

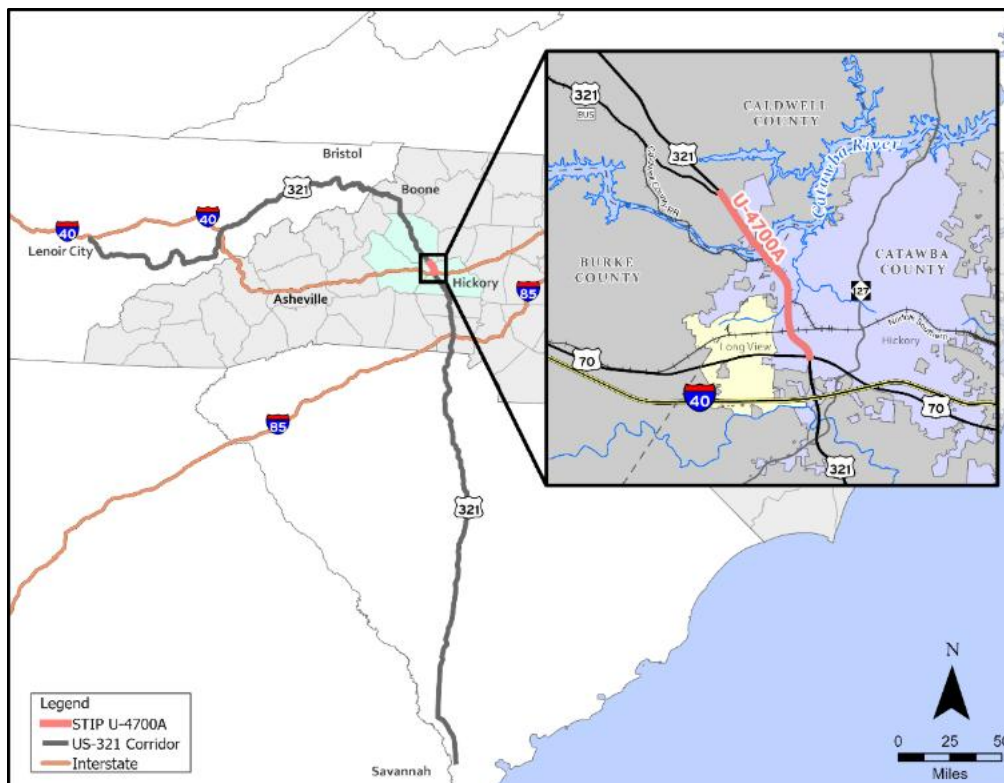
US 321 Calibrating Our National Network to Encourage Commerce and Tourism – 321 CONNECT

PROJECT DESCRIPTION

The North Carolina Department of Transportation (NCDOT) urgently seeks \$30,945,000 in Nationally Significant Multimodal Freight and Highways Projects (INFRA) funds to maintain the project schedule for the shovel-ready 321 CONNECT (Calibrating Our National Network to Encourage Commerce and Tourism) project. 321 CONNECT is a major project with an estimated future eligible cost of over \$282 million.

The funding will allow NCDOT to move forward with 2026-2035 State Transportation Improvement Program (STIP) project U-4700. Due to limited funding, the project has been split into multiple construction phases. U-4700A will improve US 321 from US 70 to US 321 Business in Hickory. The schedule for this portion of the project has already been delayed due to escalating materials costs. 321 CONNECT funding will allow NCDOT to construct critically needed improvements to US 321 in this western Piedmont area, including the replacement of two bridges over the Catawba River.

Figure 1: 321 CONNECT U-4700A Improvements



The US 321 corridor extending from Hickory north through Boone, NC, Bristol VA/TN and Lenoir City TN is a critical link in the western North Carolina transportation network, linking the region to the I-40/I-85 system. This part of US 321 is a vital connector to Appalachian communities, major visitor destinations, and national markets. As part of the National Highway System and North Carolina's Strategic Transportation Corridor D, US 321 plays an essential role in moving freight more efficiently and reliably, while also carrying workers, residents, families with children

and visitors to jobs, schools, services, and recreation throughout the foothills and mountains. The corridor also connects vital manufacturing and distribution networks.

The U-4700A project includes a crossing of Frye Creek in Hickory on US 321 and several downstream roads lie within the Frye Creek floodplain and face current and continuing flood risks. The 321 CONNECT project will update stormwater Best Management Practices (BMPs) within U-4700A right of way (ROW). In addition, the project will install a flood gauge on Frye Creek near US 321, which will be connected to North Carolina's Flood Inundation Mapping and Alert Network for Transportation (FIMAN-T). FIMAN-T was developed as a partnership between NCDOT and NC Emergency Management (NCEM) to provide NCDOT officials and emergency management stakeholders with real-time and forecasted flood inundation depths along roads, bridges and other NCDOT assets in support of risk-based decision-making during flooding events. The application features an interactive dashboard allowing users to navigate between current conditions, modeled scenarios, and forecasted conditions where available. The system reports critical emergency response information, such as bridge freeboard (the distance between the water surface and the bridge's low chord elevation), allowing for a more informed response by NCDOT, NCEM and other stakeholders. The integrated flood gauge will inform stakeholders when flooding conditions might impact US 321 and other local downstream roads.

Located in the rolling hills of the North Carolina Piedmont and bordered to the north by the Catawba River, the City of Hickory has long been a gateway to the northwestern part of the state. Through most of the late 19th and 20th centuries, the economy of Hickory was based on hosiery and textile mills and furniture building. This combination of manufacturing and educational focus drove growth in the area through the 1980s, when Hickory suffered industry and job losses, which continued through the recession of 2008.

Hickory leaders and citizens rallied to develop a plan for transforming the City and passed a \$40 million bond referendum to fund an extensive bicycle and pedestrian network. Since then, Hickory has leveraged the \$40 million bond funds to secure an additional \$50 million in state and federal grants for complementary projects and is in the process of constructing the Hickory Trail, a network of bicycle and pedestrian facilities that connect downtown areas across US 321 to the Hickory Airport and Museum and LP Frans Stadium, which is home to the minor league baseball team, Hickory Crawdads.

The Hickory Trail project combined with further actions by the City have spurred additional investment both in existing businesses as well as new industries. Today, CommScope and Corning Optical Communications both employ over 1,000 people. On March 23, 2023, CommScope and Corning announced they will invest over \$540 million combined to build American-made fiber optic cables, with the aim to expand access to broadband internet in rural areas. Merchants Distributors, Inc. is the major food distribution company for independent groceries in western North Carolina. Hickory has also maintained its historic furniture industry, serving customers throughout the United States.

As detailed in the Benefit/Cost Analysis (BCA), the project provides a Benefit/Cost Ratio of 2.03, with a total benefit of \$443,487,245 and a Net Present Value (NPV) of \$239,299,697.

TABLE 1. 321 CONNECT BCA Summary

Benefit Category	Value
Operations and Maintenance Cost Savings	\$49,886,921
Crash Cost Savings	\$94,594,875
Travel Time Savings from Project	\$102,457,193
Travel Time Savings from Avoided Detour	\$16,989,864
Operating Costs Savings from Avoided Detour	\$9,446,271
Non-Motorized Traveler Amenity & Mortality Savings	\$2,114,352
Residual Value	\$11,991,838
Net Benefits	\$397,109,875
Total Costs	\$179,771,137
B/C Ratio	2.21
Net Present Value	\$217,338,738

TRANSPORTATION CHALLENGES AND SOLUTIONS

Roadway and Bridge Challenges

US 321 in the western Piedmont of North Carolina is a transportation corridor for statewide mobility and regional connectivity. The facility is part of the National Highway System and is classified as a North Carolina Strategic Transportation Corridor (Corridor D). Corridor D connects I-85 and I-40 to northwestern North Carolina (the Boone area and points north and west), providing vital linkages for freight and tourism.

US 321 from Hickory to Lenoir shows its age in both design and deteriorating conditions. US 321 was constructed in the 1950s and early 1960s, and many segments of the facility have not been substantially upgraded since their initial construction. The project area is characterized by rolling topography and the prevailing design criteria during construction of the facility do not provide the sight distances and horizontal alignment to which current drivers have become accustomed. These factors may contribute to the 3,961 crashes that were recorded on US 321 from Hickory to Lenoir between February 2014 and January 2024. The total crashes include 993 non-fatal injury crashes. In addition, since 2007, there have been 25 bicyclist and pedestrian crashes along US 321 from US 70 to just north of the Catawba River bridges. This includes 19 pedestrian crashes and six bicycle crashes. The crashes have resulted in four fatalities and 17 crashes resulted in injuries (classified as possible injuries or serious injuries).

An at-grade crossing of US 321 and Caldwell County Railroad (CWCY), a shortline railroad just south of the Catawba River crossing, is utilized by four trains per week. At-grade rail crossings, regardless of the amount of train traffic, can cause delays and present a continual risk of railroad/motor vehicle collisions.

Figure 2: US 321 Bridges Over Catawba River

The most significant challenge to the corridor are the aging bridges that cross the Catawba River. State bridge inspection reports in 2022 for the southbound bridge (FHWA ID 000000000270367) classified the substructure as 4 (poor condition) with the deck rated as 5 (fair condition) and the superstructure rated as 6 (fair condition). The facility, which was constructed in 1962, is considered structurally deficient. The inspection noted metal deterioration in one location, which is considered a critical find, as well as ten additional items that were assigned as priority maintenance. Cracking was noted in the surface asphalt of the structure, which required additional maintenance activities. NCDOT recently completed a rehabilitation project of the Catawba River southbound bridge on US 321. The total cost of the project was \$2,674,024. This extensive work does not solve all of the issues with the structure. Based on the April 26th NCDOT Bridge Inspection Report, the superstructure of the facility had declined to a 5 (Fair condition), while the deck and substructure are classified as 7. Spalling and cracks are still noted on the bridge deck and corrosion is noted on several plate girders. Exposed REBAR was also documented.

The northbound bridge (FHWA ID 000000000270366) was also inspected in June 2022. The deck and superstructure were rated as 4 and the substructure was rated as 5. The bridge is also considered to be structurally deficient. The structure, which was built in 1983, has corrosion and cracking, with some exposed rebar noted. A total of nine items were assigned as priority maintenance activities. Repairs raised the 2026 rating of the facility of the deck and superstructure to 5 and 6, respectively, while the substructure declined to a rating of 4.

Roadway and Bridge Solutions

321 CONNECT will substantially upgrade the corridor, widening the facility to accommodate current and future traffic demands and replacing both bridges over the Catawba River. The project will also improve the safety of the facility by improving the roadway geometry where possible, installing a pedestrian crossing at 2nd Avenue SW, and developing reduced conflict intersections at 2nd Avenue NW and other locations as appropriate. In addition, the project will repurpose the existing northbound bridge over the Catawba River as a bicyclist and pedestrian facility.

Based on the Benefits/Cost Analysis, the project derives an estimated 2.21 Benefits/Cost Ratio (BCR) with a net present value of over \$217 million.

Funding Challenges

NCDOT has recognized the need to improve US 321 and has developed STIP project U-4700 to address these concerns. However, continually rising construction costs put the project schedule at risk. Postponed several times, the construction schedule has been pushed to state fiscal year 2028 with additional delays possible.

Funding Solutions

321 CONNECT would significantly advance the construction timeline of the proposed U-4700 improvements. U-4700A is by far the most costly segment of the proposed U-4700 project, due to site constraints for right of way in Hickory and the need to replace the bridges over the Catawba River. This section also has the greatest congestion. Any advancement of the project will provide the benefits described more quickly and will reduce maintenance needs for the bridges and other parts of the corridor.

Since 2023, estimated construction costs have increased from \$251.5 million to \$282.4 million. The proposed INFRA funds will be used to cover that cost increase for construction as well as the installation of a flood gauge.

Because U-4700A has completed the required National Environmental Policy Act (NEPA) documentation and purchasing right of way acquisition, NCDOT can assure rapid and smooth delivery of the project. Construction costs for the project were updated in February 2026. Supplemental Materials can be found on the [321 CONNECT website](#).