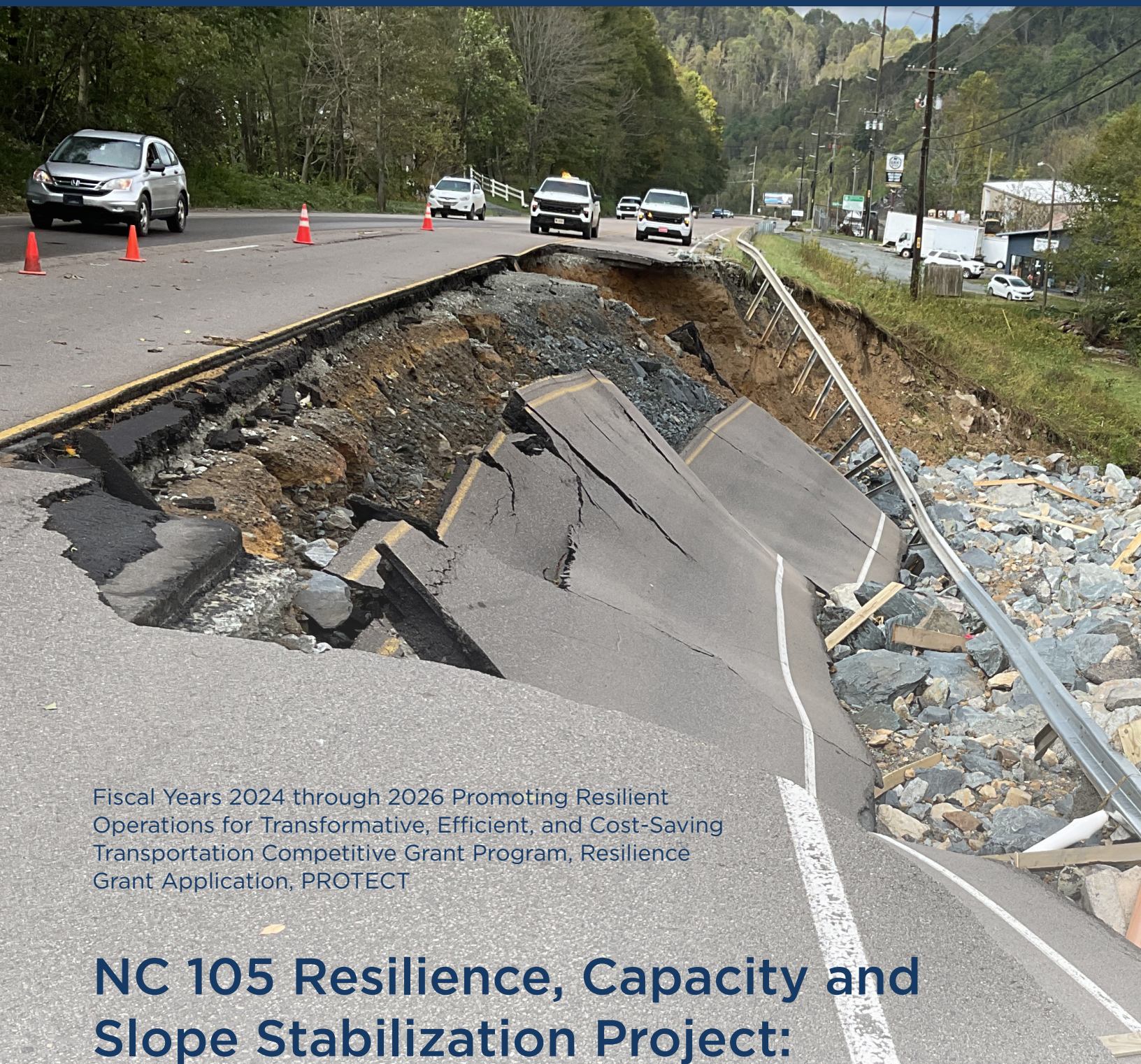


Fiscal Years 2024 through 2026 Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation Competitive Grant Program, Resilience Grant Application, PROTECT

NC 105 Resilience, Capacity and Slope Stabilization Project: Securing a Critical Mountain Corridor

NCDOT Priority #10

Applicant:
North Carolina Department of Transportation

October 9, 2026

Fiscal Years 2024 through 2026 Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation Competitive Grant Program
Resilience Grant Application Template

Summary

Project Title	**NC 105 Resilience, Capacity and Slope Stabilization Project**
Lead Applicant Name	**North Carolina Department of Transportation**
Lead Applicant Type	Select from the below statutory eligible applicants: ☒ A State or political subdivision of a State. ☐ A metropolitan planning organization. ☐ A unit of local government. ☐ A special purpose district or public authority with a transportation function, including a port authority. ☐ A federally recognized Indian Tribe (as defined in Section 207(m)(1)). ☐ A Federal land management agency that applies jointly with a State or group of States. ☐ A multi-State or multijurisdictional group of entities described above.
Type of Grant(s)	☒ Resilience Improvement ☐ Community Resilience and Evacuation Route ☐ At-Risk Coastal Infrastructure
Eligible Activities	**Resilience Improvement Grants (23 United States Code (U.S.C.) § 176(d)(4)(A)(ii)):** ☒ Resurfacing, restoring, rehabilitating, replacing, improving, or realigning a facility eligible for assistance under this program (see eligible facilities in the row below). ☐ Incorporating natural infrastructure. ☒ Upgrading existing surface transportation facilities to meet/exceed FHWA design standards. ☒ Installing flood mitigation measures. ☒ Strengthening rainwater removal systems. ☒ Upgrading or installing structural stormwater controls. ☒ Constructing a resilience project that addresses vulnerabilities described in the Resilience Improvement Plan (RIP) in your jurisdiction. ☐ Relocating roadways in a base floodplain. ☒ Stabilizing slide areas or slopes. ☐ Installing riprap. ☐ Lengthening or raising bridges. ☒ Increasing size or number of drainage structures. ☐ Installing seismic retrofits on bridges. ☐ Adding scour protection on bridges.

	☐ Adding scour, stream stability, coastal, and other hydraulic countermeasures, including spur dikes. ☐ Implementing vegetation management in the right-of-way. ☐ Installing any other protective features, including natural infrastructure.
Long-Term Infrastructure Cost Reduction	For At-Risk Coastal Infrastructure Grant applications only *(check if yes):* ☐ The proposal will reduce long-term infrastructure costs by avoiding larger future maintenance or rebuilding costs. Documentation: N/A
Project Area	North Carolina, Watauga County, Bushy Fork Township, Watauga Township.
Amount of Funding Requested Under this NOFO	$60,000,000
Cost Share Requested[1]	87%
Total Project Cost	$182,108,072
Which type(s) of natural hazards does the project address?	Flash flooding Intense cloudbursts Landslides Severe winter storms Tropical storms
Which transportation modes are addressed by the project?	Roadway

Project Description

The North Carolina Department of Transportation (NCDOT) requests Resilience Improvement funding under the federal PROTECT program for the NC 105 Resilience, Capacity and Slope Stabilization Project ("the Project"). The Project will improve a 5.5-mile section of NC 105, stretching from Shulls Mill Road (SR 1568) to NC 105 Bypass (SR 1107) in Boone, Watauga County.

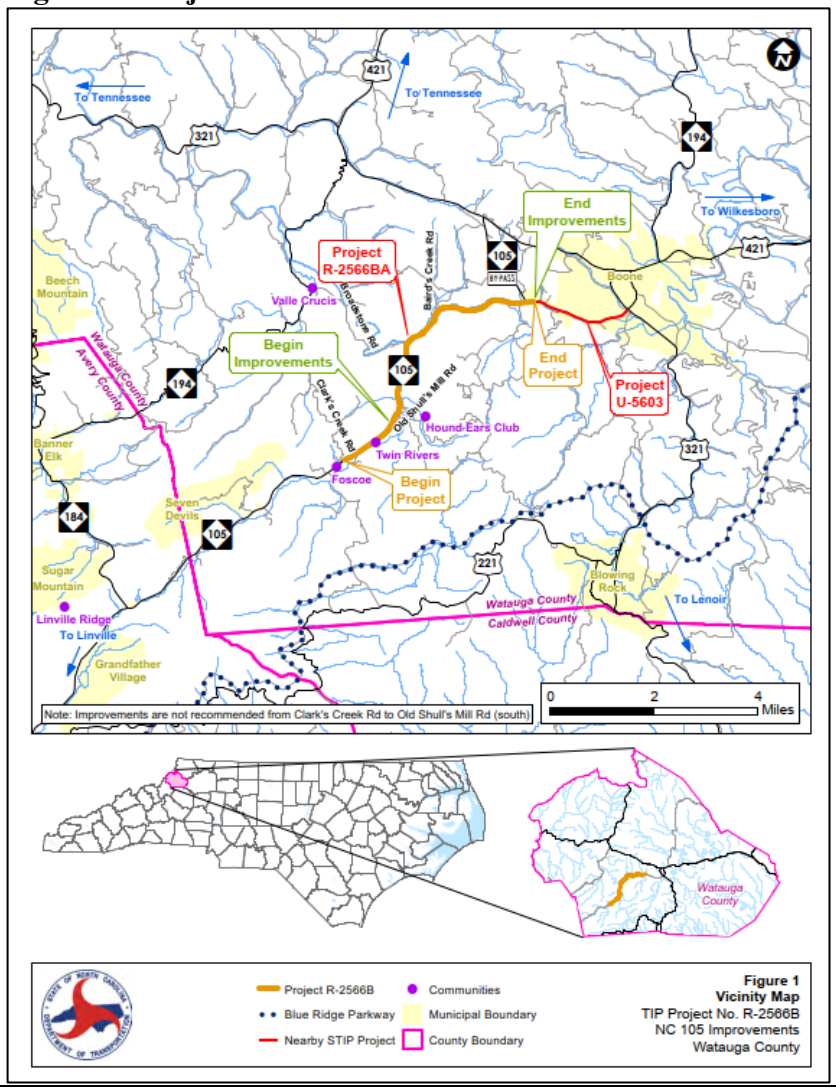
As a primary arterial corridor through western North Carolina's rugged mountainous terrain, this 5.5-mile segment of NC 105 handles significant daily local commuter traffic, commercial freight, and seasonal tourism. However, the corridor is increasingly subject to severe weather events, including tropical and winter storms, cloud bursts, and flash flooding. The surrounding mountainous terrain concentrates water runoff directly toward the roadway, overwhelming dated infrastructure during flash floods.

The Project involves widening the roadway to accommodate safer traffic flow, installing high-capacity modern drainage systems, optimizing intersection safety, and implementing critical geotechnical slope-stabilization techniques to prevent structural washouts and rockslides.

[1] See NOFO Section C.2 for Cost Sharing or Matching information.

Taken together, these improvements will reduce congestion on NC 105, reduce rear-end and run-off road crashes, and improve bicycle facilities.	
Attachments:	Appendix A: Letter of Financial Commitment Appendix B: Letters of Support Appendix C: NC 105 PROTECT Budget Narrative.pdf Appendix D: NEPA Documentation Appendix E: Crash Report

I. Project Information

1	**Project Title**	NC 105 Resilience, Capacity and Slope Stabilization Project
2	**Project State**	North Carolina
3	**Project Location**	The NC 105 Resilience, Capacity and Slope Stabilization Project is located on a 5.5-mile mountainous section of NC 105 stretching from Shulls Mill Road (SR 1568) to NC 105 Bypass (SR 1107) in Boone, Watauga County, North Carolina. **Figure 1: Project Location** 

<table>
<tr><td></td><td></td><td>Watauga County is in the northwest corner of North Carolina, within the Blue Ridge Mountain Region and along the state border with Tennessee. NC 105 serves as a primary arterial corridor in the region, carrying travelers north-south between Linville and Boone. It connects to US Highway 321 in Boone and US Highway 221 to the South. Figure 1 provides a map of the Project's location and connections to existing infrastructure, while Table 1 sets out the latitude and longitude of the Project start and end points.

Table 1: Latitude/Longitude of Project Start and End Points
<table>
<tr><th>Start Point/End Point</th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>Start: Fosco</td><td>36.183283</td><td>-81.747571</td></tr>
<tr><td>End: Boone</td><td>36.206755</td><td>-81.105274</td></tr>
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<tr><td>4</td><td>Which Census tract(s) does the project encompass?</td><td>Census Tracts 9206.02, 9209, and 9203</td></tr>
<tr><td>5</td><td>Is the project fully located in a Rural area?[2]</td><td>☒ Yes
☐ No</td></tr>
<tr><td>6</td><td>Is the project located in a base floodplain?</td><td>☒ Yes
☐ No
The Project is located in a FEMA Flood Hazard Zone AE. The Project will implement components of the risk mitigation plan under section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5165), with respect to the area (23 U.S.C. § 176(d)(5)(B)(ii)), by including the identification of natural hazards, risks, and vulnerabilities of the corridor; and by identifying and prioritizing mitigation actions as resources become available from the state or Federal governments.</td></tr>
<tr><td>7</td><td>Other Parties</td><td>N/A</td></tr>
</table>

[2] For purpose of this notice, the PROTECT Competitive Grant Program defines a rural area as any area outside of an Urbanized Area with a population over 200,000. (23 U.S.C. § 176(d)(5)(H)(ii)). Applicants can use the FHWA HEPGIS maps of MPO and 2020 Census Urban Areas to find this information: https://hepgis-usdot.hub.arcgis.com/apps/72bcd861285c423c9d4aec6b8e48a496/explore.

8	**Eligible Facility Type**	Select from list below (check all that apply): ☒ Highway project eligible for assistance under Title 23; ☐ Public transportation facility or service eligible for assistance under chapter 53 of Title 49; ☐ Facility or service for intercity rail passenger transportation (as defined in Section 24102 of Title 49); or ☐ Port facility, including a facility that: a. Connects a port to other modes of transportation; b. Improves the efficiency of evacuations and disaster relief; or c. Aids transportation. (23 U.S.C. § 176(d)(5)C).
9	**Project Background**	The Project is located in the mountainous and flood-prone northwest region of North Carolina. Over the ten years between June 2016 to June 2026, Watauga County suffered at least 60 flood events, 40 heavy rain events, and 4 heavy snow events.[3] On average, the corridor has experienced more than 10 major storm events every year over the past decade.[4] The most significant of these events occurred in September 2024 with Hurricane Helene, when heavy rain resulted in numerous roads becoming flooded and impassible across Watauga County. Rainfall totals ranging from seven to locally 11 inches were observed across much of the county on September 26th, resulting in numerous flooded creeks, as well as many roads that were covered by several inches to feet of flowing water. A total of 1,135 buildings were impacted by flooding and/or winds, with estimated property damage of $253.1 million and two fatalities reported in Watauga County alone. The infrastructure along the NC 105 Corridor is not equipped to withstand the scale and intensity of storm events affecting the region. Due to steep terrain and close proximity to the Watauga River, heavy rainfall triggers rapid flash floods that inundate the low-lying areas and clog stormwater drainage systems. The steep slopes are prone to erosion, soil saturation, and destabilization, introducing a threat of landslides and debris flows onto the travel lanes. In addition, rock slopes adjacent to the Project were determined to be softer than previously thought, thus increasing the risk of slides. The proposed Project will widen the roadway to accommodate safer traffic flow, install modern drainage systems, optimize intersection safety, and implement critical geotechnical slope-stabilization techniques to prevent structural washouts and rockslides. These improvements will reduce congestion and crashes in the corridor, and better accommodate cyclists on the wider shoulders.

[3] National Centers for Environmental Information. National Oceanic and Atmospheric Administration (NOAA)
[4] Ibid.

		The Project is at 65% design, with a NEPA Environmental Assessment (EA) completed. To date, previous expenditures total $9 million for planning and design, and the right-of-way (ROW) acquisition process is underway. The Project is anticipated to be let in August 2028, with construction beginning in September 2028.
10	**Is the proposed project prioritized on a RIP developed in accordance with 23 U.S.C. § 176(e)?**	☒ Yes ☐ No The Project is prioritized in North Carolina Department of Transportation's RIP. It is included in the priority list as object ID #s 3885 and 3890, and can be found here.
11	**Has a RIP been incorporated into an applicable State DOT or MPO long range transportation plan?**	☐ Yes ☒ No

II. Budget and Funding

1	**PROTECT Competitive Grant Program Request Amount**	$60,000,000
2	**Other Federal Funding**	Estimated total of other Federal funding, excluding PROTECT Competitive Grant Program requested funding, in year-of-expenditure dollars: $59,665,595 Other Federal programs and estimated amounts: Program: NHP Amount: $59,665,595
3	**Non-Federal funding**	Source: State Trust Fund Amount: $23,881,916
4	**Future Eligible Project Cost**	$143,547,512
5	**Previously incurred project costs (if applicable)**	Amount: $9,000,000
6	**Total Project Cost**	$182,108,072

7	**Grant Funds, Sources and Uses of Project Funds (Detailed Budget)**	Activity: PE Cost $9,000,000 Activity: Right of Way Cost: $14,223,040 Activity: Utilities Cost: $14,337,521 Activity: Mobilization and Site Prep Cost: $41,860,245 Activity: Roadway Construction Cost: $58,478,972 Activity: Miscellaneous Cost: $16,170,164 Activity: Engineering & Contingency Cost: $18,923,632 Activity: Grant Administration Cost: $8,114,498 ☒ A detailed budget is attached separately. The file is named: NCDOT10-2026 PROTECT Attachment C NC 105 PROTECT Budget Narrative.pdf
8	**Does the project involve the construction of new capacity?**	☒ Yes ☐ No
9	**Does the project involve development phase activities, including planning, feasibility analysis, revenue forecasting, environmental review, preliminary engineering and design work, and other preconstruction activities described under 23 U.S.C. § 176(d)(5)(F)(i)?**	☐ Yes ☒ No
10	**Has the applicant submitted previous applications for Federal funding for this project?**	☐ Yes ☒ No

III. Merit Criteria

Criterion #1: Vulnerability and Risk

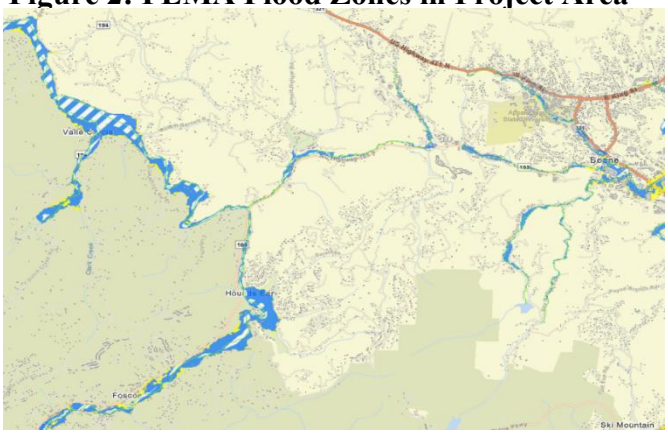
A. *The application describes the relevant current or future weather events, natural disasters, or changing conditions to which the project area is exposed and that the project will address.*

The NC 105 Corridor is located in an extremely flood-prone area of the Appalachian High Country in western North Carolina. The roadway is vulnerable to flooding from heavy rainfall events, which are increasingly frequent and disruptive in terms of their impact. As noted previously, over the 10 years between June 2016 to June 2026, Watauga County suffered at least 60 flood events, 40 heavy rain events and 4 heavy snow events.[5] On average, the Corridor

[5] National Centers for Environmental Information. National Oceanic and Atmospheric Administration (NOAA)

has experienced more than 10 major storm events every year over the past decade.[6] The most significant of these events occurred in September 2024 with Hurricane Helene, when heavy rain resulted in numerous roads becoming flooded and impassible across Watauga County. Rainfall totals ranging from seven to locally 11 inches were observed across much of the county on September 26th, resulting in numerous flooded creeks, as well as local roads that were covered by several inches to feet of flowing water. A total of 1,135 buildings were impacted by flooding and/or winds, with estimated property damage of $253.1 million and two fatalities reported in Watauga County alone.[7]

Figure 2: FEMA Flood Zones in Project Area



Source: North Carolina Flood Risk Information System

As shown in Figure 2, large sections of NC 105 between Foscoe and Boone are in FEMA Flood Hazard Zone AE, indicating there is at least a 1% chance of flooding annually.

B. *The application describes how the project addresses each element, as applicable, of vulnerability-exposure, sensitivity, and adaptive capacity.*

The Project will address the three components of vulnerability for the NC 105 corridor: exposure, sensitivity and adaptive capacity.[8]

The exposure of NC 105 is determined by the degree to which it is affected during flood events. To address this element, corridor-wide drainage improvements including upgraded culverts and stormwater systems, will enhance stormwater collection and conveyance, reducing roadway flooding, erosion, pavement damage, and localized drainage failures. These improvements will strengthen the roadway's ability to withstand severe precipitation events.

The Project addresses the sensitivity of the corridor by improving the roadway's ability to cope with heavy rainfall events. This includes enhancing the safety of NC 105 for travelers by widening the roadway to accommodate safer traffic flow, installing high-capacity modern drainage systems, optimizing intersection safety, and implementing critical geotechnical slope-stabilization techniques to prevent structural washouts and rockslides.

Finally, the Project enhances the adaptive capacity of the corridor, by integrating modern, climate-resilient engineering standards, the upgraded highway may withstand 100-year storm events and reduce recurring post-disaster maintenance costs. This will secure a dependable

[6] Ibid

[7] National Centers for Environmental Information. National Oceanic and Atmospheric Administration (NOAA)

[8] RIP ranks NC 105 for Flood Exposure and Sensitivity Indices as 1. Others include Criticality 3, and Priority 5.

pathway for emergency services, medical evacuations, and rapid post-disaster supply deliveries.

C. *The application demonstrates that there is a high risk to the transportation asset or system from current or future weather events, natural disasters, or changing conditions (risk is a function of the likelihood of negative impact and the consequence should the impact occur).*

There is a high risk to the safety and mobility of travelers using the NC 105 corridor because of the increasing likelihood and intensity of storm events in the area. The decade from 1996 to 2006 saw 25 flood/heavy rain events in Watauga County over 10 years. This more than doubled between 2006 and 2016, with 64 flood/heavy rain events recorded. In the most recent decade, between 2016 and 2026, this has risen again, as Watauga County experienced 100 flood/heavy rain events. The risk of further flood events affecting NC 105 is additionally highlighted by FEMA's flood map. As shown in Figure 2, large sections of the NC 105 roadway between Foscoe and Boone are in FEMA Flood Hazard Zone AE, indicating there is at least a 1% chance of flooding annually.

The consequences of future flood events will be significant because the current infrastructure along the NC 105 corridor is not equipped to handle such heavy rainfall events. Over the past 5 years, there have been 346 crashes reported on the Project corridor. This includes 1 fatal crash and 67 non-fatal injury crashes. Of these total crashes, 43 occurred during wet road conditions.[9]

Criterion #2: Criticality to American Families and Communities

A. *The application demonstrates that the project is critical to support continued operation or rapid recovery of crucial local, regional, or national surface transportation assets and facilities that serve families and communities*

NC 105 is a critical regional connector for American families and communities traveling to homes, schools, hospitals, and businesses across the region. In terms of access to services and employment, the corridor connects travelers to population centers at Foscoe and Boone, which are home to critical community services and business destinations. For example, as the County seat, Boone is where local government services, industrial development, and other economic drivers are located.

Boone is the largest community and the economic and cultural hub of the rural county, and hosts the largest employers in the County including Appalachian State University, Appalachian Regional Healthcare System, Watauga County Board of Education, Samaritan's Purse (a relief agency), and Watauga County.[10]

This concentration of regional resources in Boone made access via NC 105 vital in the aftermath of Hurricane Helene. For example, Appalachian State University – a public research

[9] NCDOT Traffic Engineering Accident Analysis System, Strip Analysis Report, From SR 1136 to NC 105 Bypass
[10] Boone Area Chamber of Commerce, https://www.boonechamber.com/

university with nearly 10,000 students and about 2,000 staff and faculty – felt the brunt of Hurricane Helene but rallied and became a hub for recovery efforts.[11] By reducing congestion and avoiding a detour of up to 33 minutes, the roadway improvements implemented through the Project would protect this vital corridor for future emergency response and recovery efforts if ever required.

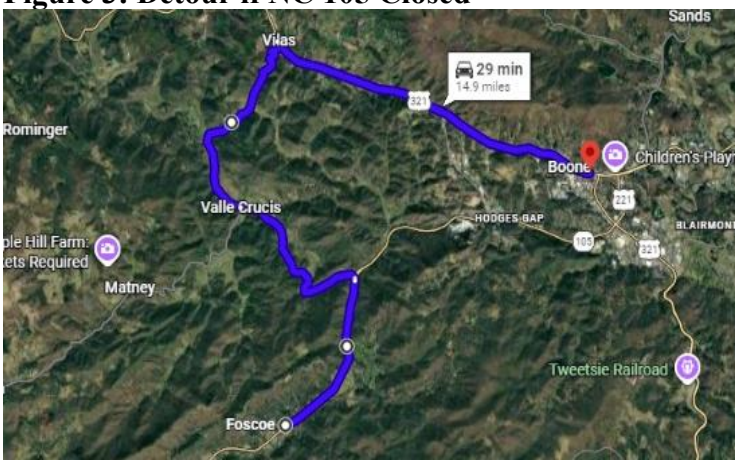
B. The application demonstrates the project would be timely to address transportation infrastructure risks to the community and that consequences are severe if resilience improvements are not made in the near term.

The high risk to the safety and mobility of travelers using the NC 105 corridor is underlined by the increasing likelihood, intensity and potential disruption of storm events in the area. In the most recent decade, between 2016 and 2026, Watauga County has experienced 100 flood/heavy rain events. The need to mitigate against future flooding risks is therefore critical and urgent to the community.

However, the current infrastructure along the NC 105 corridor is not equipped to handle future heavy rainfall events. The steep slopes bordering the highway are prone to erosion, soil saturation, and destabilization, introducing a continuous threat of landslides and debris flows onto the travel lanes. Rock slopes adjacent to the Project were recently determined to be softer than previously thought, thus increasing the risk of slides.

If the infrastructure along NC 105 is left unaddressed, there will be severe impacts to local communities and families in Watauga County who rely on this primary arterial corridor. These consequences were highlighted in the aftermath of Hurricane Helene, which changed communities and damaged the roads that connected them. The failure of the roadway would have substantial impacts, requiring a 13 to 33-minute detour to travel between Foscoe and Boone, depending on which section of the roadway is closed (see Figure 3).

Figure 3: Detour if NC 105 Closed



The Project corridor carries 15,700 vehicles every day. As such, based on this estimated detour, the closure of NC 105 would generate between 2,200 to 5,700 additional vehicle hours traveled (VHT) every day and 98,900 to 277,900 additional vehicle miles traveled (VMT) daily. In time savings alone, the implementation of the Project would generate between $17 million to $43 million of

[11] App State Reflects: After Helene, Appalachian State University, https://today.appstate.edu/helene

travel time benefits each year (in 2024 dollars) versus a no-build scenario where NC 105 is closed. Similarly, annual vehicle operating cost savings have been estimated at between $20.2 million to $56.8 million when compared against a no-build closure scenario (in 2024 dollars).

C. *The application demonstrates the project is critical to supporting community functions (such as economic activities or emergency operations during evacuations).*

Economic Activities

As discussed previously, NC 105 serves as a primary corridor for commuters traveling to the largest employment centers in the region. Boone is the largest community and the economic and cultural hub of the rural county, and hosts the county's largest employers. In the event of NC 105 being closed, a significant detour of between 13 and 33 minutes would severely impact travel for businesses, employees, and delivery services in the region.

Figure 4: High Country Fall Road Trip Map



With beautiful vistas, access to outdoor activities, and connections to the small, colorful communities in the western part of the state, NC 105 is also well-traveled by tourists. The High-Country Fall Trip map includes a portion of the Project area along NC105. According to Visit NC 2025 data,[12] Watauga County saw total tourism spending reach $531.78 million in 2025, with visitors spending on lodging, food and beverage, recreation, retail, and transportation. The tourism industry employed 2,984 Watauga County residents in 2025.

Emergency Operations

The NC 105 corridor serves as a primary connector for emergency services for Watauga County. Appalachian HealthCare's 2025 Community Health Needs Assessment (CHNA)[13] identified access to care, housing, and mental/behavior health as priorities for Watauga County, and acknowledges that transportation is an issue that is beyond the scope of the hospital's expertise. However, during severe storm events, the impassable condition of NC 105 directly impacts the ability to transport patients to the medical facilities in Boone. This includes the Watauga Medical Center, which is part of UNC Health Appalachian and serves as the main regional medical complex for Watauga County and the High Country region, offering 24/7 emergency care, surgical services, and specialized cardiology and cancer care.

[12] The Economic Impact of Travel on North Carolina Counties 2025, VisitNC website, https://www.visitnc.com/industry/research/economic-impact-studies

[13] UNC Health Appalachian Community Health Needs Assessment, 2025, UNC Health Appalachian, https://www.unchealthappalachian.org/services/community-outreach/

Criterion #3: Design Elements, including Addressing Core Infrastructure

A. *The application identifies the anticipated service life of the facility or asset and identifies design element(s) to address current and future vulnerabilities over that service life.*

The Project would provide a safe, reliable, and resilient transportation connection along the 5.5-mile section of NC 105 between Foscoe and Boone throughout its anticipated 75-year service life. The improvements are designed to address existing vulnerabilities while preparing the corridor for increasingly severe weather conditions. The corridor is made up of roadway infrastructure that was predominantly constructed in 1956, making it over 70-years-old and not up to current design standards to mitigate against the range of risks facing the corridor.

To reduce flood-related risks, the Project will widen the roadway to accommodate safer traffic flow, install high-capacity modern drainage systems, optimize intersection safety, and implement critical geotechnical slope-stabilization techniques to prevent structural washouts and rockslides. Taken together, these improvements will reduce congestion on NC 105, reduce rear-end and run-off road crashes, and improve bicycle facilities.

B. *The application documents the source of relevant evidence-based data, projections, and scenarios used or proposed for use as the basis for resilience design element(s).*

The Project, STIP Project R-2566B, is included in NCDOT's Resilience Improvement Plan (RIP) and received a priority score of 5 as a highway resilience project. Developed by NCDOT, the RIP is a comprehensive, data-driven assessment of transportation infrastructure across the state that evaluates assets based on hazard exposure, asset sensitivity, and transportation system criticality to identify where resilience investments are most needed. Using a GIS-based methodology, NCDOT overlaid transportation assets, including roadways, bridges, and culverts, with hazard datasets to identify areas of elevated vulnerability, including the Project area. Data sources for the analysis include the NCDOT Risk Identification Tool (RIT), the Geotechnical Asset Management (GAM) database, FEMA datasets, National Bridge Inventory data, and additional state and federal transportation and hazard information.

For inland flooding, the RIP relies on flood-inundation modeling from the NCDOT RIT, which incorporates FEMA flood studies and evaluates exposure across multiple flood recurrence intervals ranging from 10-year to 500-year events. The analysis considers both the likelihood of flooding and the expected depth of inundation. In western North Carolina, where the Project is located, geotechnical hazards are a significant concern. Accordingly, the analysis uses information from the GAM database to identify locations vulnerable to landslides, rockfalls, rockslides, and embankment failures. This assessment incorporates factors such as failure potential, maintenance history, precipitation patterns, groundwater conditions, and the forecast consequences of asset failure.

Furthermore, the RIP considers the importance of transportation assets to the broader network and the communities they serve through measures of roadway criticality, socioeconomic

conditions, and health and safety. The Health and Safety Index specifically evaluates access to hospitals, emergency shelters, and utilities, linking transportation resilience to essential community services.

C. *The application describes how the design elements will reduce current and future vulnerabilities and risks to surface transportation infrastructure*.

The following design elements will reduce current and future vulnerabilities to NC 105:

- Corridor-wide drainage improvements will enhance stormwater collection and conveyance, reducing roadway flooding, erosion, pavement damage, and localized drainage failures.
- The Project will construct rock cuts and soil nail walls to stabilize slopes, reducing the risk of debris reaching the roadway and minimizing potential roadway closures caused by geotechnical hazards.
- Roadway widening, improved geometry, and six-foot shoulders would enhance safety, operational reliability, and emergency access. The added shoulders would provide space for disabled vehicles, maintenance activities, and emergency response, improving corridor functionality during disruptive events.

D. The application describes how the project will improve the condition and safety of the surface transportation infrastructure by reducing current and future vulnerabilities.

The Project would improve the condition, safety, and reliability of NC 105 by addressing aging infrastructure, flooding, drainage issues, and slope instability. These improvements would reduce disruptions, strengthen resilience to future hazards, and provide a safer, more dependable connection for the communities that rely on NC 105.

E. The application describes how the funded design elements will be maintained for the anticipated life of the facility, identifies which entity will be responsible for maintaining the project, and anticipated funding sources for future maintenance.

After construction, the Project will be maintained by NCDOT throughout its service life. As part of the state highway system, NC 105 and all other Project assets, including pavement, drainage infrastructure, slope stabilization measures, signage, and pavement markings, will be incorporated into NCDOT's established inspection, asset management, and maintenance programs. The Division of Highways and Structures Management Unit will oversee ongoing inspection, preservation, and maintenance activities. Future maintenance will be funded through NCDOT's existing state highway maintenance programs, including the Highway Fund, with additional support from applicable State and federal bridge preservation programs.

F. In support of reinvesting in the American family: the project improves the accessibility of the transportation system for families and persons with disabilities.

The Project improves accessibility, wayfinding, and travel predictability for families, caregivers, older adults, persons with disabilities, and other roadway users. Improved roadway geometry, six-foot paved shoulders, updated signage, and enhanced pavement markings will

make the corridor easier to navigate and support safer, more reliable access to healthcare, schools, businesses, and other essential community destinations. The wider shoulders will also provide safer space for recreational cyclists in the corridor.

Criterion #4: Innovation

A. The project uses nature-based solutions to improve resilience

The Project will deploy nature-based solutions to improve resilience, including stabilized vegetative buffers and rip-rap channels. These designs absorb heavy run-off, reduce downslope erosion, and safeguard the local river basin ecology.

C. The project employs innovative project delivery methods.

The Project incorporates innovative practices and technologies that enhance project delivery, construction efficiency, and transportation system resilience. Delivered through NCDOT's Resurfacing, Restoration, and Rehabilitation (3R) program, the Project utilizes a proactive asset-management approach that preserves and extends the service life of existing infrastructure through targeted rehabilitation and reconstruction rather than full facility replacement. This approach maximizes the value of prior transportation investments, minimizes construction impacts, reduces lifecycle costs, and provides a cost-effective method of addressing documented safety and operational deficiencies.

To improve project delivery and construction efficiency, the Project will incorporate Subsurface Utility Engineering (SUE) during design. SUE is an FHWA Every Day Counts (EDC) innovation that uses advanced utility investigation and engineering practices to accurately identify and characterize underground infrastructure before construction begins. By reducing unknown utility conflicts, improving utility-location accuracy, and supporting better design decisions, SUE minimizes change orders, reduces construction delays, lowers project risk, and improves cost and schedule certainty.

In addition, the Project will be managed through NCDOT's Project Delivery Network (PDN), a digital project-management platform that integrates design, environmental review, utility coordination, right-of-way acquisition, and construction activities. PDN provides centralized project information, standardized workflows, and milestone-based coordination that promote collaboration among project teams and stakeholders. This integrated approach supports early issue resolution, improves project transparency, reduces schedule risk, and enhances overall project delivery efficiency.

IV. Project Readiness

Readiness: Technical Assessment

A. The applicant has the resources to deliver the project.

NCDOT has fully demonstrated its ability and readiness to deliver the Project. The cost estimate was developed in 2024 by NCDOT's engineering consultant using unit prices and design assumptions specific to the Project area, and has been escalated by 4% per year to the midpoint of the estimated spending year. NCDOT has already advanced the Project through design using state funds, demonstrating both its commitment and financial capacity to complete the Project.

The non-federal match funding for construction will come from the state's Highway Trust Fund; the match funds are secured, available and eligible for all components and completion of the Project. Each task includes an appropriate contingency, and NCDOT will cover any cost overruns to ensure uninterrupted progress.

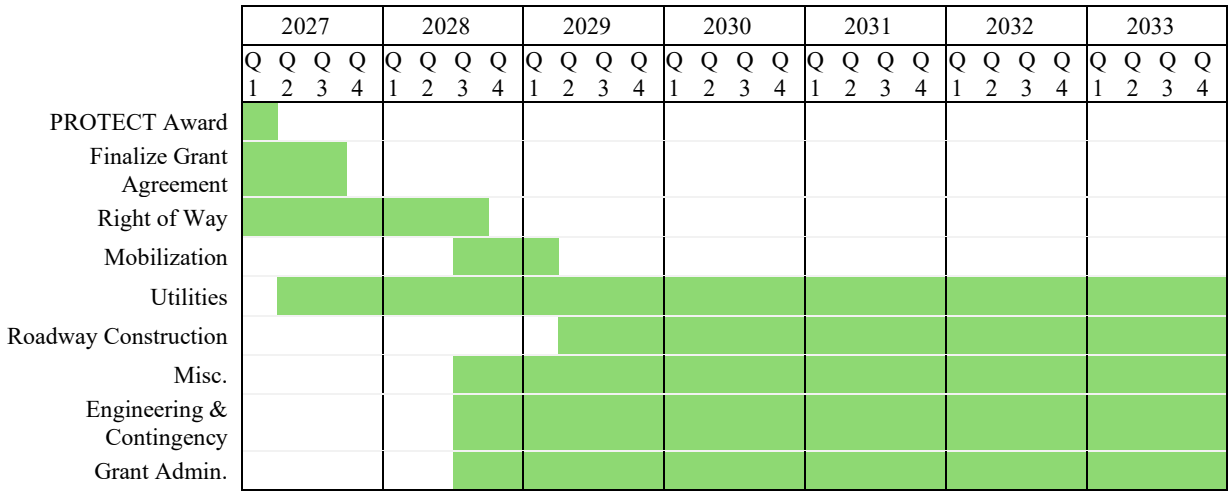
With dedicated funding, an established delivery pathway, and a proven track record of advancing this Project to date, NCDOT is prepared to execute all remaining components through completion.

B. The project will comply with all applicable Federal requirements.

The Project will comply with all applicable Federal requirements, including, but not limited to, Buy America provisions, Americans with Disabilities Act (ADA) Regulations, Civil Rights requirements, Federal Motor Vehicle Safety Standards (FMVSS), Clean Air Act, the Federal Motor Carrier Safety Regulations (FMCSR), and criteria under 23 USC 217(e), if applicable.

C. The applicant demonstrates a commitment for timely project delivery as demonstrated by the schedule information in the application, including meeting PROTECT Competitive Grant Program obligation deadlines.

NCDOT demonstrates a clear commitment to timely Project delivery through a schedule that aligns with all PROTECT Competitive Grant Program obligation requirements. The Project schedule assumes a February 2027 award and finalization of the grant agreement by August 2027, ensuring the Project is positioned to obligate funds well in advance of the FY24 deadline of September 30, 2027. The schedule further reflects prudent planning by initiating construction mobilization in September 2028, providing additional flexibility for agreement execution, early coordination, finalization of right of way acquisition and utilities, and Federal review. This structure underscores NCDOT's readiness, capacity, and disciplined approach to meeting all required milestones and advancing the Project efficiently into construction.



D. The applicant demonstrates the technical feasibility of the project.

The Project is informed by a significant level of preliminary planning, engineering analysis, and corridor-specific research by NCDOT and its consultants. Over the past few years, as the Project advanced through planning and design, NCDOT evaluated roadway geometry, soil and bridge conditions, crash history, and drainage considerations, resulting in design plans.

In addition, NCDOT has advanced multiple related projects in the corridor, including earlier drainage studies, structure inspections, and design development for adjacent segments. These efforts produced design drawings, environmental documentation, and erosion and sediment control plans that directly inform the current Project. Lessons learned from these prior studies—particularly regarding flood behavior, soil conditions, and constructability constraints—have been incorporated into the proposed design. The Project is at 65% design, with a NEPA Environmental Assessment (EA) completed. The right-of-way (ROW) acquisition process is underway and utility relocations are expected to begin in early 2027.

NCDOT has the legal authority, financial capacity, and technical expertise to deliver the Project. The Department has a long history of successfully completing major transportation infrastructure projects with Federal funding, consistently meeting schedule, budget, and performance expectations. With established engineering foundations, proven delivery capability, and a clear path to final design and construction, the Project is technically feasible and ready for advancement.

Readiness: Financial Completeness Assessment

A. *The application demonstrates the costs in the estimate are reasonable and necessary to complete the project.*

The Project cost estimate has been developed using established planning-level cost estimation methodologies and reflects the scope, complexity, and anticipated requirements of the project. Cost estimates are based on recent comparable projects, current market conditions, available data, and professional engineering and planning judgment. The project budget includes all activities necessary to successfully complete the project, including project management, right of way acquisition, utility relocations, construction and implementation, and project monitoring. NCDOT has carefully reviewed all cost assumptions to ensure that project expenses are both reasonable and directly related to achieving the project's objectives. The budget reflects a prudent use of federal funds while ensuring sufficient resources are available to deliver all project components as proposed. A 4% annual cost escalation was assumed to bring the cost estimate to year of expenditure dollars, and contingency is also included in the project budget (see Detailed Budget attachment for more information).

B. *The application includes a plan to address potential cost overruns.*

NCDOT has established procedures for monitoring expenditures, managing risks, and addressing unforeseen conditions that may affect project costs. Throughout project implementation, costs will be tracked against established budgets and milestones through regular financial and project management reviews. Should cost increases occur due to factors such as market fluctuations, unforeseen site conditions, or scope refinements, NCDOT will evaluate value-engineering opportunities, phase project components if appropriate, and coordinate with project partners to identify additional funding sources. NCDOT and its partners have a demonstrated history of managing federally funded projects and maintaining fiscal accountability through proactive risk management and financial oversight. NCDOT will be responsible for covering cost overruns.

C. *The application demonstrates reasonable availability of all funding needed to complete the project with an award.*

NCDOT has identified the non-federal funding sources necessary to complete the project and is committed to providing all required matching funds. Federal and non-federal funding commitments are supported by agency budgets, planning documents, partner commitments, and applicable programming processes. The proposed funding package provides a clear and achievable strategy for project completion. In addition to the requested PROTECT funds, state resources have been identified to support project delivery. NCDOT will ensure all necessary funds remain available throughout project development and implementation, minimizing the risk of project delays or funding shortfalls.

D. *For construction projects, the proposal includes information on how future operation, maintenance and preservation costs will be funded.*

NCDOT is committed to the long-term operation, maintenance, and preservation of the proposed improvements following project implementation. The project is already programmed in the North Carolina State Transportation Improvement Program (STIP), demonstrating NCDOT's commitment to advancing and delivering the project. Ongoing operations and maintenance costs will be incorporated into existing agency operating budgets and capital maintenance programs and supported through established local, state, regional, and federal transportation funding sources.

The project will not create a significant financial burden beyond NCDOT's capacity. Routine maintenance, asset management, and preservation activities will be conducted in accordance with established agency standards and maintenance schedules to ensure the continued safety, reliability, and performance of the transportation network throughout the project. This commitment protects the federal investment and ensures the project will continue delivering long-term mobility, safety, and economic benefits to military personnel, residents, freight operators, and surrounding communities.

E. *For construction projects, the budget must ensure that no more than 10 percent of the grant is spent on development phase activities (23 U.S.C. § 176(d)(5)(F)(i)).*

The full budget for the Project (100%) is allocated to construction phase activities.

Readiness: Permitting Risk Assessment

A. *The National Environment Policy Act (NEPA)* review is complete, or the application demonstrates NEPA will be complete in time to meet the project schedule.*

An Environmental Assessment (EA) has been completed for the Project, in accordance with the Code of Federal Regulations (CFR) 23, Part 771 for the purpose of evaluating the potential impacts of a proposed transportation improvement project. The EA document has been signed and included as an attachment to this PROTECT grant application in Appendix D: NEPA Documentation.

B. *All necessary permits have been obtained, or the application demonstrates permits and approvals will be obtained in time to meet the project schedule.*

NCDOT has evaluated the anticipated permitting and approval requirements associated with the Project and has incorporated these activities into the Project schedule. It is anticipated that an Individual Section 404 permit will be required from the US Army Corps of Engineers (USACE). The USACE holds the final discretion as to what permit will be required to authorize Project construction. If a Section 404 permit is required, a Section 401 Water Quality Certification from the NC Division of Water Resources (NCDWR) also will be needed. NCDOT anticipates that all necessary federal, state, and local permits, approvals, and clearances can be obtained within the timeframe needed to support timely Project delivery.

NCDOT will work closely with the Federal Highway Administration (FHWA), USACE, local governments, and other relevant stakeholders to ensure that permitting and environmental

review activities are initiated early and completed efficiently. Project milestones have been developed to accommodate permitting requirements, and NCDOT has extensive experience coordinating environmental reviews and regulatory approvals for transportation projects. This proactive approach minimizes permitting risk and supports the Project's successful implementation.

C. *Public engagement has occurred or will occur, and any known public controversy has been or will be addressed or mitigated.*

Public and stakeholder engagement is a key component of NCDOT's transportation planning and Project development process. The Project has benefited from ongoing coordination with local governments, transportation agencies, community organizations, business stakeholders, and the public through regional planning efforts and project development activities. For example, as part of the public involvement process, two sets of public meetings were held. Two hundred forty-eight citizens signed in at the three August 2011 meetings, and 132 written comments were received. Eighty-three citizens signed in at the June 2015 meeting, and 17 written comments were received. All comments are summarized in Section VI.A.
A start of study letter was mailed to federal, state, and local agencies on December 28, 2009.

To date, no significant public controversy has been identified. Should concerns arise during project development, NCDOT will work collaboratively with affected stakeholders to identify appropriate mitigation measures and incorporate feedback where feasible. This approach will help build public support, address potential concerns early, and reduce risks to Project delivery.

The Project is consistent with regional transportation plans and local transportation priorities and has been developed through coordination with partner agencies and stakeholders. NCDOT will continue to monitor potential risks throughout Project implementation and maintain open communication with regulatory agencies, Project partners, and affected communities to identify and address issues before they impact the Project schedule. Through proactive Project management, stakeholder engagement, and agency coordination, NCDOT has established a framework for minimizing Project delivery risks and ensuring successful Project advancement.

D. *The application discloses any known and unmitigated issues posing high risk to project delivery. Examples include litigation, known public controversy, or Agency opposition to the project on environmental grounds.*

At this time, no known and unmitigated Project issues have been identified. Should concerns arise during project development, NCDOT will work collaboratively with affected stakeholders to identify appropriate mitigation measures and incorporate feedback where feasible.

V. Statutory and DOT Selection Priorities

Statutory Selection Priorities
For Resilience Improvement Grants: ☐ The benefits of the eligible activity proposed to be carried out by the eligible entity exceed the costs of the activity (as demonstrated by the economic analysis); and ☐ There is a need to address the vulnerabilities of surface transportation assets of the eligible entity with a high risk of, and impacts associated with, failure due to the impacts of weather events, natural disasters, or changing conditions, such as sea level rise, wildfires, and increased flood risk; or ☒ The eligible activity is included in a RIP as described by 23 U.S.C. 176(e)(2). ☐ None of the above apply to the project. **For Community Resilience and Evacuation Route Grants:** ☐ The activities are cost-effective (as demonstrated by the results of the economic analysis), taking into account: (1) current and future vulnerabilities to an evacuation route due to future occurrence or recurrence of emergency events that are likely to occur in the geographic area in which the evacuation route is located; and (2) projected changes in development patterns, demographics, and extreme weather events based on the best available evidence and analysis. ☐None of the above apply to the project.
Statutory Selection Priorities:
The Project is listed in the North Carolina Department of Transportation Resilience Improvement Plan (Object IDs 3885 and 3890).[14]
DOT Selection Priorities
☒ The project supports critical infrastructure for industries of national interest. ☒ The project would contribute to promoting economic prosperity in communities, including rural areas and Tribal communities. ☒ The project prioritizes improvement of the condition and safety of existing transportation infrastructure, particularly infrastructure with high cost of failure, such as bridges with lengthy detours, impacts to critical corridors, or failures that will cause economic disruption. ☒ The project demonstrates an ability to meet PROTECT Competitive Grant Program obligation deadlines.

[14] NCDOT Resilience Plan. https://www.ncdot.gov/initiatives-policies/Transportation/transportation-resilience/Pages/studies-reports.aspx

☐ The project improves access to national security and defense facilities or facilitate movement of military cargo or personnel.
☒ The project will reduce roadway traffic congestion.
☐ The project repurposes existing specialized travel lanes for bicycles, buses, or pedestrians for general purpose use by all motor vehicles, including single-occupant motor vehicles, and the applicant demonstrates the repurposing will meet the PROTECT program purpose, will reduce congestion on the facility, will utilize 40 percent or less of requested PROTECT funds for adding capacity consistent with 23 U.S.C. 176(d)(5)(G)(i)(I), will address safety consistent with the merit criteria described in Section F of the NOFO, and will comply with applicable federal requirements, including the Clean Air Act and criteria under 23 U.S.C. 217(e).
☐ None of the above apply to the project.

DOT Selection Priorities

The project supports critical infrastructure for industries of national interest

Tourism has been established as a major economic driver for the North Carolina mountains, and Watauga County specifically. Visitors from across the country come to visit and spend their money to support the region. According to Visit NC 2025 data,[15] Watauga County saw a 3.1% increase, year over year, in tourism spending, which totaled $531.78 million on lodging, food and beverage, recreation, retail, and transportation in 2025. The tourism industry employed 2,984 Watauga County residents in the same year. The Project provides vital transportation links for visitors, owners of second homes, employees of the many businesses that provide memorable visitor experiences, and the businesses and communities that support the tourism industry. As Watauga County continues its recovery from this Hurricane Helene, both state[16] and federal[17] government agencies have committed support; many of those efforts rely on a sound and safe transportation system to deliver still much needed assistance to families and communities in the area.

The project would contribute to promoting economic prosperity in communities, including rural areas and Tribal communities.

As explained above, the recovery of Watauga County and the High Country area depends on tourism and the return of visitors to the Blue Ridge Mountains. According to tourism data, Western North Carolina is experiencing a remarkable tourism resurgence. Reservations from the summer and the upcoming fall seasons were 14% ahead of 2025 baseline figures, and a $14 million state investment in marketing delivered a 103% ROI as visitors return.[18] As visitors return to the mountains, NCDOT is committed to ensuring that the roads are safe and capable of serving the needs of the communities as well as visitors. The Project provides a critical link for the economic engines in the area including Appalachian State University,

[15] The Economic Impact of Travel on North Carolina Counties 2025, VisitNC website, https://www.visitnc.com/industry/research/economic-impact-studies
[16] WNC Recovery, state resources for Western North Carolina hurricane recovery, https://www.wncrecovery.nc.gov/
[17] Recovery Progress Continues Nearly Two Years After Helene, FEMA, Sept. 14, 2026, https://www.fema.gov/press-release/20260914/recovery-progress-continues-nearly-two-years-after-helene
[18] Western North Carolina and Blue Ridge Parkway Surge Back: $14M Recovery Campaign Drives 103% ROI Amid Post-Storm Tourism Rebound in 2026, Nomadlawyer.org, June 23, 2026. https://www.nomadlawyer.org/western-north-carolina-blue-ridge-parkway-recovery-campaign-14-million-tourism-s

Watauga County School District facilities, County government services, public and private jobs, and the thousands of seasonal tourists hosted in the area.

The project prioritizes improvement of the condition and safety of existing transportation infrastructure, particularly infrastructure with high cost of failure, such as bridges with lengthy detours, impacts to critical corridors, or failures that will cause economic disruption.

The primary focus of the Project is to improve the condition and safety of a critical rural corridor whose failure would impose severe detours, isolate communities, and disrupt economic activity. The route is used daily by commuters, farmers, tourists and other regular travelers moving between more remote areas of Watauga County and the economic and population center of Boone.

Recent flooding events, and especially Hurricane Helene in September 2024, drove home the importance of the infrastructure and the high cost of failure including damaged bridges, unstable roadways and foundations, and closures due to excessive flooding. Most importantly, first responders recall the importance of the corridor for moving rescue teams and response personnel and supplies in a timely manner, and the future safety of the region's residents and visitors will be improved as a result of this Project.

The project demonstrates an ability to meet PROTECT Competitive Grant Program obligation deadlines.

NCDOT demonstrates a clear commitment to timely project delivery through a schedule that aligns with all PROTECT Competitive Grant Program obligation requirements. The Project schedule assumes a February 2027 award and finalization of the grant agreement by August 2027, ensuring the Project is positioned to obligate funds well in advance of the FY24 deadline of September 30, 2027. The schedule further reflects prudent planning by initiating mobilization in September 2028, providing additional flexibility for agreement execution, early coordination, finalization of right of way acquisition, utility relocation, and Federal review. This structure underscores NCDOT's readiness, capacity, and disciplined approach to meeting all required milestones and advancing the Project efficiently into construction.

The project will reduce roadway traffic congestion.

The Project will reduce roadway traffic congestion by reducing the risk of roadway failure. The Project corridor carries 15,700 vehicles every day, and when the road is impassable, the alternative routes can be limited, unreliable, and were not built to handle traffic detours long-term.

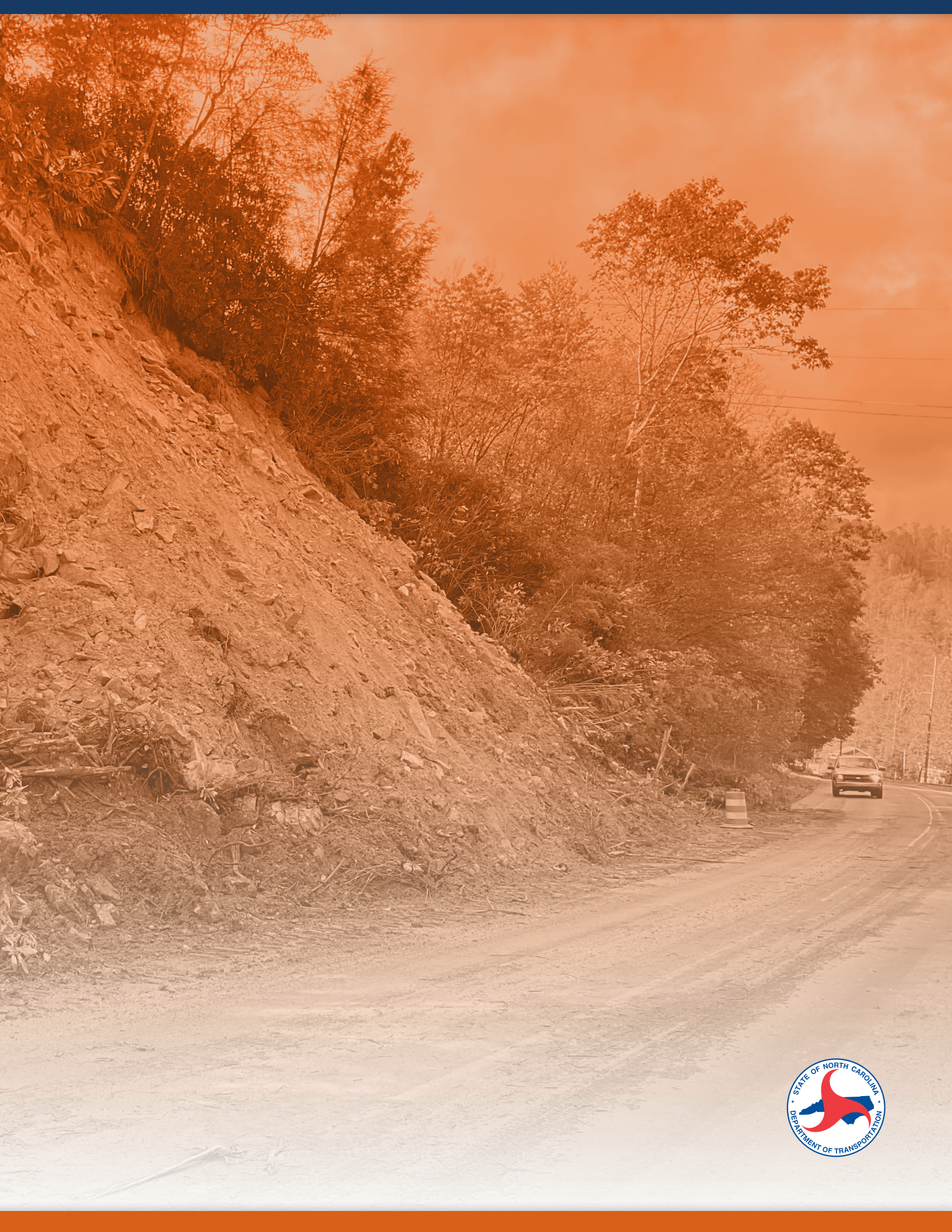
As such, based on this estimated detour, the closure of NC 105 would generate between 2,200 to 5,700 additional vehicle hours traveled (VHT) every day and 98,900 to 277,900 additional vehicle miles traveled (VMT) daily. In time savings alone, the implementation of the Project would generate between $17 million to $43 million of travel time benefits each year (in 2024 dollars) versus a no-build scenario where NC 105 is closed. Similarly, annual vehicle

operating cost savings have been estimated at between $20.2 to $56.8 million when compared against a no-build closure scenario (in 2024 dollars).[19]

VI. Benefit-Cost Analysis

Resilience Improvement Grant 23 U.S.C. § 176(d)(5)(E)(ii)(I)	BCA is required for the project to be prioritized, unless the project is prioritized in a RIP. (see *Completing a BCA* below) Please check the appropriate box: ☐ The applicant is not requesting Resilience Improvement Grant funds. ☐ The applicant requests Resilience Improvement Grant Funding, and the project is not prioritized in a RIP. A BCA is attached. ☒ The applicant requests Resilience Improvement Grant funding, and the project is prioritized in a RIP. ☐ The application is from a federally recognized Indian Tribe that is requesting Resilience Improvement Grant funds but is opting to provide raw data with its application to support the need for a project, without additional BCA*. The raw data is attached.

[19] USDOT Benefit-Cost Analysis Guidance (May 2025)


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION