffers. Projects will be designed to include nature-based solutions as our Stormwater Best Management Toolbox allows.

Quality of Life

Improves Affordable Transportation and 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 travel costs and the movement of goods throughout Division 10 and the State. These bridges also serve as connections for rural families to neighboring towns and the City of Charlotte, which are home to critical community services and resources as North Carolina's largest and most vibrant economic engine. Without these connections, rural families would lose reliable access to essential economic opportunities in nearby urban centers, including healthcare, childcare, and employment. 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.

Implementing the project will bring these structures up to current standards, replace aging materials, and ensure reliable crossings that connect rural community members to daily needs, education, and employment opportunities. Reducing bridge closures will lessen dependence on detours and decrease the vehicle miles, time, and travel costs of local families and business owners due to time spent in vehicles instead of engaging with these community assets. In fact, the BCA analysis estimates that avoided detours associated with the project will yield \$62.1 million in travel time savings and \$45.0 million in vehicle operating cost savings for users. 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**.



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Table 1 | Annual Avoided VMT and VHT

VMT		VHT	
First Year	Project Lifecycle	First Year	Project Lifecycle
21.8 million	276.4 million	0.55 million	6.9 million

Improves Family Travel Experience to Daily Destinations

Replacing these bridges will reduce existing risks of failure associated with flooding, scour, and drift. In the event of bridge failure, detour distances can vary between approximately half a mile to ten miles depending on the location. Many of the bridges are located near critical resources for surrounding families including facilities dedicated to healthcare, childcare, and education, recreational areas, and commercial destinations, and a bridge failure could significantly affect access to these amenities.

The northern counties include the Charlotte Urbanized Area in Mecklenburg, which contains many daily destinations that North Carolina families 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 Mountain Creek Road) provide access to roadways into Charlotte and to the towns of Mount Pleasant, Concord, and Harrisburg, as well as the towns of Stanfield, Locust, and Red Cross.

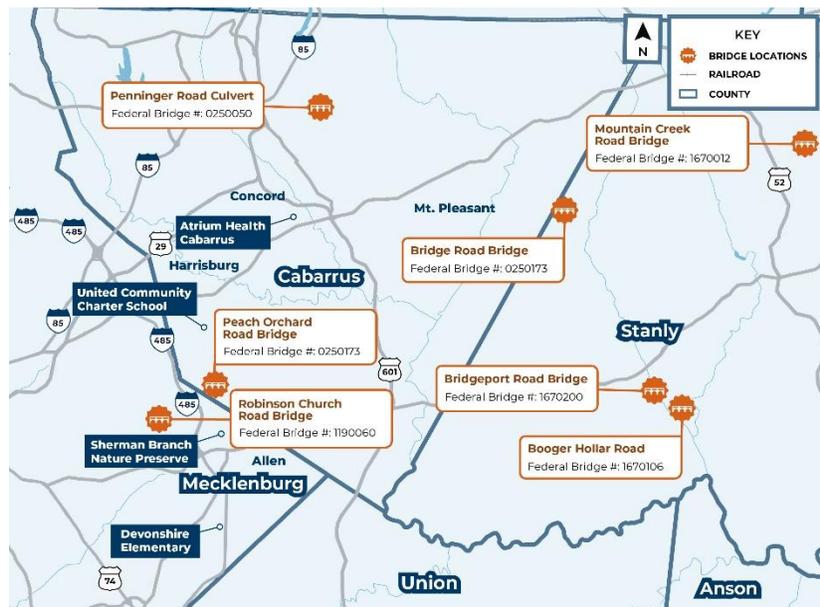


Figure 4 | Division 10 Northern Counties Bridge Proximity to Destinations

As with the other structures, failure of these bridges could impact commute times to grocery stores, schools, medical facilities including Atrium Health Cabarrus, and recreational facilities such as Sherman Branch Nature Preserve. Surrounding families would face one- to ten-mile detours in the event of bridge failures. These bridges in context with potential destinations can be referenced in **Figure 4**.



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Three of the bridges (Lockhart Bridge, Mills Road Bridge, and Robinson Road Bridge) are located in Anson County and provide crossings to resources in Wadesboro, Polkton, Peachland, and Lilesville. These resources include critical destinations for families including 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 K-12 schools, that are accessible by way of these bridges and can be referenced in **Figure 5**. In the event these bridges fail, local family members would be forced to take six- to eight-mile detours to get around the bridges.

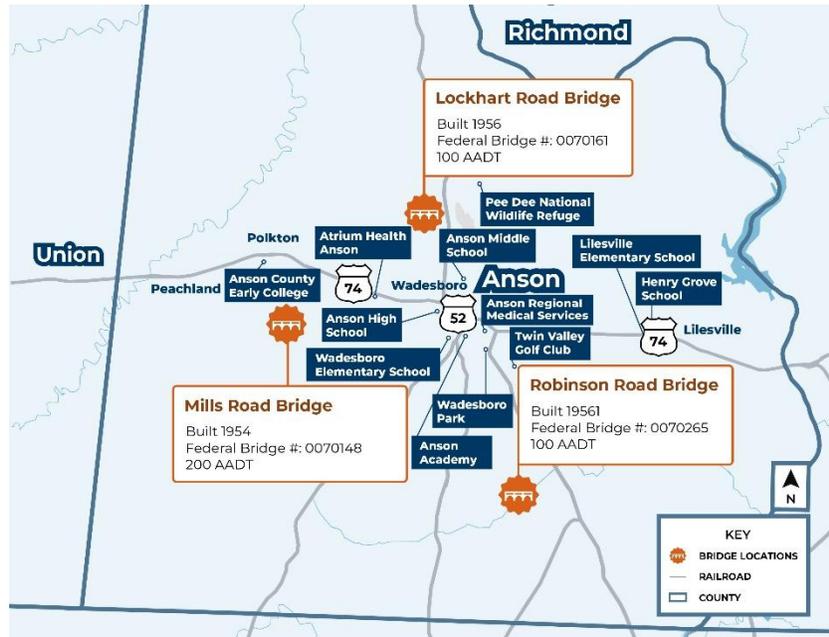


Figure 5 | Anson County Bridge Proximity to Destinations

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 critical resources for local families including 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.

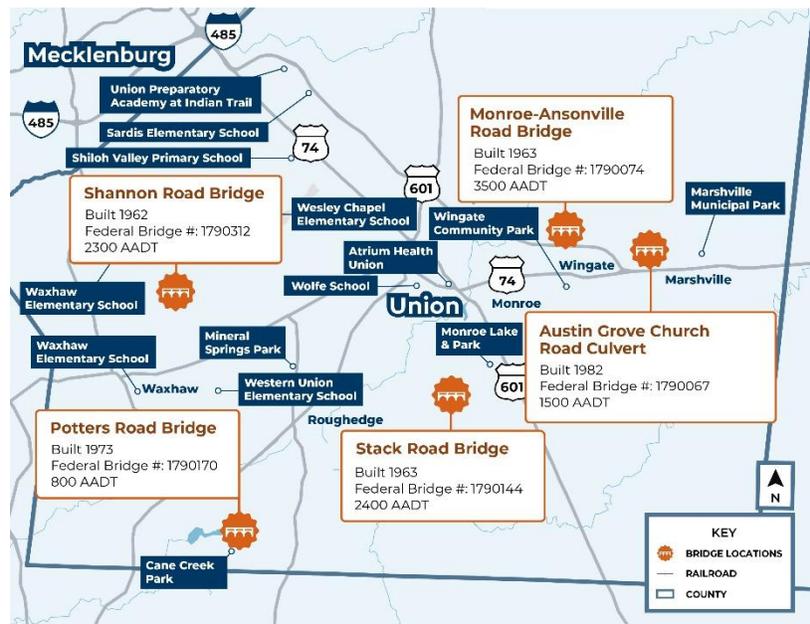


Figure 6 | Union County Bridge Proximity to Destinations



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The county is home to several recreational facilities including Cane Creek Park and Campground, Marshville Municipal Park, Wingate Community Park, Monroe Lake and Park, and Mineral Springs Park. These bridges and potential destinations can be referenced in **Figure 6**. The replacement of these structures will reduce reliance on detours and vehicle miles traveled, resulting in shorter driving distances and overall more affordable travel.

Mobility and Community Connectivity

Connectivity and Accessibility for People and Freight

Although the bridges in this bundle are in rural areas, they remain essential links to important community destinations and serve as critical routes for motorized and non-motorized travelers who rely on them. Oftentimes, detours to community facilities and destinations are miles in length adding significant vehicle miles traveled and travel times for community members. As previously mentioned, some of these destinations include recreational facilities, childcare facilities, grocery stores, healthcare facilities, schools, retail centers, and worship centers. All of these bridges contribute to accessing central pillars of everyday life. This project will bring these bridges to standard and increase bridge capacity, increasing the number of vehicles that can use the bridges, particularly large freight and agricultural vehicles. This will reduce reliability on detours and increase the reliability of first- and last- mile freight and farm to market routes in these rural areas. 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 failures would also significantly increase emergency response times. Most hospitals and medical facilities in the region are concentrated in urban centers, while many of these bridges primarily serve rural communities. The same pattern holds for police stations. Although fire stations are somewhat more evenly distributed, they too are generally located closer to town centers, making reliable bridge access critical during emergencies. Community members and first responders rely on Division 10's rural roads to travel between small towns and the Charlotte area. In many places, these bridges are the only nearby crossing, forcing emergency personnel to take long detours when they fail. An extra five to eight miles can be critical in emergencies. Replacing the structures to meet current NCDOT standards will improve their resilience in severe weather, reducing closures and detour impacts.

Remove Barriers to Affordable Transportation Options

Each NCDOT project is reviewed through the NCDOT IMD Complete Streets program, which develops recommendations based on demand estimates, nearby existing and planned facilities (within a half-mile and three-mile radius), future land use, and bicycle and pedestrian crash data. IMD also coordinates with local governments to determine the most appropriate facility types for each project, supporting its goals to expand access, remove transportation barriers, improve multimodal connectivity, and enhance safety and quality of life for all North Carolinians.



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Although no bicycle or pedestrian facilities currently exist on the bridges in this bundle, each project will work with IMD during development to assess the suitability and placement of any future facilities. Because bridge investments are long-term, even if designated bicycle or pedestrian infrastructure is not installed now, the replacement spans are expected to include paved shoulders that preserve space for future multimodal improvements as these rural areas continue to grow.

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

Economic Competitiveness and Opportunity

Promotes Local Economic Growth and Entrepreneurship

Six structures are located within APPs, defined as any county that has consistently had greater than or equal to 20 percent of the population living in poverty during the 30-year period preceding November 15, 2021. The replacement of these bridges will improve farm-to-market accessibility and provide North Carolina families, including those in the APPs, with easier access to surrounding markets and urban centers. This promotes investment in local, family-owned businesses and will better provide for the movement of North Carolina made goods and services. Similarly, replacing the bridges will increase the number of trips that can be made using larger loads, removing barriers to automobile access and the movement of goods in alignment with Executive Order 14154 (Unleashing American Energy). In fact, according to the CRTPO MTP, there are 311 trucking companies located in Charlotte and 57 percent of Fortune 500 companies have facilities in the area. By replacing these bridges and reducing detour dependence for large freight trucks and agricultural equipment, the project can improve the movement of goods and services, generating economic benefits for local families and businesses.

Additionally, NCDOT offers two programs that create pathways for community members to enter the transportation industry. These programs are used whenever possible during project implementation. 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. The program's mission is to help individuals enter the highway



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construction industry by introducing youth to the field through outreach events and providing targeted training with partner consultants to ensure participants reach the required skill level, supporting a diverse and well-prepared workforce.

Under this program, NCDOT launched 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 Academy provides training for individuals 18 and older interested in construction careers, offering 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. Courses are held several times a year in multiple locations to improve accessibility. Since its launch, the Academy has placed dozens of graduates in positions with partner agencies. Through classroom and field training, highlighted in a Success Story video on the HCTA website, participants gain the skills needed to work on projects such as the Bridges not Barriers – A Collaborative Bridge Bundle Replacement Project.

State of Good Repair

Modernize and Address 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 and targets for the state’s transportation network, including bridges. Infrastructure condition is considered vital to the efficient movement of freight and maintaining a healthy local economy. Replacing and modernizing the old bridges with new structures will eliminate deficiencies, reduce scour, improve structure reliability, and increase safety of existing infrastructure with a high risk of failure, ultimately reducing maintenance needs and costs. A summary of existing conditions and vulnerabilities associated with the existing structures are summarized below:

Table 2 | State of Good Repair

Bridge #	Poor Condition	Built Before 1975	Timber Present	No Rail	Load Restricted	Single Lane	Scour Plan	Temporary Shoring Necessary
0250173			X		X		X	X
0070148		X	X		X		X	
1790170		X			X			
1790144		X	X		X			
1790074		X			X			
0070265		X	X	X	X		X	



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Bridge #	Poor Condition	Built Before 1975	Timber Present	No Rail	Load Restricted	Single Lane	Scour Plan	Temporary Shoring Necessary
1670200		X	X	X	X	X	X	
1790312		X	X	X	X			
1670106		X	X	X	X	X	X	
1670081		X			X		X	
0070161		X	X		X		X	
1190060					X			
1790067	X							
1670012		X	X					
0250050	X	X						

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 and has a deck rating of 6, a superstructure rating of 5, and a substructure rating of 5. The bridge experiences significant scour and flooding.

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.

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.

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.



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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.



Figure 7 | Bridgeport Road Bridge

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 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.



Figure 8 | Shannon Road Bridge

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 9 | Booger Hollar 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.

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



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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.

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.



Figure 10 | Robinson Church Road Bridge

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.

Mountain Creek Road (Bridge # 830012, Federal # 1670012)

Constructed in 1969 with a reconstruction in 1989, Mountain Creek Road Bridge has a sufficiency rating of 39.34 percent and has timber in the structure. It has a deck rating of 7, a superstructure rating of 6, and a substructure rating of 4. 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.

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



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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 timber substituted with metal, resulting in bridges 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 existing bridges operable. The new bridges are expected to need an estimated \$160,000 each year for the 15 bridges combined. See the submitted **BCA Narrative** and **BCA Calculations Attachments** for more information.

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 127 times a year (average of almost 8.5 closures per bridge) due to storm damage or debris, which costs the Division another \$162,000 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.

Partnership and Collaboration

The Bridges not Barriers – A Collaborative Bridge Bundle Replacement Project is a collaborative effort with broad, multi-jurisdictional support. NCDOT maintains communication with local stakeholders and the public through newsletters, the NCDOT website, and social media platforms. NCDOT Staff regularly attend local stakeholder meetings and are available to answer questions and provide information about local projects. A list of supporters over the project lifecycle has been included, and letters of support received to date can be referenced in the **Letters of Support Attachment** and will continue to be added to the [Supplemental Information](#) website.

Letters of Support

City of Charlotte*
Anson County*
Cabarrus County*
Mecklenburg County*
Stanly County
Union County
CRTPO*
CRMPO
Rocky River RPO
NC Department of Agriculture and Consumer Services

**Previously provided a letter of support for the Project*

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



BRIDGES NOT BARRIERS

A Collaborative Bridge Bundle Replacement Project

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, including NCDOT and consultants brought in by NCDOT, FHWA, MPOs and 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 to document it with the proper class of action. Environmental documents will be available to the public on NCDOT's website. Public meetings about the bridge replacement projects will be held as necessary.

Innovation

Innovation Techniques

As mentioned previously, the project will implement new gauges on all the bridges, expanding NCDOT's flood-warning and stream-gage network. This project will provide NCDOT and the local community with a first of its kind focus on applying a concentrated gauge network on rural bridges. This network will provide a transformative layer of intelligence for the Division 10 Bridge Bundle by integrating real-time and predictive hydrologic data directly into project development and long-term asset management. Through FIMAN, and BridgeWatch, more than 750 gages supply continuous water-level, inundation, and forecast information. These systems use LiDAR-based floodplain mapping to model upstream and downstream impacts—often extending 5–10 miles—allowing NCDOT to anticipate roadway overtopping, bridge freeboard exceedance, and culvert vulnerability before and during storm events. This capability did not exist prior to 2019 and now forms a core part of NCDOT's resilience strategy.

Beyond supporting engineering decisions, the system strengthens community flood awareness by quantifying building-level vulnerability, mapping inundation extents, and providing public-facing updates through DriveNC.gov. Incorporating this intelligence into the Bridge Bundle enhances safety, reduces lifecycle risk, and ensures the structures are designed with a clear understanding of future flood behavior.

Innovative Project Delivery

Bridge bundling and Express Design-Build is being employed on this project. Project bundling for design and construction contracts streamlines procurement, reduces the number of contracts employed, 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. As mentioned above, three of the four bundles will be designed and implemented utilizing an express design-build approach, streamlining final design and construction phases. This will result in increased collaboration, faster project completion and cost savings.

