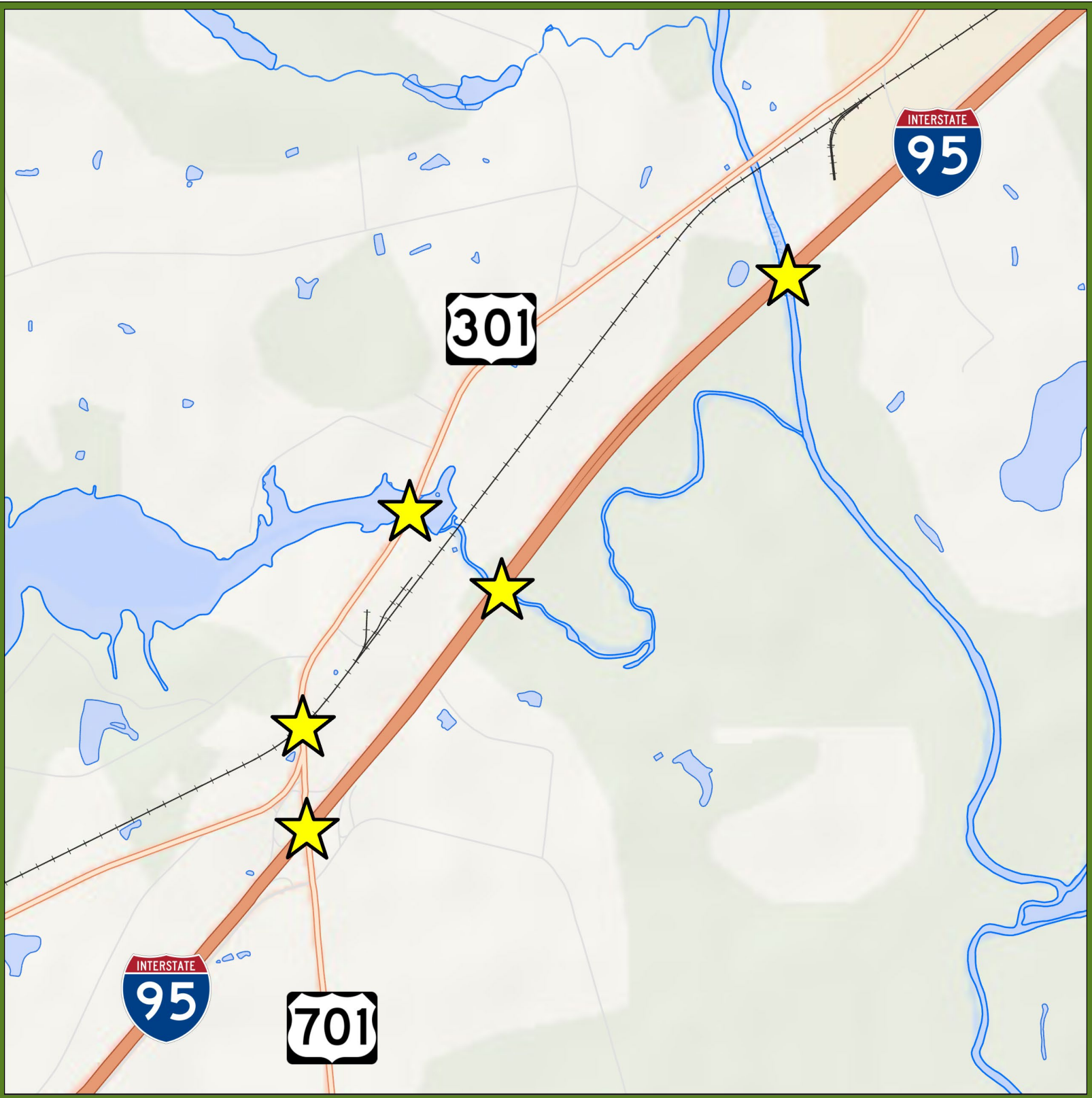


I-95/US 301 Bridge Replacements

An application for Bridge Investment Program (BIP) Large Bridge Grant Funding

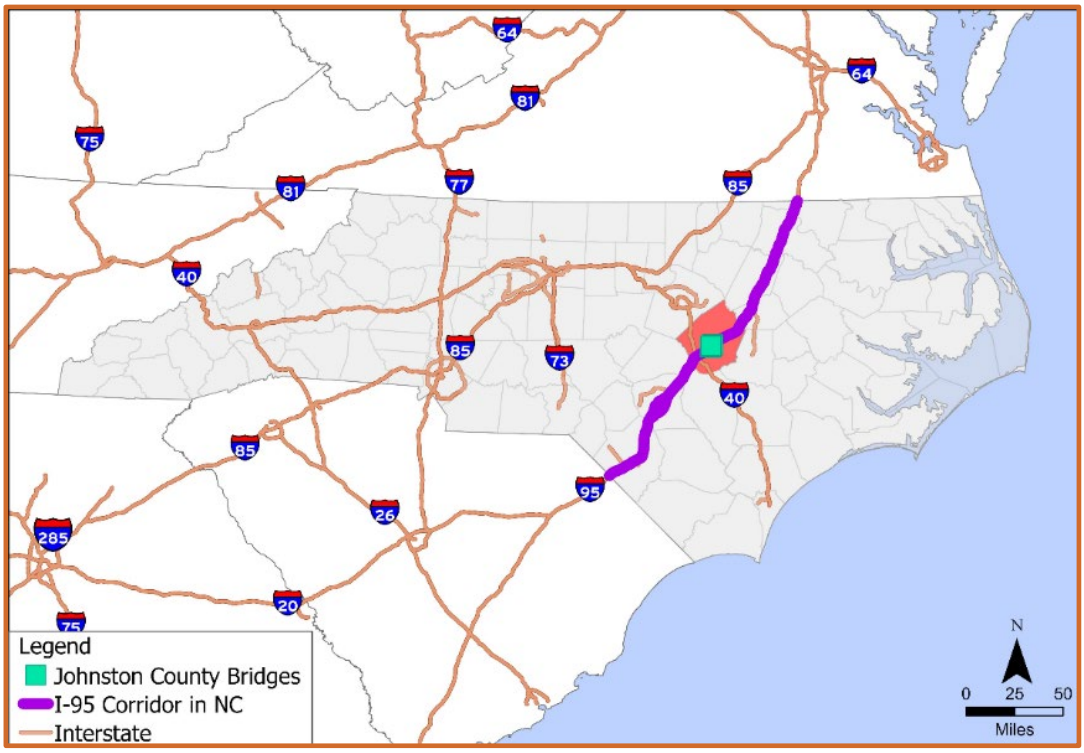
August 1, 2025

North Carolina Department of Transportation (NCDOT)

UIE: XSN8A4TT1DY5

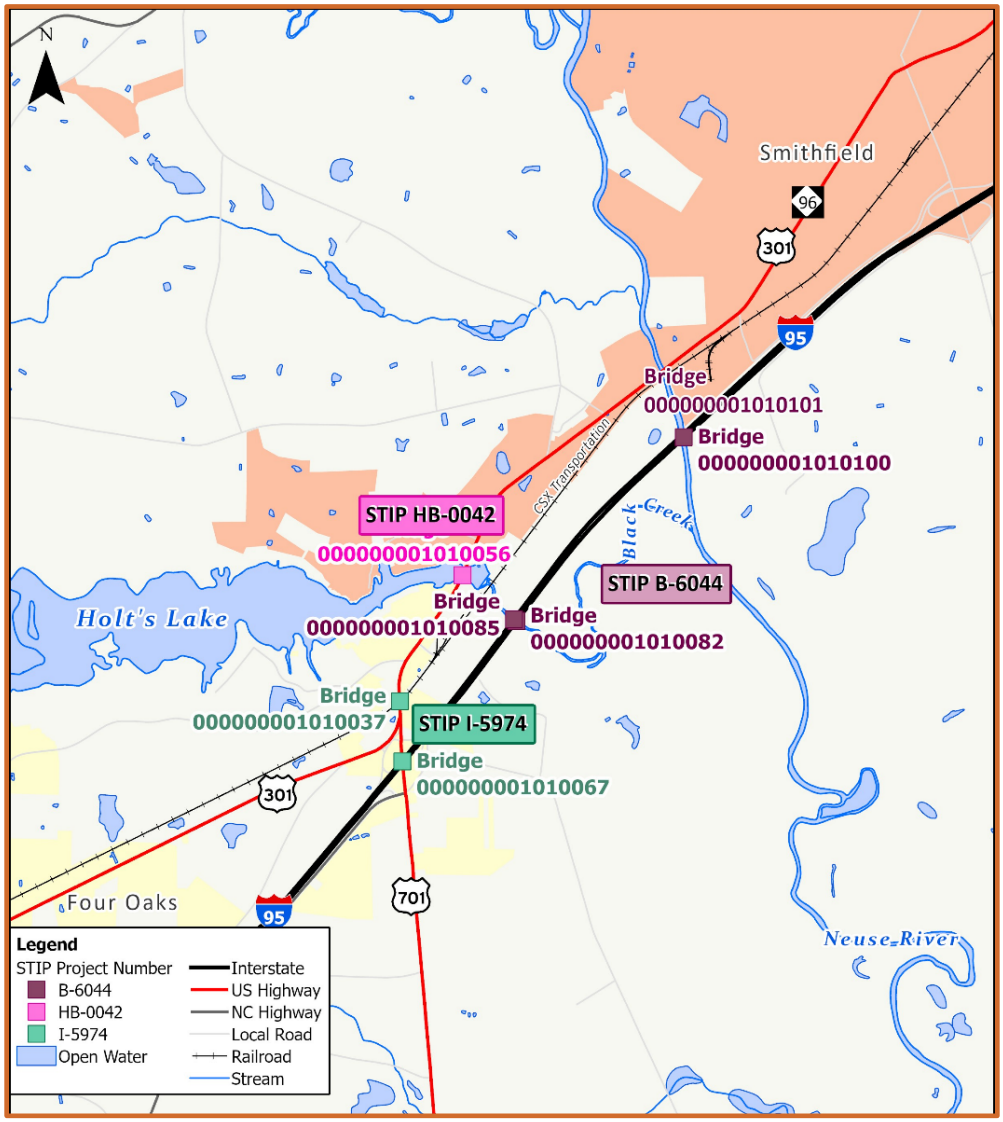
I. Project Description

The North Carolina Department of Transportation (NCDOT) urgently seeks $73 million in USDOT Bridge Investment Program (BIP) Large Bridge Project Program funding to replace seven aging bridges on the vital I-95 and US 301 travel and freight corridors in Johnston County, North Carolina. I-95 is part of the Federal Highway Administration's (FHWA's) National Highway System (NHS), the National Highway Freight Network (NHFN), and the North Carolina Strategic Highway Network (STRAHNET). US 301 is also an important part of FHWA's NHS and serves as a redundant route for I-95 in this area.



Project Context Map

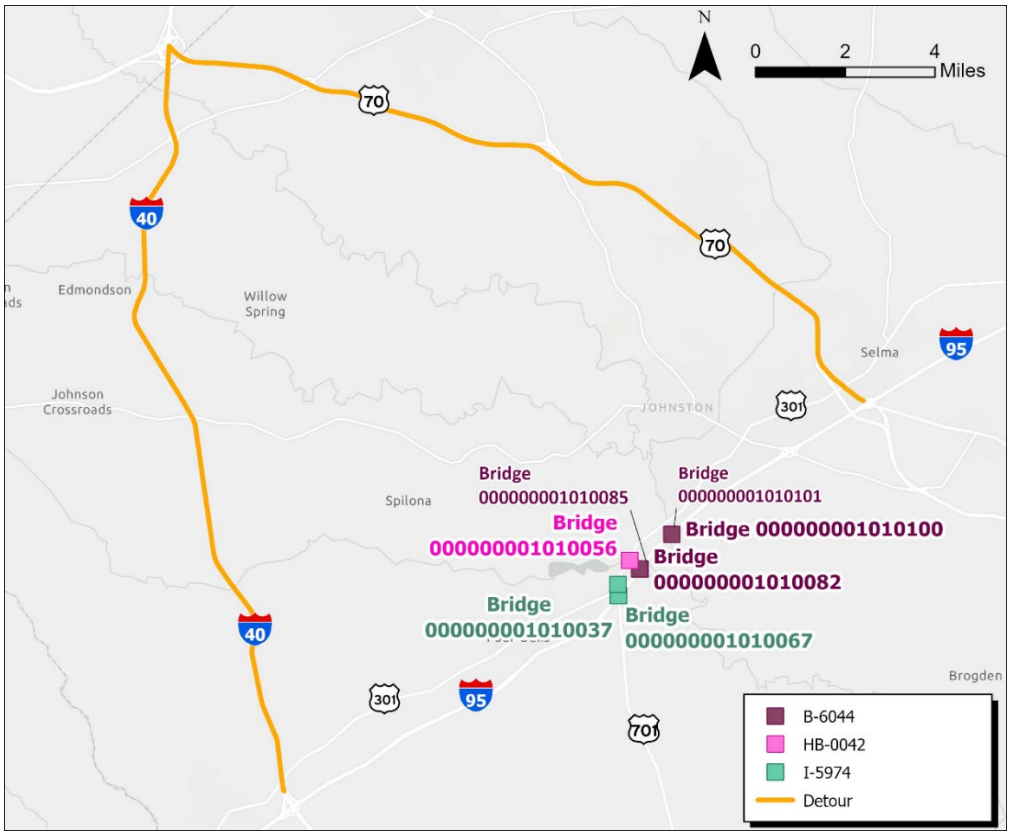
Of the seven bridges, four are located on I-95, two are found on US 301, and one is on US 701/NC 96 crossing I-95. Of the two bridges on US 301, one carries US 301 over Holt's Lake and another over the CSX A-line. The US 701/NC 96 bridge carries US 701/NC 96 over I-95 at an interchange. One of the US 301 bridges (000000001010037) carries US 301 over the CSX A-line. The bridge is load rated, limiting truck travel. The structure width limits the ability of CSX to add additional lines and is too low to allow CSX to run double-stacked trains on multiple lines. The condition of all seven structures is listed in the National Bridge Inventory (NBI) as either fair or poor. The projects have been combined for this grant as the I-95 and US 301 Bridge Replacements Project. Previously incurred costs for preliminary engineering and ROW acquisition for the three projects total $14,327,622 through July 2024. Any new information on costs will be added to the supplemental materials section. The bridge locations are shown on the map. Supplemental information for the project and all criteria can be found at https://connect.ncdot.gov/resources/LBIP2026-I95US301/Pages/default.aspx.



Project Bridges in Johnston County, North Carolina

The seven bridges were constructed between 1926 and 1958 and are at the end of their designed lifespan. Three of the bridges have been reconstructed between 1954 and 2009 in attempts to preserve the structures. Bridge inspection reports for the facilities are included in the Supplemental Materials. The reports document many signs of deterioration, including delamination, cracking, exposed rebar, missing header and joint material, and corrosion. Bridge 000000001010037 over CSX railroad is load posted for trucks over 18 tons. Bridge 00000001010085 (I-95 southbound over Black Creek) has temporary shoring and is in poor condition. The 2022 bridge inspection report notes that the bridge is open but would be posted or closed except for the temporary shoring.

The bridges on US 301 were originally built in 1926 and reconstructed in the 1950s. The bridges on and over I-95 are currently in fair condition and were built in the 1950s using the same materials and construction standards. Maintenance costs over the past five years have continued to increase. However, without near constant maintenance, the condition of all the structures would continue to degrade. If issues closed this part of the I-95 corridor, a substantial detour would be required. While the figure shows the detour NCDOT would sign, it is likely that many travelers through the project corridor would divert to smaller, local routes that are not designed to handle high traffic volumes. This would compromise the safety of area residents, many of whom live in poor rural communities.



NCDOT Proposed Detour around I-95 and US 301 Bridges

This grant would enable the replacement of these critical infrastructure resources, providing long-term transportation resiliency while bringing the structures up to current design standards. Given the importance of the I-95 corridor to the national economy, ensuring these structures continue operation provides exceptional benefits, as shown in the Benefits/Cost Analysis.

Location

The project is located in the Southeastern Plains Level 3 Ecoregion, in the Rolling Coastal Plain and Southeastern Floodplains and Low Terraces Level 4 Ecoregions. The project includes the Neuse River Basin. Specific locational data for each bridge is shown below:

Structure No.	Latitude	Longitude
000000001010037	35274110	078232184
000000001010056	35280920	078230433
000000001010067	35272728	078232120
000000001010082	35275866	078225040
000000001010085	35275960	078225068
000000001010100	35283930	078220448
000000001010101	35283972	078220463

The project area is partially located in the Smithfield, North Carolina 2020 Census-designated Urban Area. Three census tracts (CTs) are within the project area (CTs 37101040600, 37101041201, and 37101041202).

According to North Carolina Department of Health and Human Services (NCDHHS, 2023), Johnston County's fertility rate was 59.6, which is 6.8 percent higher than the statewide rate of 55.8. Additionally, 2020 NCDHHS data reports that Johnston County had a marriage rate of 5.6, exceeding the statewide rate of 5 by 12 percent. For both fertility and marriage rates, Johnston County surpasses NC averages. Additional information is provided in the Excel project template and Supplemental Materials.

Lead Applicant

The NCDOT is the lead applicant for the I-95/US 301 Bridge Replacements Project. The NCDOT has vast experience with the receipt and expenditure of Federal-aid highway program funds under 23 U.S.C. No other parties are involved in delivering the project, reducing risk to the project.

Bridge Maintenance

The seven bridges included in this application are being designed to have an asset life of 100 years. To ensure the safety of motorists who rely on these bridges, NCDOT has an aggressive inspection program. NCDOT follows the National Bridge Inspection Standards and ensures each bridge is inspected at least every two years. The seven bridges will be maintained through a combination of preventive and preservation activities. The goal of preventive maintenance is to avoid major repairs that can cause long traffic closures and be costly to the Department.

Bicycle and Pedestrian Accommodations

The replacement of Bridge No. 000000001010056 on US 301/NC 96 will provide width on the bridge for a future multi-use path, providing a crossing of Black Creek/Holt's Lake for bicyclists and pedestrians. The multi-use path is consistent with the Johnston County Envision Johnston 2040: Comprehensive Land Use Plan. The replacement of Bridges 000000001010100 and

000000001010101 carrying I-95 over the Neuse River will provide additional width to accommodate a future greenway under the bridges. This will provide the only designated bicycle and pedestrian crossing of I-95 for dozens of miles. As an interstate, I-95 is not designed to accommodate bicyclists and pedestrians.

Within the limits of the I-95/US 301 Bridge Replacements project, this section of US 301 is the temporary location of both the East Coast Greenway (ECG) and Mountains to Sea Trail (MST). The ECG connects 15 states and 450 cities and towns for 3,000 miles from Maine to Florida. The MST is North Carolina's state hiking trail, stretching 1,175 miles from the Great Smoky Mountains to the Outer Banks. It is planned that the eventual accommodation of the ECG and MST will be provided under the I-95 bridges over the Neuse River. Investment in the I-95/US 301 Bridge Replacements project will allow for much needed multi-modal connectivity in a rural area faced with many transportation barriers.

Asset Management Plan

The I-95/US 301 Bridge Replacements project is consistent with the NCDOT Transportation Asset Management Plan (2022). It meets Goal 1 by improving the geometry and providing safer shoulder areas for disabled vehicles and maintenance vehicles. It supports Goal 3 by replacing aging structures with new, more easily maintained structures. It supports Goal 4 by improving the reliability and connectivity of the transportation system. It supports Goal 5 by promoting economic growth along both the I-95/US 301 corridor as well as future double stacked train cars on the CSX A-line. It will improve the pavement condition of the interstate system and reduces the number of bridges in poor or fair condition.

II. National Bridge Inventory Data

Please refer to the attached Excel Template and the Bridge Inventory Reports found in the Supplemental Materials.

III. Project Budget – Grant Funds, Sources, and Use of All Project Funding

NCDOT seeks $73.25 million in BIP Large Bridge Project funding for the I-95/US 301 Bridge Replacements Project. The funding will allow NCDOT to move forward with 2024 – 2033 State Transportation Improvement Program (STIP) projects HB-0042, I-5974, and B-6044. All three projects have completed environmental documentation (categorical exclusions). Right of way acquisition for B-6044 is complete. ROW is in progress for the other two projects, so the projects are shovel ready. However, due to funding concerns, I-5974 and B-6044 have been delayed until FY 2029 for construction. BIP funding will allow the projects to be let together, allowing for innovative contracting methods as bundled bridges.

Previously incurred costs for the three projects total $14,327,622. NCDOT's latest cost estimates for the three bridge projects totals $147,850,000. This estimate includes $22,288,000 in contingency funds. The cost estimates are detailed in the Supplemental Materials and outlined in the table.

	HB-0042	I-5974	B-6044	Item Totals
Construction	$9,400,000	$76,000,000	$53,900,000	$139,300,000
ROW	$1,190,000	$5,300,000	$110,000	$6,600,000
Utility	n/a	$1,700,000	n/a	$1,700,000
DMS Installation	n/a	n/a	$250,000	$250,000
Project Totals	$10,590,000	$83,000,000	$54,260,000	**$147,850,000**

North Carolina's Strategic Transportation Investments Act (STI) of 2013 requires that capital projects compete through a data-driven project prioritization process that considers, but is not limited to, cost and mobility improvements for each proposed project.

The process has three major competition categories, Statewide Mobility, Regional Impact, and Division Needs. These categories are based on the proposed project's type of transportation asset class. STIP Project B-6044 is funded through the Statewide Mobility category and STIP Project I-5974 is funded through Regional Impact funds in the current (2024-2033) STIP. Due to the limited nature of funds, construction is scheduled for FY 2029. HB-0042 is currently funded for preliminary engineering (PE) only. If BIP Funding is provided, a combination of Statewide Mobility and Regional Impact funds are available to provide the NCDOT Match ($29,750,000).

Source of Funds

	HB-0042	I-5974	B-6044 (includes DMS)	Item Totals
State Funds	$2,118,000	$16,600,000	$10,852,000	$29,570,000
BIP Funds	$5,250,051	$41,100,255	$26,899,694	$73,250,000
Other Federal Funds	$3,221,949	$25,299,745	$16,508,306	$45,030,000
Project Totals	$10,590,000	$83,000,000	$54,260,000	**$147,850,000**

As noted previously, NCDOT has already had substantial coordination with resource agencies, minimizing permitting risk. To account for risks related to construction, NCDOT includes contingency fees in all construction cost estimates. For the three subject bridge projects, the overall construction contingency is 16 percent ($22,288,000).

IV. Merit Criteria

Criterion #1: State of Good Repair

All of the bridges were built or reconstructed before 1960 and are at the end of their designed lifespan. Below is a summary of the condition of the seven bridges included in this application:

1 – Bridge No. 00000001010037 on US 301/NC 96 over CSX Railroad (NBI # 377564)	
Notes: Load posted for single vehicles (SV) over 18 tons and truck tractor semitrailers (TTST) over 21 tons. The inspection report	**Sufficiency Rating:** 35.35 out of 100
	Deck Condition: 6
	Superstructure Condition: 5
	Substructure Condition: 5

notes delamination, spalling, cracks, exposed rebar, and corrosion.	**Built:** 1926, reconstructed 1954

2 – Bridge No. 000000001010056 on US 301/NC 96 over Black Creek/Holt's Lake (NBI # 377583	
Notes: The inspection report notes delamination, spalling, cracks, and exposed rebar.	**Sufficiency Rating:** 48.63
	Deck Condition: 5
	Superstructure Condition: 5
	Substructure Condition: 5
	Built: 1926, reconstructed 1954

3 – Bridge No. 000000001010067 on US 701/NC 96 over I-95 (NBI # 377593)	
Notes: The inspection report notes delamination, spalling, cracks, exposed rebar, and corrosion.	**Sufficiency Rating:** 66.95
	Deck Condition: 6
	Superstructure Condition: 6
	Substructure Condition: 5
	Built: 1957, reconstructed 2009

4 – Bridge No. 000000001010082 on I-95 over Black Creek (NBI # 377607)	
Notes: In 2018, the superstructure condition had fallen to 5. Extensive efforts in 2020 and 2022 improved the superstructure condition to the current rating, but these short-term improvements will not slow the long-term deterioration of the structure. The 2024 inspection report notes delamination, spalling, cracks, exposed rebar, and patched areas.	**Sufficiency Rating:** 80.84
	Deck Condition: 6
	Superstructure Condition: 7
	Substructure Condition: 6
	Built: 1958

5 - Bridge No. 000000001010085 on I-95 over Black Creek (NBI # 377610)	
Notes: Listed in Poor condition on the NBI. The 2024 inspection report notes that while the bridge remains open, it would be posted or closed except for temporary shoring. The report also notes delamination, spalling, cracks, exposed rebar, and patched areas.	**Sufficiency Rating:** 52.63
	Deck Condition: 6
	Superstructure Condition: 4
	Substructure Condition: 5
	Built: 1955

6 – Bridge No. 000000001010100 on I-95 over the Neuse River (NBI # 377624)	
Notes: The 2023 inspection report notes a priority repair needed for the deck due to missing header and joint material as well as multiple instances of cracking, delamination/ spall, and damaged pilings and railings.	**Sufficiency Rating:** 65.13
	Deck Condition: 7
	Superstructure Condition: 6
	Substructure Condition: 5
	Built: 1957

7 - Bridge No. 000000001010101 on I-95 over the Neuse River (NBI # 377625)	
Notes: The inspection report notes delamination, spalling, cracks, exposed rebar, railing distortion, and corrosion.	**Sufficiency Rating:** 54.00
	Deck Condition: 5
	Superstructure Condition: 6
	Substructure Condition: 5
	Built: 1955

Structure 000000001010085 is currently classified as in poor condition whereas the other structures are in fair condition. The deck condition of Structure 000000001010100 had fallen to a 6 out of a possible 10 in 2018. A maintenance effort of $82,000 boosted the deck condition to the current 7, but this did not supply a long-term solution to the bridge condition. As shown in the table below, maintenance costs for these bridges have exceeded $940,000 since 2010.

I-95/US 301 Bridges Maintenance Costs (2010-2024)							
	B0000000 01010082	B0000000 01010085	B0000000 01010100	B0000000 01010101	B00000000 1010037	B00000000 1010056	B00000000 1010067
2010	$31,351	$20,263		$60,375			
2011				$832	$20,745		
2012		$4,191	$3,097	$11,453			
2013			$6,729	$6,729	$1,018	$1,018	$1,018
2014	$35,561	$2,781	$3,965	$6,910		$27,629	
2015	$1,018	$3,944	$18,110	$15,122			
2016				$22,031	$27,957		
2017		$2,531	$2,828	$645			
2018			$657	$3,791		$6,992	$4,916
2019		$2,792	$6,501	$2,237	$781	$958	$521
2020				$16,462			
2021	$14,544	$41,018	$19,042	$53,115	$660	$1,178	$17,656
2022	$67,823		$3,126	$27,607	$1,297	$44,161	$122,339
2023			$41,232	$10,524			
2024		$34,624	$8,268	$51,817			
Total	**$150,297**	**$112,144**	**$113,555**	**$289,650**	**$52,458**	**$81,936**	**$146,450**
Grand Total	**$946,490**						

Of that total, over $575,000 has been spent in the last five years. Given the increases in materials costs and the aging infrastructure, these expenditures are only expected to increase over time. Given the age of the structures, it is not unreasonable to anticipate that increasing maintenance would be required to avoid load restrictions in the coming years. One particularly noteworthy aspect of on-going maintenance costs is the increasing need to remove debris drifts on the Neuse River. In 2024, drift removal was required for bridges 100 and 101. Drift buildup can lead to substructure damage and possible failures. The proposed replacement structures will reduce the number of piers in the water, which will allow more debris to pass through the structure without becoming lodged. This will reduce long-term maintenance costs.

The BCA details the anticipated expenditures needed to maintain the I-95 and US 301 structures in a functioning condition. Given the State of North Carolina's extensive inventory of aging bridges, such regular expenditures are not feasible. NCDOT can program funding for part of the proposed replacement of the I-95 and US 301 bridges; however, BIP funding is urgently needed to make up the gap in funding. BIP funding, along with State monies, will provide the long-term solution of replacement structures instead of stop-gap measures to deteriorating infrastructure. With modern construction techniques, the new structures are anticipated to require minimal maintenance for the next century.

Criterion #2: Safety and Mobility

The I-95 and US 301 bridges were constructed between 1926 and 1958, when roadway design standards were very different. Three of the bridges were reconstructed between 1954 and 2009 in attempts to preserve the structures.

The facilities lack sufficient paved shoulder width for service vehicles or stranded motorists to pull out of the travel lanes. The bridges have deck drains discharging stormwater directly into the sensitive Neuse River watershed. Further, the relatively flat grade of the structures is prone to ponding during increasingly heavy rainfall events.

BIP funding will provide new facilities with at least 14-foot shoulders that allow drivers to safely leave the travel lane if they encounter difficulties. This wider shoulder also provides additional space for emergency and maintenance vehicles. The structures will be designed with closed hydraulic systems, channeling stormwater away from the facilities and reducing pollutants from directly entering the vulnerable Neuse River watershed.

Bridge Nos. 000000001010082 and 000000001010082 over Black Creek

Bridge Nos. 000000001010100 and 000000001010101 over Neuse River

There are known safety issues throughout the corridor, which are documented by a crash analysis conducted for this application (study dates December 1, 2018, to November 30, 2023). During the period of the study, there were 105 reported crashes within the 1.7-mile construction limits of the four I-95 bridges over the Neuse River and Black Creek (B-6044). This includes 17 crashes with non-fatal injuries and an estimated $695,700 in property damage. The crashes included 31 fixed object, 21 rear end/slow or stop, and 25 sideswipes for vehicles traveling in the same direction.

For Bridge 000000001010037 over CSX Railroad and Bridge 000000001010067 on US 701/NC 96 over I-95 (I-5974)) there were 38 reported crashes, including 1 fatal crash, 12 non-fatal injury crashes. The crashes included 7 fixed object, 1 rear end/slow or stop, 5 sideswipes for vehicles traveling in the same direction. For Bridge 000000001010056 on US 301 over Black Creek/Holt's Lake (HB-0042), there were 17 total crashes of which 3 included non-fatal injuries. The crashes included 5 fixed object, 1 rear end/slow or stop, and 2 sideswipes for vehicles traveling in the same direction.

Frequent crashes on this part of I-95 often lead to detours or long traffic delays. From November 2, 2022 through January 15, 2024, there were 12 crashes that required detours through the project area with an average duration of almost 1.5 hours. These detours utilized the US 301 bridges that are also in need of replacement. Maintenance and other required activities to maintain the structures also cause lane closures and other delays.

US 301, which is a parallel route in this area, does not have the capacity to accommodate I-95 closures for more than a few hours. There are regular news reports of crashes on I-95 closing the facility for hours. A failure of the I-95 structures could delay traffic for days or weeks. Trucks are unable to use US 301 as a detour to bypass I-95 due to load restrictions on Bridge 000000001010037 over CSX Railroad. A truck detour to go around I-95 and US 301 via I-40 and US 70 adds over 35 miles to trips through the region.

Should any of the bridges carrying I-95 or US 301 fail at the same time, north-south travel in eastern North Carolina would be severely hindered. Detour regulations in North Carolina would

require NCDOT to sign an official detour route with the nearest similar facility. For I-95, if US 301 is also inaccessible, drivers would be advised to use I-40 and US 70 before reaching I-95 again. The detour to bypass the I-95 and US 301 bridges via I-40 and US 70 would add over 35 miles to travel. Local drivers or travelers using GPS may use other secondary roads to avoid the 35-mile detour but would still be met with a long detour. These drivers may be rerouted through smaller roads not designed for high volumes of traffic. The shortest possible detour to avoid both I-95 and US 301 bridges via Packing Plant Road, Black Creek Road, Thunder Road, and US 301 would be a 12-mile detour.

All current facilities have a narrow typical section. The bridge decks are also relatively flat, causing ponding during rainfall events.

The proposed typical section of the bridges carrying I-95 over Black Creek and Neuse River includes 14 feet of paved shoulder width. This extra width allows maintenance vehicles and disabled motorists a safer area out of the main travel lanes. The wider shoulders will also allow greater recovery time for vehicles whose drivers temporarily lose control or who seek to avoid a slow or stopped vehicle. The superelevation of I-95 will be increased to 0.025, this will allow for more efficient and effective drainage of the structures. The wider facilities will also accommodate the future widening of I-95. The BCA provides a cost estimate associated with the proposed safety improvements.

While the I-95 corridor is a vital part of the nation's economy, it does provide a barrier to those who lack automobiles. The MST is currently co-located with the Buffalo Creek Greenway in Smithfield and then continues south and east on US 301, using the US 701/NC 96 over I-95 bridge to Devils Racetrack Road as a temporary route for trail users to cross I-95. The ECG is currently located on US 301 south of Smithfield and currently continues down US 301 onto Boyette Road. The replacement of Bridge Number 000000001010056 on US 301 over Black Creek/Holt's Lake will provide additional width for a future multi-use path. The multi-use path will connect in the future to the planned extension of the East Coast Greenway, consistent with local Johnston County plans.

NCDOT, in coordination with the North Carolina Department of Parks and Recreation (NCDPR) and ECG representatives, will provide additional width sufficient for a future route for the MST and ECG with the replacement of I-95 bridges over the Neuse River (Bridge Nos 000000001010100 and 000000001010101). By providing the width necessary for a future greenway under the Neuse River Bridges, NCDOT is working with local stakeholders to lay the groundwork to develop the only bicycle and pedestrian friendly crossing of I-95 for miles once constructed in the future.

Criterion #3: Economic Competitiveness and Opportunity

The Economic Value of I-95

The interstate system has played a vital role in the expansion of the nation's economy. According to research conducted by the FHWA, "From 1950 to 1989, approximately one-quarter of the nation's productivity increase is attributable to increased investment in the highway system." By improving transportation between regions, the interstate highway system has helped to expand the national market for goods as firms can supply their products to much larger geographical

areas at lower costs. A 2013 National Bureau of Economic Research (NBER) publication found that each dollar of current federal highway grants received by a state raises that state's annual economic output by at least $2.

NBER research found that removing the Interstate Highway System (IHS) reduces the country's real GDP by $421 to $578 billion in 2012 dollars ($565 to $776 billion adjusted for 2024 dollars). The cost of removing I-95 from the IHS was estimated at $19.4 to $30.9 billion in 2012 dollars ($26.7 to $41.5 billion adjusted for 2024 dollars). The total reduction attributed to domestic trade costs was estimated at $11.3 billion, and an additional $13.3 billion attributed to international trade cost.

In terms of economic impact, few facilities compare with I-95. In a recent (2023) NBER Working Paper entitled Highways and Globalization, researchers quantified the value of the 20 longest interstates in the US. As a transnational route, I-95 was found to be one of the most valuable. The route was considered "extremely valuable" as it not only connects the most cities and the most major markets to one another, but also connects to ports.

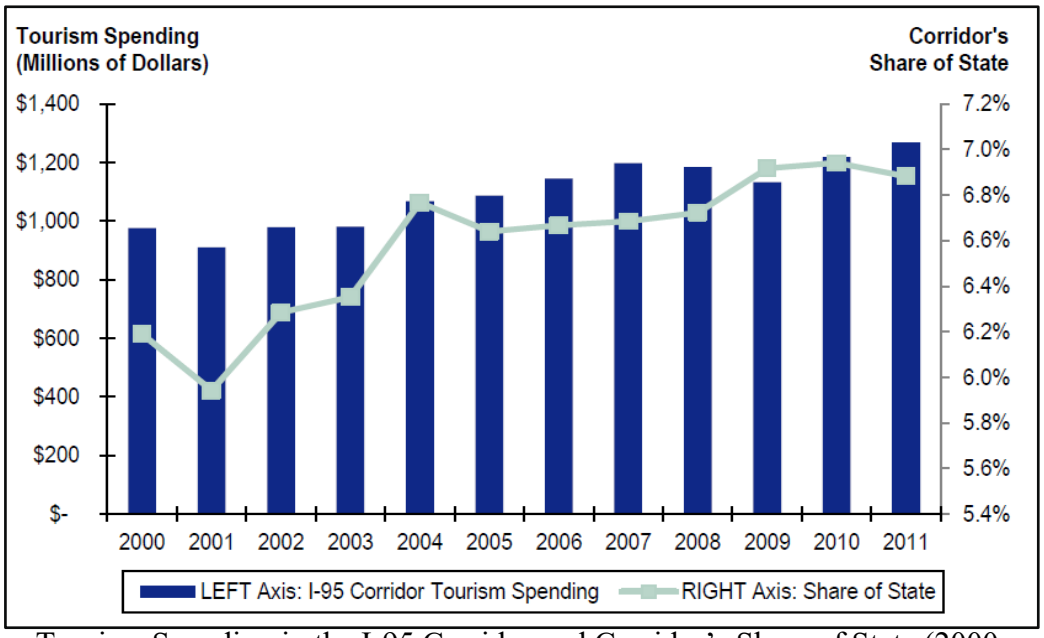
I-95 is part of the NHS, NHFN, and STRAHNET, highlighting its importance to both national supply chains and statewide traffic. One reason that I-95 is one of the most valuable segments of the interstate highway system is that it is connected to the Port of Savannah, Georgia, otherwise known as "The Quiet Giant," 25,000 tons of cargo are transported through this port every day, making it the fourth busiest in the nation. Between 7,000 and 9,000 trucks enter and leave this port daily with goods on their way to retail stores across the Southeast, Midwest, and Gulf Coast, 80 percent of which are distributed using I-95.

In the project area, the 2024 ADT on I-95 is estimated to be 45,900 vehicles per day (vpd), with an expected increase to 54,400 vpd by 2044. The facility has a TTST rate of 12 percent and a dual axel rate of 4 percent. This equates to over 5,500 trucks per day traveling the I-95 corridor.

Based on data from the Bureau of Transportation Statistics, the value of freight was approximately $1,001 per ton. The maximum weight of a semi-truck is 80,000 pounds (40 tons), based on FHWA regulations. Assuming an average cargo weight of 42,000 pounds (21 tons) to 48,000 pounds (24 tons), the daily value of truck freight traffic traveling the I-95 corridor is approximately $115,616,000 to $120,240,000 per day. Recent experience in Pennsylvania and Georgia shows the heavy toll that is taken if interstate bridges fail. Diverting traffic onto secondary roads costs time and increases the risk of crashes on roads not designed to carry such volumes of truck traffic.

I-95 is vital not only in terms of pure economic development, but also as a vital tourism corridor. A vast number of east coast residents have fond memories of escaping the cold of northern winters by traveling to sunny destinations on the I-95 corridor. Specifically in North Carolina, according to a 2013 study, approximately 7 percent of the state's tourism dollars are provided by the I-95 corridor. In 2011 dollars, that equated to over $1.2 billion dollars per year. Of that amount, $200 million was spent in Johnston County, which offers such tourism attractions as the Clemmons Educational State Forest, the Ava Gardner Museum, the Tobacco Farm Life Museum, and the Bentonville Battlefield State Historic Site. Based on data reported in the 2013 study, the average annual visitation of just these four venues exceeded 72,000 people. This is in addition to

the substantive traffic that passes through North Carolina to more southern destinations. It was estimated in 2013 that 66 percent of hotel stays in Johnston County were pass-through stays. These stays provided $14,743,000 to the economy of Johnston County.



Tourism Spending in the I-95 Corridor and Corridor's Share of State (2000-2011)

Source: North Carolina Department of Commerce, calculated by Cambridge Systematics, Inc.; tourism spending is in 2011 dollars.

More recent data highlights the continuing importance of I-95 and Johnston County to the North Carolina economy. According to WRAL, 2025, Johnston County has experienced steady growth over the past three decades. In January 2025, there were a record 124,000 employed people in Johnston County, a 15 percent increase from the previous year. In addition, several companies are relocating or expanding operations in Johnston County, including Crystal Window and Door Systems, Veetee Foods and Novo Nordisk. All of these companies are offering jobs with pay rates higher than the statewide average. Advanced manufacturers are attracted by the proximity to a quality labor pool as well as the proximity of north-south and east-west interstates (I-40 and I-95). This location allows manufacturers to efficiently get products to customers. In fact, economic developers have labeled the five-county area including Johnston County as the BioPharma Crescent. Development has allowed more Johnston County workers to have jobs closer to their homes, reducing commute travel times and vehicle miles traveled. While this only provides qualitative data, it highlights the importance of maintaining I-95 and US 301 for freight traffic.

Maintaining the I-95 corridor is of vital importance to the national and state economy. BIP funding will ensure that these benefits continue to flow.

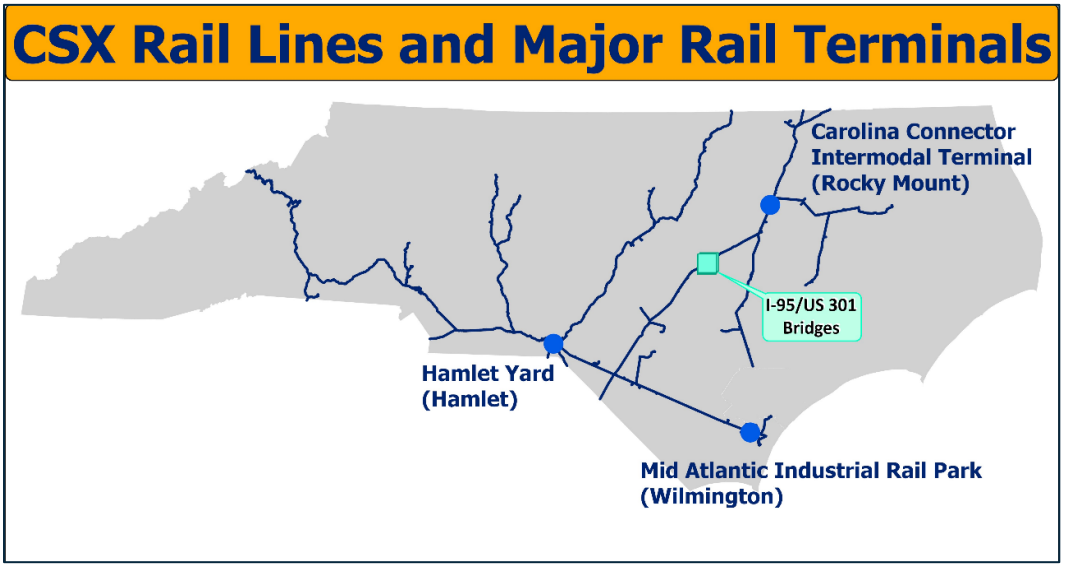
Railroad Freight Mobility

The US 301 bridge over the CSX Railroad A-line is a vital link in the company's national freight network. CSX has worked with a variety of public and private partners to improve the rail line. The 330-acre Carolina Connector (CCX) terminal in Rocky Mount, North Carolina serves 5 million customers within a 120-mile radius, including via the A-line crossing under US 301. CCX enables rail containers to be offloaded from freight cars arriving at the terminal onto another train or truck for final distribution. The initial capacity of CCX is 1,250,000 containers per year. CCX has the capacity of expanding to 700 acres with the eventual capacity of 2,500,000 containers per year. The CSX Network reported the following major commodities shipped in 2021 as a percent of their yearly total (Note: percentages do not add up to 100 percent due to rounding). The substantial amount of intermodal traffic illustrates the importance of the railroad to the national economy as well as the capacity of the rail network to transport vital commodities more efficiently.

MAJOR COMMODITIES	AGRICULTURE AND FOOD	AUTOMOTIVE	CHEMICALS	COAL	INTERMODAL	METALS AND EQUIPMENT	MINERALS	PAPER AND FOREST PRODUCTS	PHOSPHATES AND FERTILIZERS
SHIPPED BY VOLUME	3%	0%	10%	0%	41%	4%	18%	13%	10%
RECEIVED BY VOLUME	32%	0%	11%	7%	22%	3%	10%	8%	8%

Source: CSX, 2024.

The higher bridge clearance of Bridge 000000001010037 will allow future double stacking of railroad cars, substantially increasing the freight capacity on this section of the A-line. The A-line allows connections between the CCX, Hamlet Yard, and the Mid-Atlantic Industrial Rail Park that serves the Port of Wilmington.



Major CSX Facilities in NC
Source: Adapted from CSX

Criterion #4: Sustainability, Resiliency, and the Environment

Sustainability

NCDOT will examine the use of recycled concrete during project construction, potentially reducing emissions associated with construction activities.

Resiliency Benefits

The Neuse River in the area of the I-95 bridges frequently floods and debris in the stream channel is a common occurrence. Debris flows are known to damage bridge bents in the water, increasing in maintenance needs. By reducing the number of bents in the water for the Neuse River bridges, the project will provide a more resilient structure that is less likely to be damaged by debris through its useful existence.

Environmental Benefits

The extra travel miles required if I-95 and US 301 were closed within the Project area would increase emissions. To be conservative, it was estimated that the majority of travelers used the shorter, local detour route rather than the official NCDOT-signed detour route. However, due to the high traffic volumes on I-95 and US 301, BIP Large Bridge Grant funding to replace the seven bridges and avoid possible lengthy detours due to structure failure would help provide $274.5 million in benefits from reduced volatile organic compound (VOC) emissions and $2.4 million in benefits for the reduction in non – CO_2 emissions.

The project will replace structures that cross the Neuse River and a major tributary of the Neuse, Black Creek. The Neuse River flows approximately 275 miles through eastern North Carolina to its mouth at the Pamlico Sound. The Albemarle-Pamlico estuary was designated as "an estuary of national significance" by the US Congress in 1987. At the site of the I-95 bridges, the Neuse River has been identified as Critical Habitat for Atlantic sturgeon and a Primary Nursery Area for anadromous fish, notably shad, herring, and striped bass.

Black Creek Near the I-95 Bridges

The current I-95 structures over the Neuse River consist of multiple piers at each bent, which was a common construction style in the 1950s. The current structure also has deck drains, which were designed to allow stormwater to flow away from travel lanes in this relatively flat area. The proposed replacement structures for the Neuse River and Black Creek crossings will convey stormwater away from the facility to allow for treatment before it enters the streams.

There are previous studies that document contaminant loading of stormwater on highway bridges. In 2001, Wu and Allan sampled stormwater runoff from North Carolina highways. The analysis examined the stormwater for ten bridges, including those with deck drains and those in which stormwater was treated by directing stormwater through pervious cover. The study noted that directing stormwater to a vegetated treatment system contributed to an attenuation of total suspended solvents (TSS) of 54 percent. In general, elevated levels of event mean concentrations (EMCs) can be expected with roadways with increased ADT or imperviousness, such as is the case with I-95. However, the study noted that whenever a large percentage of indirectly connected impervious area exists, a significant reduction in precipitation EMCs can be expected. The study noted that there was a strong correlation between TSS, EMC, and imperviousness for sites with greater than 30,000 vehicles per day. The study concluded that directing runoff to vegetated areas appeared to reduce the total pollutant export for most chemical constituents in proportion to the reduction in runoff through infiltration losses.

Because the Neuse River is classified as “Nutrient Sensitive Water,” streamside riparian zones within the study area are protected under provisions of the Neuse River Riparian Buffer Rules administered by North Carolina Division of Water Resources (NCDWR). The Neuse River Buffer Rules establish 50-foot buffers adjacent to subject waterbodies and apply to intermittent and perennial streams in the study area, including Black Creek and Neuse River.

In addition, new structures over the Neuse River will have fewer bents in the water, allowing for more natural stream flow, reducing the area in which debris can be trapped, while also requiring

less maintenance and reducing the disturbance of the stream channel after construction. Debris accumulating at the bridge bents not only presents environmental concerns, but safety concerns as well. Clearing the debris requires an ongoing maintenance effort by NCDOT to keep the river flowing.

Neuse River Debris Clearing Effort

NCDOT is also focused on reducing construction related impacts associated with the project. The Department has entered an informal Section 7(a)(2) consultation with National Marine Fisheries Service (NMFS) for the federally endangered Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Conservation measures that result from that consultation will be strictly adhered to. NCDOT is subject to a Programmatic Biological Opinion (PBO) of may affect, likely to adversely affect (MA-LAA) for the northern long-eared bat (*Myotis septentrionalis*) in Highway Divisions 1-8, which encompasses this project. A separate PBO of MALAA for Divisions 2, 4, 5, and 7 applies to the following Federally listed aquatic species due to proximity to known populations:

- Atlantic pigtoe (*Fusconaia masoni*)
- Carolina madtom (*Noturus furiosus*)
- Dwarf wedgemussel (*Alasmidonta heterodon*)
- Neuse River waterdog (*Necturus lewisi*)
- Tar River spinymussel (*Parvaspina steinstansana*)

NCDOT will submit payments in conjunction with the aquatics PBO and fully adhere to the corresponding conservation measures for aquatic species. Payments made under the PBO are remitted to a fund for conservation. A multi-agency organization/group of species experts will determine how to expend these funds to assist in the recovery of the Carolina madtom and Neuse River waterdog.

All of these measures will serve to remove barriers on the Neuse River to Atlantic sturgeon and anadromous fish species while aiding in the recovery of federally listed species.

Rural Community Outreach/Benefits

NCDOT contacted the Catawba Indian Nation and solicited their input on the projects, however, no comments were received. A small group meeting was held to discuss the accommodation of a future greenway under the I-95 bridges over the Neuse River. A public meeting was held for I-5974. Project websites were established for each of the three projects to seek input and inform the public about project activities.

Replacing the project structures will provide definitive benefits to rural communities. Currently, when I-95 or US 301 are closed, freight and other traffic is diverted to smaller roads in rural areas that are not designed for such vehicles. This increase in traffic, combined with interstate traffic's unfamiliarity with these rural routes, creates safety risks for rural residents along these routes. It also causes increases in traffic noise, commute times, and air pollution.

Criterion #5: Quality of Life.

The projects will improve access to local goods and services and will allow the I-95 US 301 corridor to continue to be an economic lifeline to the region. As noted in the economic analysis section, new jobs recently created in Johnston County are above statewide averages, in large part because of the north-south/east-west connectivity Johnston County has with I-95 and I-40. Construction associated with replacing the I-95 and US 301 bridges will provide a stimulus to the local economy. Based on community input, accommodation for a multi-use path under the Neuse River bridge will be provided. This accommodation for the future East Coast Greenway (ECG) and Mountains to Sea Trail (MST) will provide exceptional east-west and north-south connectivity for pedestrians and bicyclists. This allows for a safe crossing under I-95 for those without a vehicle. The US 301 bridge over Black Creek/Holt's Lake will provide additional width for a future multi-use path.

A project of this size, even when located in a rural area, requires some degree of relocations. Based on current designs, less than 10 relocations are anticipated. As designs are finalized, avoidance and minimization measures will be applied to the extent practicable to reduce displacements.

Criterion #6: Innovation

NCDOT will explore the use of recycled concrete and innovative bridge materials to reduce air pollution and materials costs and potentially extend the effective lifetime of the bridge.

The three bridge projects (I-5974, B-6044, and HB-0042) will utilize innovative contract methods by bundling the bridges into one project for construction. Bundling the bridges will increase efficiency and creates the potential for cost and time savings. With only one construction team working in the area, bundling will allow for easier maintenance of traffic during construction on some of the county's busiest roads, continuity of construction crews, and easier communication between NCDOT and contractors.

NCDOT is currently utilizing an INFRA grant to install broadband on the I-95 corridor. This grant will enable NCDOT to install an ITS-enabled dynamic message sign (DMS) in the I-95 median right of way.

The evolution in the state of the practice for messaging should allow the DMS for this project to provide quantifiable benefits based on the research cited below and included in the updated Supplemental Materials. It is important to note that the type of messages displayed were found to have an effect on driver responses.

In April 2013, Haghani et al., reported for the Maryland Department of Transportation on the effectiveness of DMS with regards to traffic flow. The study examined the effects for three types of messages:

- Type 1 – Danger Warning Messages
- Type 2 – Common Road Condition Messages
- Type 3 – Regulatory/Not Traffic-Related Messages.

Based on 2,268 cases, the study found that for Type 1 messages, driver speeds decreased by an average of 3.13 miles per hour and that decreases occurred in 17.1 percent of the cases where Type 1 messages were displayed.

Speeding is reported as common on I-95. The posted speed limit on I-95 in this area is 65 miles per hour. Of the 105 crashes reported at the bridges for this project, 12 reports listed at least one driver's speed at 70 mph or higher at the time of the crash. This number may be an underestimation. Any measures that can quantifiably reduce speed, even for some percentage of drivers, should provide definitive benefits over time, resulting in fewer and less severe crashes.

In August 2021, Savolainen et. al, evaluated the use of DMS to display safety messages in a report sponsored by the Michigan State University Department of Civil and Environmental Engineering. Crash analyses showed that while there were no significant differences with respect to total or nighttime crashes, speeding-related crashes were significantly lower downstream of DMS that showed messages related to speeding or tailgating. The crash data analysis was complemented by a series of field studies that sought to determine the immediate impacts of safety messages on fundamental aspects of driving behavior. Drivers were shown to more frequently drive at or below the speed limit when targeted move over messages were shown as compared to standard travel time messages. The study states that, *"Crashes decrease significantly based upon the frequency with which speeding and tailgating related messages are displayed. A one percent increase in the frequency of message display is associated with an average decrease of 1.5 percent in these types of crashes."*

In September 2023, the US General Accountability Office (GAO), reported on the benefits of intelligent transportation systems for traffic congestion and safety (GAO-23-105740). The study detailed that *"ITS allowed them to monitor and operate equipment remotely, which enhanced their ability to work more efficiently, including better leveraging limited staff. For example, officials at one locality told us they can remotely verify whether equipment is functioning or not, including outside of normal business hours. Furthermore, they said that this ability allows them*

to respond to problems more quickly and function with the limited staff they have. An official in a state with ITS deployments in rural areas told us the state's road weather information system was helpful for field maintenance staff to learn about road conditions and inform travelers of them by dynamic message signs. They were able to accomplish this from their office, rather than having to travel to distant areas of the state. Additionally, multiple places noted that the ability to operate remotely was particularly beneficial during the COVID-19 pandemic." While these are qualitative benefits, they do show the utility of DMS deployment.

V. Benefit-Cost Analysis

Long-term benefits associated with the I-95/US 301 Bridge Replacements Project were calculated to develop the Project's Benefit-Cost Analysis (BCA). The BCA was calculated using the official Bridge Investment Program Benefit-Cost Analysis Tool developed by FHWA (May 2025 Update). The long-term quantifiable benefits presented for the Project Outcome Criteria include safety, maintenance, and environmental benefits. Benefits to resiliency are included as a quantitative benefit and are a component of the economic and innovation benefits. The Benefit Cost Analysis Technical Memorandum included in the supplemental as an appendix to the BCA describes the benefits and costs applied to the project in more detail.

Quantifiable benefits of the project include:

- State of Good Repair Benefits - $9.5 million
- Safety Benefits - $1.4 million
- Economic Benefits from Travel Time Savings - $277.6 million
- Environmental Benefits - $279.4 million, including:
    - Environmental benefits from deck drains - $2.5 million
    - Non-CO2 emissions - $2.4 million
    - Volatile organic compound (VOC) emissions - $274.5 million

The analysis resulted in an overall 6.74 Benefit Cost Ratio (BCR) across the seven bridges, and a $484 million net present value (see BCA table below). This is considered a "High" economic analysis rating. NCDOT has concluded that these benefits reasonably justify the costs of the Project.

Benefit/Cost Analysis Summary

Bridge ID	Total Discounted Costs	Total Benefits	Benefit-Cost Ration
1010037	$23,130,245	$166,615,104	7.20
1010067	$23,255,732	$63,726,275	2.74
1010056	$6,064,767	$185,625,316	30.81
1010082/85	$15,897,105	$54,185,038	3.41
1010100/101	$15,960,990	$97,652,016	6.12
Total Net Present Value	$84,268,840	$567,803,749 $483,534,909	6.74

VI. Project Readiness and Permitting Risk

a) Technical Feasibility and Technical Competency

The B-6044, I-5974, and HB-0042 projects have followed FHWA's established procedures and guidance for the implementation of a highway project.

NCDOT followed its normal procedures for the Project. Although none of the projects needed to follow the Department's Section 404/NEPA Merger Process, extensive coordination has taken place prior to development of the environmental documents (Categorical Exclusions (CEs)). Cost estimates developed for each project were developed using 25% design plans or later stage. The construction cost estimates include a 16 percent contingency cost, which based on project experience has proven sufficient in the past.

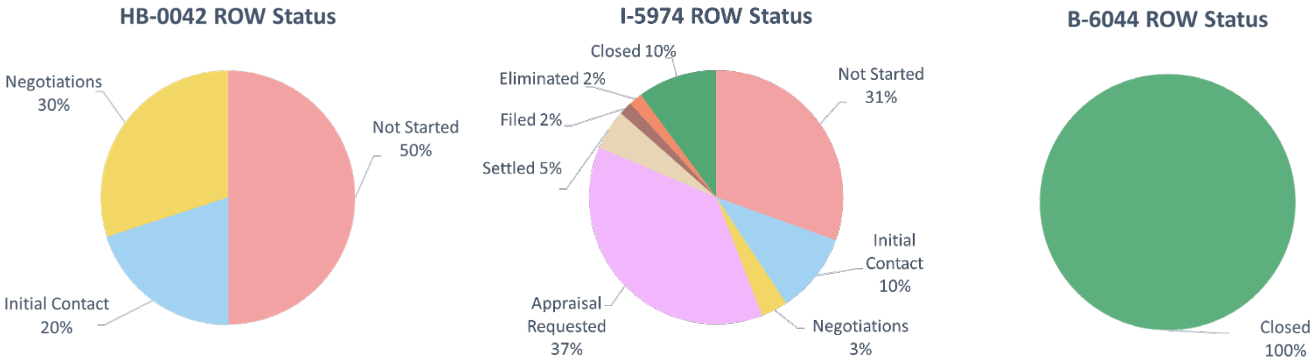
In terms of scope, schedule, and budget risk mitigation issues, NCDOT has the technical competency to undertake this important Project. The Department is responsible for approximately 13,700 bridges in the state. In 2024, NCDOT was estimated to provide $47 million in state funds for bridge maintenance, $333 million for bridge replacements, and $86.5 million for bridge preservation. In addition, NCDOT has successfully secured and is delivering on federal grant funding for bridge replacements, including a 2018 BUILD Grant to replace 77 bridges in 17 rural counties, a 2022 BUILD (formerly RAISE) Grant to replace 28 bridges in Western North Carolina, and a 2022 MPDG-Mega Grant to replace the Alligator River Bridge.

b) Project Schedule

The I-95 and US 301 Bridge Replacements Project has cleared several schedule milestones and has a detailed schedule for the completion of all major project milestones. All NEPA documentation is complete. The table below includes past milestones and anticipated future milestone dates.

Milestone	HB-0042	I-5974	B-6044
Programming in the STIP	2023	2017	2018
Start of NEPA	2023	2018	2021
Completion of NEPA	CE signed August 2024	CE signed June 2020	CE signed October 2022
Permits Finalized	FY 2025	FY 2025	FY 2025
Final Design	FY 2025	FY 2025	FY 2025
ROW Acquisition	Underway	Underway	Complete
Begin Construction	FY 2029	FY 2029	FY 2029
End Construction	FY 2030	FY 2030	FY 2030

ROW acquisition was finalized in November 2023 for B-6044 and is underway for I-5974 and HB-0042. Progress on ROW acquisition for each project is shown below. All real property and ROW acquisition necessary for the project will be completed in a timely manner in accordance with 49 CFR 24, 23 CFR 710, and other applicable legal requirements. USDOT can be confident that all ROW needed for the projects will be finalized once funds are obligated; the project is shovel ready.



c) Required Approvals

The CEs are complete for all three projects. Right of way acquisition is underway and is anticipated to be minimal risk. NCDOT has coordinated with resource agencies with regards to permit requirements. Although the Neuse River is considered a navigable water in this location, a Coast Guard permit is not required. The Department has also resolved issues associated with federally endangered species. Due to the presence of anadromous fish species in the Neuse River, relevant construction moratoria have been documented and will be followed. Once the final design is completed, and prior to construction, a construction consultation will be prepared for each STIP project to describe any changes in the proposed action and environmental consequences based on the final design.

NCDOT has involved the public throughout the project development process. This includes coordination with tribal and other interested parties and establishing a Title VI-compliant project websites to inform the public and obtain input.

All three projects have broad public support and have been accepted through NCDOT's SPOT process. Information on public involvement and support are included in the supplemental materials and the project are included in the 2024-2033 NCDOT State Transportation Improvement Program (STIP).

Conclusion

Funding for the I-95 and US 301 Bridge Replacements Project will meet BIP goals for improving the safety, efficiency, and reliability of people and freight traveling over the bridges. Not only will the number of bridges in poor or at risk of falling into poor condition be reduced, the total person miles traveled over bridges in poor condition will also be reduced.

The included Excel Spreadsheet and Merit Criteria discussion provide context for the proposed improvements. The project budget and BCA submittals detail the cost effectiveness of the proposal. NCDOT looks forward to your review and approval for funding this important project.