



NORTH CAROLINA WCPP GRANT APPLICATION

September 2024



BLACK
BEARS



DEER



RACCOON



FOX

I-26 Wildlife Fence Installation for Wildlife Crossings & Roadway Safety

Madison County, NC





ABSTRACT

The North Carolina Department of Transportation (NCDOT) is seeking \$5.8 million from the US Department of Transportation's (USDOT's) Wildlife Crossings Pilot Program (WCPP) to add wildlife fencing along Interstate 26 (I-26) in Madison County, North Carolina. I-26 is a vital part of the Nation's infrastructure. It is part of the National Highway System and is a North Carolina Strategic Transportation Corridor (Corridor C).

The project area is a 9-mile section of I-26, completed in 2003, that extends from the Tennessee-North Carolina state line at Sam's Gap to near US Highway 19 (US 19) in Mars Hill, NC. NCDOT will provide the \$1,450,000 match from NCDOT general funds.

During the development of I-26 as a new location highway project (A-0010C), biologists with the North Carolina Wildlife Resources Commission (NCWRC) raised concerns that I-26 would fragment habitat for black bear (*Ursus americanus*). The roadway's proposed overall width of six, 12-foot travel lanes and a median with concrete barrier was predicted to impede bear movements and contribute to localized bear mortality from wildlife vehicle collisions (WVCs). To mitigate this problem, the NCDOT constructed two 8-foot by 8-foot concrete box culverts under the highway for use by black bears and other area wildlife. These culverts were anticipated to provide two locations where wildlife could cross under I-26, in addition to crossing under the I-26 bridge over Big Laurel Creek.

Black bears, white-tailed deer (*Odocoileus virginianus*), and other wildlife have been observed using the culverts to cross I-26. However, the 4.5-foot control-of-access fencing along the facility does not effectively funnel wildlife to the underpasses and reduce WVCs. A NCDOT crash analysis for the period from January 1, 2003 to March 31, 2023, determined that 117 reported WVCs occurred within the project area. The average reported property damage per crash was approximately \$3,000, though statewide average property damage cost per reportable WVC is currently much higher (\$14,400 based on [2022 Standardized Crash Cost Estimates for NC](#)). It should be noted that most WVCs are not reported. For example, a Virginia Department of Transportation (VDOT) study found that WVCs were underreported by a factor as high as 8.5 when compared to white-tailed deer carcass removal data from the same facility (VDOT, 2017). Using a correction factor of 5, which Virginia uses to adjust crash data, approximately 585 large animal WVCs are estimated to have taken place along this section of the I-26 corridor in the last 20 years. There were 33 WVCs reported between mile marker (MM) 9.3 and the Tennessee state line from 2019 to 2023. At the same time, the National Parks Conservation Association (NPCA) conducted periodic assessments along the roadway and noted 41 deer and bear and 52 small wildlife WVC mortalities on the corridor, further showing that WVCs are appreciably higher on this roadway than reflected by traffic reports alone (NPCA, unpublished data 2024).

The project study area includes 2019 U.S. Census Tracts 100, 600, and 700 in Madison County. Census Tracts 100 and 700 meet USDOT Justice40 criteria as Historically Disadvantaged Communities (HDC). Census Tract 100 also meets the Justice40 criteria as an Area of Persistent Poverty (APP). This project would provide improvements to the safety of the traveling public and better exclude wildlife from the roadway and facilitate cross-highway movements.



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SUPPLEMENTAL MATERIALS

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BASIC PROJECT INFORMATION

Project Description

The North Carolina Department of Transportation (NCDOT) seeks \$5.8 million for wildlife fencing that will greatly improve safety and wildlife habitat connectivity on the I-26 corridor in the mountains of Madison County, NC. In 2003, NCDOT constructed a 9-mile new location highway (State Transportation Improvement Program (STIP) Project A-0010C) through high-quality wildlife habitat from the Mars Hill area north to the Tennessee state line. Two 8-foot by 8-foot concrete box culvert underpasses were installed to minimize the habitat fragmentation from the roadway, specifically targeting the area's black bear (*Ursus americanus*) populations. However, the standard control-of-access fencing has proven insufficient for directing wildlife to the underpasses and reducing highway access by wildlife (NPCA unpublished data 2024). Wildlife fencing will direct animals to the installed culverts, reducing wildlife vehicle collisions (WVCs). NCDOT would provide \$1,450,000 in matching funds from the State's General Maintenance Reserve Fund to install wildlife fencing adjacent to these two underpasses and the I-26 bridge over Big Laurel Creek, another site where concentrated wildlife activity and crossings under I-26 have been documented (NCSU 2008; NPCA unpublished data 2024). Additionally, funds would be used to improve drainage at the south culvert where water pools, discouraging wildlife use.

This project would install 6.5 miles of appropriately designed wildlife fencing to direct species, especially large mammals, to the existing wildlife crossing structures. The 10-foot-tall fencing would minimize the over and under fence highway access while directing wildlife to the underpasses and the Big Laurel Creek bridge. The fencing would be set closer to the highway (compared to control of access fencing) thus reducing the availability of forage habitat between the fence and the road.

Past and on-going wildlife studies (NPCA unpublished data 2024) have documented concentrated wildlife use of the habitats along the I-26 corridor in the project area both along the culvert and the slopes above the creek. Furthermore, wildlife activity is sometimes higher at, or just beyond, the culvert openings and in the nearby surrounding forest suggesting the culvert underpasses are in good locations. Therefore, this project is a cost-effective way to increase wildlife usage of the underpasses and hydraulic structures in this region.

Project History

NCDOT STIP Project A-0010C involved construction of a section of I-26 from Kingsport, Tennessee south to Charleston, South Carolina. Planning for the section from the Tennessee-North Carolina state line south to Asheville began in 1987. During planning, concerns about habitat fragmentation and effects of the new roadway on black bear were raised by the North Carolina Wildlife Resources Commission (NCWRC). As noted in the 1992 Environmental Impact Statement for the project, the roadway would include provisions for wildlife crossings, namely to benefit black bear. The NCWRC helped identify suitable locations for crossings and later, during design, two sites were selected.



Right-of-way fencing was intended to direct wildlife to the crossings, though post-construction evaluation has shown this fencing is inadequate.

Initial monitoring of the underpasses began two years after construction. This study by NC State University (NCSU) researchers found support for wildlife crossing site selections. Significant crossing structure use was documented for meso-mammals but initial observations noted that large mammals were less likely to use the underpasses. This was attributed to human activity, traffic, structure design, and inadequate fencing. However, monitoring elsewhere in North Carolina has shown that culvert underpasses with the dimensions of the culverts in the project area are commonly used by black bear. In addition, repeat usage seems to occur often, which suggests that habituation and learning may occur.



BEAR CROSSING UNDER I-26 AT BIG LAUREL CREEK BRIDGE (NCWRC)

Recent monitoring (2022 – 2023) by National Parks Conservation Association (NPCA) has observed increased but still infrequent use of the I-26 crossing structures, including the slopes under the Big Laurel Creek bridge (NPCA unpublished data 2024). Monitoring observations have included digital videography, still photographs, and local resident observations. In addition to the structure monitoring, the patterns of wildlife use near the highway were also assessed. Observations from the monitoring were consistent with previous data, showing wildlife activity is sometimes higher at or just beyond the underpass openings and in the nearby surrounding forest. This further corroborates the conclusion that the structures are in ideal locations.

Collectively, the available research data suggest that the proposed wildlife fence installation would be an effective way to increase wildlife usage of the culverts and bridge. By comparison, additions of wildlife fence to existing underpasses on Highway 64 in Virginia resulted in a 92 percent reduction in WVC (Donaldson 2022). The existing monitoring data represent an opportunity to further quantify the effectiveness of fencing measures in reducing WVCs along I-26 and similar high traffic volume roadways in western North Carolina.

The road width, surface, traffic noise, and median barriers separately or together impede or block dispersal movements by numerous wildlife species. The nearly



continuous concrete median barriers in most of the project area are a physical barrier to several meso-mammals, as well as an impediment or barrier to black bear cubs and white-tailed deer fawns. In addition to large species like black bear and white-tailed deer, species in the area that should benefit from the project include bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), grey and red fox (*Urocyon cinereoargenteus* and *Vulpes vulpes*, respectively), long-tailed weasel (*Mustela frenata*), and striped skunk (*Mephitis mephitis*). In addition, the area is home to state-listed reptile species including timber rattlesnake (*Crotalus horridus*) and other state (NCWRC) and regional (Southeastern Association Fish and Wildlife Agencies (SEAFWA)) species of greatest conservation need (SGCN), including the Eastern box turtle (*Terrapene carolina carolina*). Although reptile species have lesser ranges than larger mammal species, many reptiles have dispersal or seasonal migrations and can benefit from the crossing structures.

Project Location

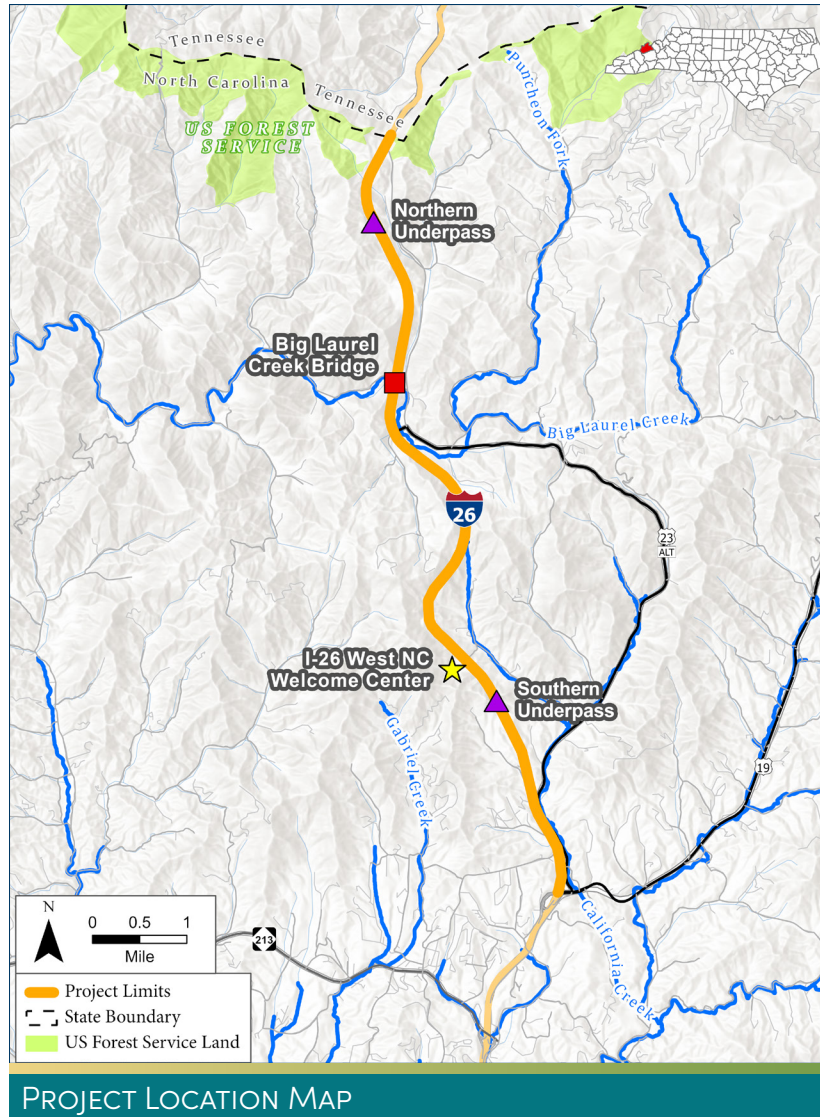


I-26 FROM HIGHWAY CUT (NCWRC)

I-26 is a vital part of the Nation's infrastructure. It is part of the National Highway System and is a North Carolina Strategic Transportation Corridor (Corridor C). The efficient operation of this corridor is of critical importance not only for North Carolina but also for the nation. This portion of the I-26 corridor cuts across relatively undeveloped and extensive forested habitats on the spine of the Appalachian Mountains, which run from Georgia generally northeast to Maine. The project area consists of mountains and deep river valleys, supporting diverse habitats for a wide variety of wildlife. The diversity of plant species allows bears and other species to access a variety of food sources including species of oak, hickory, maple, and beech, as well as various berry-producing trees and shrubs. These species exist on both sides of I-26, making habitat connectivity



vitaly important for bears, in particular.



TRIBAL LAND

This project is not located on land belonging to a federally recognized Indian Tribe.

RURAL OR URBAN DESIGNATION

This project is in a Rural area as designated by the U.S. Census Bureau.

COMMUNITY DEVELOPMENT ZONE

This project is not located in any of the four federally designated community Development zones.



Lead Applicant

NCDOT is the Eligible Applicant and project lead. NCDOT has a long history of successful project delivery. NCDOT has provided detailed cost and schedule information in this application and additional information on the basis for the cost and schedule is included in the supplemental materials. The financial plan is in place. NCDOT has successfully delivered many USDOT grant projects and is currently working on several grant-funded projects, including the I-85 FUTURES and STERLING projects, which were awarded MPDG funds in 2023. In addition, North Carolina has a strong reputation for prudent use of federal highway funding. The state formed its State Highway Commission (now NCDOT) in 1915. The commission and NCDOT have successfully managed projects receiving Federal-Aid Highway program since the passage of the Federal Aid Road Act of 1916, through many changes and reauthorizations.

NCDOT is guided by its agency Strategic Plan and the North Carolina Division Business Plan. Based on 2023 data, [NCDOT manages approximately \\$1.4 billion per year in Federal-Aid Funds](#).

NCDOT will administer the grant. Contract development will occur through coordination by NCDOT's Federal Grants Manager in the Office of Strategic Initiatives & Program Support with the Programs Management Office, the Environmental Policy Unit, and the Division of Highways Chief Engineer's Office.

OTHER PARTIES

Coordination has taken place with resource agencies, including the NCWRC and the NPCA. Both NCWRC and NPCA have conducted research in the project area and are interested in opportunities to continue future monitoring.

Budget Narrative

TOTAL PROJECT COSTS

The total project cost is \$7,230,000 with NCDOT requesting \$5,780,000 from the WCPP and the NCDOT providing the \$1,450,000 in matching non-federal funds. This project will have the following phases: final design plans, NEPA compliance and documentation, construction, monitoring, and outreach. NCDOT has determined the following cost: design plans and NEPA documentation (\$300,000), fencing materials and installation for 6.5 miles (\$5,010,720), and grading work at northern wildlife underpass (\$50,000), and monitoring and outreach (\$200,000) for a total of \$5,560,720. Adding 15% each for both construction engineering and inspections as well as contingencies results in a total project cost of \$7,228,936.

NON-FEDERAL SHARE

The NCDOT Executive Grants Committee has committed to providing the \$1,450,000 matching funds for this project, if awarded, through NCDOT's General Maintenance



Reserve Fund which is funded through the State Highway Fund. State Highway Fund Revenues for the Highway Fund are generated from the state motor fuels tax and DMV fees. The Highway Fund primarily supports projects that maintain the state’s existing transportation system. This includes general maintenance, roadside environmental activities, resurfacing highways, replacing bridges, paving unpaved secondary roads, and state aid to municipalities. Funds are distributed across North Carolina based on need.

OTHER FEDERAL FUNDS

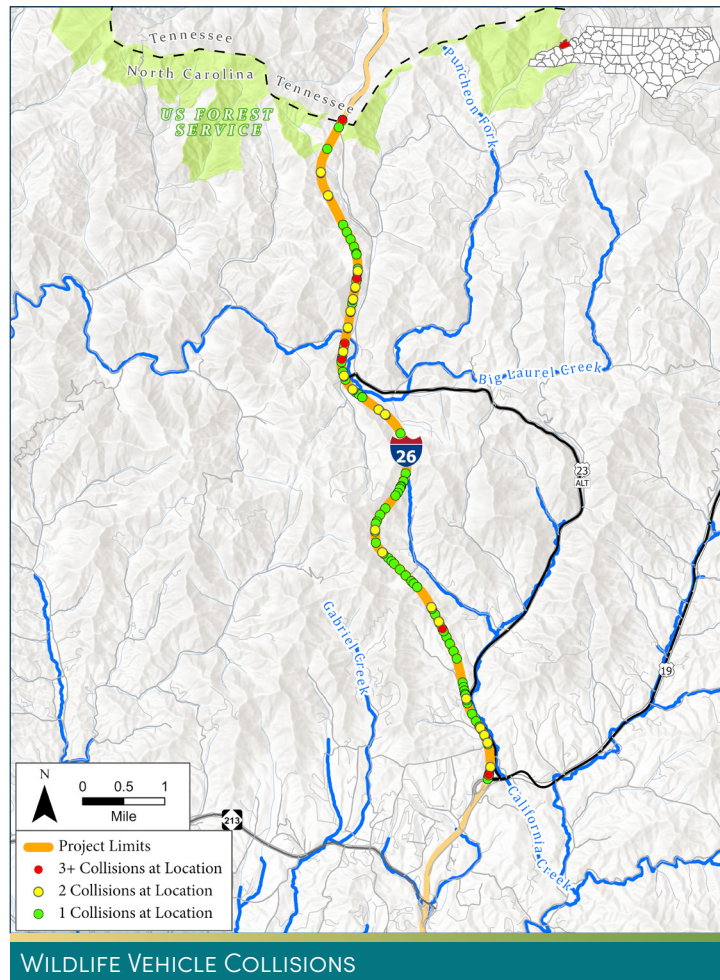
There are no additional federal funds currently allocated for this project.

PROJECT MERIT CRITERIA

Criterion 1.1: Wildlife Vehicle Collisions

The project meets the Wildlife Vehicle Collision (WVC) criterion by installing wildlife fencing to guide wildlife, especially large mammals, to wildlife underpasses, which will reduce WVCs. The current control-of-access fencing is approximately 4.5 feet high, which discourages some wildlife from crossing I- 26, but it does not effectively funnel wildlife to crossing structures nor discourage wildlife access to the roadway. Wildlife fencing is known to be the most effective measure to reduce WVCs (Clevenger and Huijser 2011). The addition of wildlife fencing to underpasses in Virginia reduced WVCs by 92 percent (Donaldson 2022).

Black bears, white-tailed deer (*Odocoileus virginianus*), and other wildlife have been observed using the culverts to cross I-26. A NCDOT crash analysis for the period from January 1, 2003 to March 31, 2023, determined that 117 reported WVCs occurred within the project area. The average reported property damage per crash was approximately \$3,000, though statewide average property damage cost per reportable WVC is currently much higher (\$14,400 based on

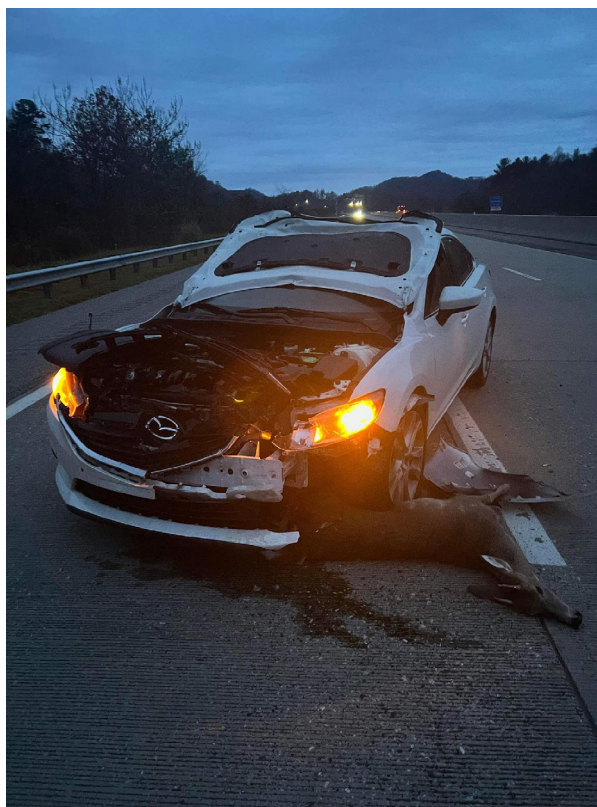




[2022 Standardized Crash Cost Estimates for NC](#)). It should be noted that most WVCs are not reported. For example, a Virginia Department of Transportation (VDOT) study found that WVCs were underreported by a factor as high as 8.5 when compared to white-tailed deer carcass removal data from the same facility (VDOT, 2017). Using a correction factor of 5, which Virginia uses to adjust crash data, approximately 585 large animal WVCs are estimated to have taken place along this section of the I-26 corridor in the last 20 years. There were 33 WVCs reported between mile marker (MM) 9.3 and the Tennessee state line from 2019 to 2023. At the same time, the National Parks Conservation Association (NPCA) conducted periodic assessments along the roadway and noted 41 deer and bear and 52 small wildlife WVC mortalities on the corridor, further showing that WVCs are appreciably higher on this roadway than reflected by traffic reports alone (NPCA, unpublished data 2024).



DEAD BEAR IN I-26 MEDIAN (NPCA)



DEER-VEHICLE COLLISION ON I-26 (VICKIE SEALOCK)

Effective wildlife fencing would reduce collision risk and improve driver safety on I-26 by maximizing the effectiveness of the previously installed underpass culverts. The fencing would decrease white-tailed deer, black bear, as well as smaller mammal at-grade crossings. While smaller wildlife does not typically account for a large proportion of WVCs, they do constitute a hazard that contributes to driver avoidance, unsafe maneuvering, and crashes.

Without this project, it is expected that WVCs will continue to increase over time on I-26 in the vicinity of the wildlife underpasses and Big Laurel Creek bridge because of the continuing human population increase, or corresponding traffic increases, in North Carolina. From April 2020 to July 2023, the human population in North Carolina is estimated to have increased 3.8 percent, higher than the 1.0 percent national average. Based on U.S. Census data, the population of Madison County and Buncombe County



to the south on I-26, which also includes the Asheville metropolitan area, grew by 4.1 percent and 2.4 percent, respectively. Traffic volumes on I-26 in the vicinity of the underpasses and bridge have increased from an estimated 7,100 to 8,500 vehicles per day (vpd) in 2004 to 11,000 to 13,000 vpd in 2022 ([NCDOT AADT Map](#)). Anecdotally, traffic volumes are higher now than in 2022, though data confirming this are not yet available.

In addition to the growing number of NC residents and corresponding traffic increase on I-26, it is also notable that some wildlife populations in the region have been increasing since I-26 was constructed. Bear populations have increased and human-bear conflicts have been particularly pervasive in developed and developing areas around Asheville and surrounding areas like Madison County. The NCWRC has opened limited hunting to an existing bear sanctuary and will be extending the bear harvest season. In addition to bear, the white-tailed deer harvest in Madison County has increased from a range of about 300 to 600 individuals per year in the first 10 years after this portion of I-26 (A-0010C) was constructed to a range of about 1,500 to 1,800 individuals per year from 2020 to 2023. While several factors can affect total year-to-year white-tailed deer harvest, an increase in population is typically a large component of markedly increase harvest. Increasing black bear and white-tailed deer populations can be expected to contribute to more WVCs along I-26 in the project area over time.

Criterion 1.2: Terrestrial and Aquatic Habitat Connectivity

This section of the I-26 corridor is bounded by extensive and diverse wildlife habitats. The surrounding landscape is primarily forested with mountainous terrain. There are several large permanently protected lands in North Carolina north and south of I-26 including Pisgah National Forest parcels in Madison County and, further to the south and west, the Great Smoky Mountains National Park, other more extensive Pisgah National Forest parcels, and state parks. The landscape of the Appalachian Mountains is also rugged with variable elevations from 1,500 to 5,000+ feet and numerous streams and river drainages. Consequently, this region has a variety of habitats that support a diverse assemblage of wildlife.

The project contributes to the Terrestrial and Aquatic Habitat Connectivity criterion by installing effective fencing that will direct several species to the existing underpass crossings, thereby maximizing the ability of a range of wildlife species to reach natural habitats on either side of the interstate.

Without wildlife fencing and despite the concrete median barrier, black bear, white-tailed deer, and other mammals regularly access and attempt to cross the I-26 project corridor. As noted previously, the road width and surface, traffic noise, and median barriers collectively impede or block dispersal movements by numerous wildlife species. The nearly continuous concrete median barriers constitute a physical barrier to several meso-mammals, as well as create an impediment or barrier to black bear cubs and white-tailed deer fawns. The soil base and reduced roadway noise in the underpasses make them attractive to wildlife, as evidenced by research. However, the rates at which



BOBCAT CROSSING UNDER I-26 (NPCA)



BEAR CROSSING UNDER I-26 (NPCA)

wildlife use the underpasses and bridge is likely lower due to inadequate fence. With the addition of effective fencing, decreased permeability of the roadway and movements of wildlife between habitats on opposite sides of the highway can be expected.



DEER CROSSING UNDER I-26 AT WILDLIFE CULVERT (NPCA)

While larger animal species such as the black bear and white-tailed deer were the target species for the wildlife crossings, they benefit a range of species. Improved usage by mammals of many types can be expected. Mammals in the project area have large ranges extending from tens to thousands of acres in the case of larger mammals. While area reptiles and amphibians generally have smaller habitat ranges, they access



different parts of the I-26 area throughout the year.

The NCDOT has a standard design wildlife fence with smaller mesh bottom panel to direct small mammals and herpetofauna, as well as the typical larger mesh upper panels for large animal exclusion. This is the type of fence that would be installed at the underpasses and bridge.

Criterion 2.1: Leveraging Investments

The project contributes to the Leveraging Investments criterion by achieving unrealized benefits associated with past federal investments in WVC mitigation and habitat connectivity. As noted previously, the addition of this section of I-26 on new location (A-0010C) included efforts to mitigate WVCs and wildlife habitat fragmentation from the new roadway. Up until then, there had been no attempts to undertake such efforts in western North Carolina. Additional investment in A-0010C would not only complete this important wildlife passage project, but also demonstrate a federal commitment to advancing the knowledge of and ability to implement and improve effective WVC reduction strategies, thereby encouraging additional investments by state and non-governmental organizations to meet common conservation and highway safety objectives in the region.

North Carolina's commitment to leveraging further investments for wildlife passage projects is demonstrated by the Memorandum of Understanding (MOU) that was signed by the NCDOT and NCWRC in 2023. The NCDOT and NCWRC have been effectively working together on mitigating highway impacts on wildlife habitats for years. This has included many small-scale habitat connectivity projects involving bridge replacements. This also has involved construction of dedicated highway underpasses to meet specific WVC reduction and conservation objectives. While the agencies have been working together effectively, it was recognized that this relationship should be formalized to ensure continued collaboration of the agencies by widely acknowledging and communicating both agencies' commitments. North Carolina's DOT and state wildlife agency MOU represents one of only a handful of such agreements across the nation.

Included in the MOU are several efforts to increase the implementation and understanding of wildlife mitigation needs. A specific task of the MOU is "Utilize our mutual understanding of each agency's missions, goals, and objectives to seek opportunities and funding for cooperative projects and activities dealing with highway/wildlife issues". The NCWRC is tasked with monitoring wildlife mitigation projects and working with NCDOT to identify scientifically based WVC reduction and conservation needs. Funding for wildlife fence on this section of I-26 would allow a more thorough assessment of anticipated benefits identified by research and similar to those realized with comparable fencing applied in Virginia. The NCWRC would deploy trail cameras to update the underpass and bridge usage by wildlife and further evaluate the effectiveness of the fence at directing wildlife, as intended. Successful demonstration of



improvements would further advance the ability to advocate for and seek more diverse funding sources for needed WVC reduction and habitat connectivity projects identified during NCDOT project development.

The signed MOU outlines specific procedures for integrating project planning and coordination; public safety; maintenance and expansion of habitat connectivity and wildlife habitat conservation; inventory, monitoring, and biological studies; reducing impacts to WVCs; and information and education.

The agencies will:

- Cooperatively seek to make highways less hazardous for wildlife and lessen the impact highways have on important habitats and ensure maximum benefit and consideration for mitigation efforts that promote wildlife habitat conservation and connectivity.
- Further develop methods for evaluating the success of wildlife mitigation measures, including monitoring crossing structures and fences to determine their effectiveness in facilitating wildlife passage.
- Create a WVC data collection tool will be made jointly available for encouraged use and contribution by both agencies (and possibly others) for traffic safety and conservation project evaluations.
- Develop effective and efficient passage structures and associated barriers for various species of wildlife to make highways less hazardous for motorists and wildlife while minimizing effects of habitat fragmentation.
- Jointly develop a “Wildlife Passage Guidance” document that will aid in the familiarity and incorporation of standard prescriptions for highway projects.
- Work together to investigate avenues to minimize highway impacts to federally listed and other sensitive species, and their habitats.
- Cooperate during transportation long-range planning, project development, and operations. allowing NCWRC to provide substantive wildlife resource recommendations to NCDOT.
- Utilize our mutual understanding of each agency’s missions, goals, and objectives to seek opportunities and funding for cooperative projects and activities dealing with highway/wildlife issues.

An intra-agency working group was established to accomplish these goals shortly after the MOU was signed. It recently released the NCWRC–NCDOT Wildlife Passage Guidance. The Guidance document will assist transportation planners and engineers, local and regional transportation planning organizations, other government and resource agencies, and non-profit organizations with wildlife passage planning and design based on the over twenty years of experience that NCDOT and NCWRC have in this field in NC.

This project represents both agencies commitment and investment in accomplishing several goals established by the MOU.



Criterion 2.2: Economic Development & Visitation Opportunities

The project contributes to the Economic Development and Visitation Opportunities by encouraging awareness of wildlife conservation and recreation along the corridor. The I-26 West NC Welcome Center is located at the southern end of the project at mile marker 6 and markets travelers on outdoor activities in the area.

As part of a growing local coalition in Madison County (NC) and Unicoi County (TN), NPCA partnered with the NC Welcome Center to create a public information display on the importance of this area for wildlife and efforts to improve wildlife connectivity and reduce WVCs. The display is housed within the Welcome Center and includes an 8-foot black bear specifically carved for this project by local artist John Beaudet; a video and poster; and other road ecology-related informational items.

The video and poster include pictures and research along the I-26 corridor. The official launch was summer 2024. NPCA's primary nexus for this work is the Appalachian Trail (a National Park Service unit) that crosses through the area and the surrounding landscape leading to it.

Further investment in wildlife mitigation, including highly visible wildlife fence, would bolster western North Carolina's reputation for long-term conservation of its diverse wildlife resources. This region already is a popular tourist destination for nature-based activities, and tourism is a primary component of western North Carolina's economy. This is largely a result of the area's extensive public lands and mountainous terrain. Roadway ecology is more advanced in the western United States but there has been increasing and increasingly visible applications of mitigation measures in the east. Additional investments such as fence additions to these I-26 underpasses and bridge would further advance the perception by tourists that western North Carolina is an attractive nature-based destination worthy of visitation.

Criterion 2.3: Innovation

The project contributes to the Innovation criterion by providing useful "before-and-after" data that can show how upgrading fencing effects wildlife crossing use and WVCs. The effectiveness of wildlife crossing structures, particularly those that involve large mammals, in mountainous terrain in the eastern United States is not well understood. Data collected before and after construction will enable more efficient cost-benefit analyses that can be used to inform future spending decisions on wildlife crossings.

Criterion 2.4: Education & Outreach

The project contributes to the Education and Outreach criterion by providing opportunities to educate travelers of the I-26 corridor about the benefits of wildlife crossing structures, possibly with a display in the visitor center. Due to the extensive data



collection activities along the corridor, it will be possible to collect real time data on the effectiveness of the project as soon as the construction is complete. Data can be used in media communications and other outreach efforts.

In addition to the public, the project can better educate NCDOT and NCWRC staff on wildlife mitigation measures and promote the objectives of the MOU. Early identification of existing or anticipated WVC issues is important in highway project development. Case-studies like the addition of wildlife fence on this section of I-26 would better inform NCDOT on the importance and effectiveness of wildlife fencing when designing structures for wildlife passage. Such knowledge would ensure consideration of WVC reduction and wildlife conservation needs because of the availability of the applied information.

Criterion 2.5: Monitoring & Research

The project contributes to the Monitoring and Research criterion by expanding on previous studies along this corridor that can be used to develop best practices for other facilities in the Southern Appalachians. This project will provide data that will augment the 2008 study by NCSU, *The Effectiveness of Wildlife Crossing Structures for Black Bears in Madison County, North Carolina* and more recent research completed by the NPCA. As noted under Criterion 2.4, implementation of this grant will expand an understanding of wildlife crossing effectiveness in mountainous terrain in the eastern United States through ongoing monitoring and research including camera-trapping and roadkill monitoring by the NCWRC, NPCA, and other researchers.

Criterion 2.6: Survival of Species

The project contributes to the Survival of Species criterion by minimizing the decline of sensitive species, especially local reptile species. Madison County is home to several North Carolina state-listed species that would benefit from the improved fencing. Species may include timber rattlesnake, woodrat (*Neotoma* spp.), and southern zigzag salamander (*Plethodon ventralis*). While most reptile and amphibian species range over relatively small areas, populations may disperse in association with seasonal and inter-annual habitat changes and shifts. “Wildlife Crossing Structure Handbook, Design and Evaluation for North America” (FHWA, 2011), notes that amphibian and reptile species will use crossing structures designed to accommodate large mammals. During still camera monitoring, broken-striped newts (*Notothalmus viridescens*) were observed at one of the crossings (NCPA unpublished data 2024).

PROJECT READINESS

Technical Feasibility

The project cost estimates were based on NCDOT regional expertise (Division 14) with current wildlife fencing costs for materials and installation, as well as recent similar



construction work underway nearby on I-40. Based on this nearby construction, the cost proposal includes an additional 15 percent construction engineering and inspection cost as well as a 15 percent contingency rate. If project costs begin to exceed estimates, adjustments will be made to stay within budget or NCDOT will investigate opportunities to provide additional funding to complete the project as proposed.

Project Schedule

Upon notification of funding, NCDOT is prepared to move quickly toward implementation. No right of way acquisition is anticipated for the project. NCDOT, in coordination with NCWRC, has already identified the location and fencing materials. As this will be fence installation within the NCDOT right of way, no further right of way

AWARD RECEIVED



acquisition is needed. Construction is anticipated to begin within 6 months of receiving funding and would be complete within 1 year.

The Project is not anticipated to have jurisdictional impacts and every effort will be made to continue to avoid and minimize impacts. Where the fence crosses wetlands or streams, the NCDOT will work with the US Army Corps of Engineers and NC Division of Water Resources to permit these areas. However, stream or wetland impacts are not anticipated based on the siting of the fencing in road shoulders. Further, the potential federal listing of tricolored bat (*Perimyotis subflavus*) under the Endangered Species Act, is anticipated to occur in late 2024. The listing for this species should not affect the project schedule. NCDOT is developing a programmatic consultation for the species in coordination with the FHWA, the US Army Corps of Engineers, and the US Fish and Wildlife Service. This formal conference/consultation should be complete by August 14, 2024, and a biological/conference opinion is expected to be delivered from USFWS by September 30, 2024.

State and Local Approvals

The project is not programmed in the State Transportation Improvement Program, French Broad River Metropolitan Planning Organization (FBRMPO) Long-Range Transportation Plan (LRTP), or the State Long Range Transportation Plan. However, NCDOT has the ability to process a STIP amendment prior to obligation of funds. Further, FBRMPO and Land of Sky Rural Planning Organization have developed [Potential Wildlife Crossings for the French Broad River MPO and Land of Sky RPO Planning Areas](#) plan (2023), which identifies this section of I-26 as a high priority location.



Assessment of Project Risks & Mitigation Strategies

NCDOT does not anticipate any specific concerns from resource partners due to the partnership and ongoing coordination with the NCWRC regarding wildlife passage and transportation facilities.

NCDOT and NCWRC signed a Memorandum of Understanding (MOU) in April 2023 to cooperatively and collaboratively work together on project planning and coordination; public safety; maintenance and expansion of habitat connectivity and wildlife habitat conservation; inventory, monitoring, and biological studies; impacts to wildlife due to vehicles; and information and education. An intra-agency working group developed and recently released the NCWRC-NCDOT Wildlife Passage Guidance.

An intra-agency working group was established to accomplish these goals shortly after the MOU was signed. It recently released the NCWRC-NCDOT Wildlife Passage Guidance. The Guidance document will assist transportation planners and engineers, local and regional transportation planning organizations, other government and resource agencies, and non-profit organizations with wildlife passage planning and design based on the over twenty years of experience that NCDOT and NCWRC have in this field in NC.

Environmental Permits and Reviews

NATIONAL ENVIRONMENTAL POLICY ACT

NCDOT has already begun environmental review and regulatory coordination for the project as part of this application. The NEPA process for the project will begin within 1 month of receiving funding award and will be completed within 6 months. NCDOT anticipates that this project will be classified as a Categorical Exclusion (CE) based on its current Programmatic Agreement with Federal Highway Administration (FHWA) for CEs.

The NCDOT has designated liaisons within all necessary regulatory agencies who are assigned to work specifically on NCDOT projects. The project will take place entirely within existing NCDOT disturbed right of way. The road shoulders where fence would be installed are cuts and fills, so there should be no archaeological concerns. Utility conflicts at the site are minimal and coordination can begin as soon as funding is announced. Potential regulatory and permitting concerns have been addressed through early coordination in the site selection process and designated liaisons within the regulatory agencies will ensure streamlined coordination and timely issuance of permits.

PUBLIC INVOLVEMENT

NCDOT acknowledges the importance of its obligation to provide robust public involvement throughout the decision-making process and project implementation across the state. These efforts, as directed by NCDOT, are critical to the success our projects. Following our [Statewide Public Involvement Plan](#) and in coordination with



our Public Involvement Team and Communications Office, a comprehensive Public Involvement Plan (PIP) will be developed. The PIP will identify opportunities to educate the public on the purpose and need for the project as well as education on wildlife in the region and wildlife corridors and crossings. Public engagement opportunities may include meetings, stand-alone kiosks at rest areas and visitor centers, and participation at area events.

SELECTION CONSIDERATIONS

Safety

Our proposed construction of wildlife fencing on I-26 is completely aligned with the National Roadway Safety Strategy, given the strong emphasis in the project for reducing the number of dangerous, potentially lethal crashes between vehicles and large-bodied wildlife. See Criteria 1.1 above. A properly designed system of wildlife fencing can be expected to reduce wildlife vehicle collisions by as much as 90 percent, making this one of the more effective and efficient highway safety interventions available.

Climate Change and Sustainability

The construction of wildlife fencing on I-26 would promote the climate resilience of the entire Southern Appalachian Ecosystem. Improving habitat connectivity will increase the ability of species to seek shifting microclimates that are suitable as the climate changes. See Criteria 1.2 for more information on how the project reduces barriers between high quality habitat areas. Also, by reducing major crashes involving large mammals, the project will also serve to reduce WVC related traffic congestion and increased greenhouse gas emissions.

Equity

The proposed work on the I-26 corridor will promote urban-rural equity by marking a substantial investment in highway safety in rural Madison County NC. By reducing crashes, the crossing projects will promote the livelihood and prosperity of rural residents who can least afford the property damage and health care implications of a high-speed collision with large animals such as bear and deer.

Workforce Development, Job Quality, and Wealth Creation

Installation of wildlife fencing will bring economic benefits to the area. The construction project will last at least six months, bringing opportunities to local workers and revenue to the restaurants, hotels, and other businesses that will benefit from the construction activities. This will promote wealth creation in the area.



NCDOT has established a Disadvantaged Business Enterprise (DBE) program to address ongoing discrimination and the continuing effects of past discrimination in transportation markets nationwide. This program will be used in all aspects of project letting.

In accordance with 49 CFR Part 26 and the Special Provisions, NCDOT has established goals for participation of DBEs in USDOT-assisted contracts, as well as State-assisted contracts. The Triennial Goals are set as follows:

- 2020 – 2022 Triennial DBE Goal for Federal Transit Administration – 1.9%
- 2021 – 2023 Triennial DBE Goal for Federal Aviation Administration – 8.9%
- 2021 – 2023 Triennial Combined Goal for NCDOT Division of Aviation (state funded projects) – 10.7%
- 2022 – 2024 Triennial DBE Goal for FHWA – 13.0%
- 2019 – 2021 Triennial Combined Goal for NCDOT (state funded projects) – 12.3% (revising soon).

On July 19, 2024, NCDOT reported that for a third straight year, the Department awarded a record amount of funding to small businesses. “NCDOT awarded nearly \$65.4 million to small business enterprises (SBEs) through contracts under \$1 million in the 2024 fiscal year, generating a 35 percent increase over the previous record of about \$48.4 million in 2023 and double the target of \$28 million.”

NCDOT is also committed to improving the depth of the transportation talent pool. Through the NCDOT Office of Civil Rights (OCR), the Department offers an On-the-Job Training (OJT) program. As of 2021, the OJT program included:

- 103 participating contractors
- 33 contractors with an assigned trainee goal
- 5 contractors without an assigned trainee goal
- 11 trainees enrolled.

The Department operates Accelerated Boot Camps (ABCs), which are accelerated, two-week versions of the Highway Construction Trades Academy (HCTA), in NCDOT’s 14 Divisions as well as full, six-week versions of the program. HCTAs and ABCs are customized to the local area and are designed to train participants and connect the talent pipeline to new employment. Currently, typical subjects may include:

- Construction math
- OSHA 10, CPR/First Aid
- Flagger certifications
- Introduction to Earthmoving and Heavy Equipment Training
- Introduction to Commercial Driver’s License (CDL).

Participants in OJT or HCTAs can receive Advanced Highway Skills Training (AdT) in current/developing needs areas. This includes bridgework, disaster recovery, EV charging station installation, and CDL for women. The Department is actively examining



expansion of these programs to include additional subjects, including broadband installation and maintenance.

NCDOT is also working with its Historically Black Colleges and Universities (HBCUs) and the state's MSI (UNC Pembroke, established by the Lumbee Tribe of North Carolina) to build the transportation labor force. Some examples include:

- NC A&T State University's Center of Excellence for Connected and Autonomous Vehicle Technology.
- Fayetteville State University's SAP Next-Gen Lab for transportation geospatial research.
- Elizabeth City State University's four-year Unmanned Aircraft Systems (UAS) degree program.

NCDOT's OCR will explore the possibility of providing HCTA, ACTs, and/or AdTs in the Division during construction. The Department will encourage the use of DBE firms as part of the letting/administration process.



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street Suite B
Asheville, North Carolina 28801

August 29, 2024

FHWA WILDLIFE CROSSINGS PILOT PROGRAM
2024 GRANT APPLICATION
USFWS ASHEVILLE FIELD OFFICE (AFO) LETTER OF SUPPORT FOR NCDOT

RE: The [Wildlife Crossings Pilot Program | FHWA \(dot.gov\)](#) competitive grant program awarding grants to eligible entities for projects with the goal of reducing Wildlife Vehicle Collisions (WVC) while improving habitat connectivity for terrestrial and aquatic species.

In support of NCDOT's ongoing and longstanding coordination, incorporation and construction of wildlife crossings on transportation facilities in North Carolina, and their joint Wildlife Stewardship [MOU](#) with the NC Wildlife Resource Commission, this letter serves as the USFWS AFO's support for the following proposed NCDOT projects:

I-26 Madison County: Wildlife Fence Installation for Wildlife Crossings and Roadway Safety -

This project proposes to install 6.5 miles of appropriately designed wildlife fencing to direct species, especially large mammals, to the existing wildlife crossing structures. The fencing would minimize highway access while directing wildlife to the underpasses and the Big Laurel Creek bridge.

I-40 Haywood County: Groundhog Creek Area Wildlife Passage Structures – This project seeks to install wildlife underpasses at Groundhog Creek as well as 2.2 miles of wildlife fencing to bracket the multiple hydraulic structures under I-40 near and Groundhog Creek. The fence will extend to the I-40 westbound tunnel, thereby incorporating the proposed passage improvements with an existing overpass that is used by wildlife. This will create a mix of wildlife crossing opportunities within a section of the Pigeon River Gorge.

The two projects below fall within the USFWS Raleigh Field Office (RFO) work area. Acknowledging that, and the RFO's stated support, the AFO provides additional support given the impacts to endangered red wolves (*Canis rufus*).

US 64 Washington County: Wildlife Fencing to Reduce Wildlife Vehicle Collisions (64 SAFETY) –

This project proposes to upgrade the existing wildlife underpasses with appropriate wildlife fencing for approximately 7 miles of US 64. The fencing will reduce WVC in an area with critically endangered red wolf, black bear, and white-tailed deer populations and improve habitat connectivity for all species within this corridor.

US 64 Dare County: The Red Wolf Essential Survival Crossings Under Evacuation Route (RESCUER) -

RESCUER proposes to reduce WVC and improve habitat connectivity for the entire length of US 64 within the Alligator River National Wildlife Refuge (ARNWR). This project is critical for the continued existence of the only wild population of the critically endangered Red Wolf in the world. This project is a joint application with the USFWS's Red Wolf Recovery Program and ARNWR. It is supported by Wildlands Network, the Center for Biological Diversity, and coalition partners through a \$2 million fundraising challenge to match a \$2 million anonymous donor. More information can be found [here](#).

Over the last 10 years vehicle strike mortalities have been the leading cause of mortality in Red Wolves. Installing wildlife fencing to reduce WVC along with multiple wildlife underpass structures to provide habitat connectivity for species including the critically endangered Red Wolf, black bear, white-tailed deer, meso-mammals, small mammals, and herpetofauna is an essential mitigation measure to address impacts from US 64 through ARNWR. Specific to this funding opportunity, this first phase addresses one of the WVC hotspots and is a main area of concern along US 64 identified by both Huijser and Begley (2023) based on all Red Wolf vehicle strike mortality data and previous WVC studies conducted on US 64.

The USFWS AFO appreciates the efforts that the NCDOT is making toward reducing WVCs across the state. Such projects align with the USFWS mission, that is “Working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.” We appreciate the opportunity to provide our support.

Sincerely,

Holland Youngman
USFWS Wildlife Biologist
NCDOT Liaison

**HOLLAND
YOUNGMAN** Digitally signed by
HOLLAND YOUNGMAN
Date: 2024.08.29
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◊ North Carolina Wildlife Resources Commission ◊

Cameron Ingram, Executive Director

August 29, 2024

Grant Selection Committee Members
Wildlife Crossing Pilot Program
United States Department of Transportation, Federal Highway Administration

Subject: Letter of support for Wildlife Crossing Pilot Program (WCPP) grant application for the North Carolina Department of Transportation's I-26 wildlife fence project in Madison County, North Carolina

Dear Grant Selection Committee Members,

As the state agency charged with protecting North Carolina's fish and wildlife resources, the North Carolina Wildlife Resources Commission (NCWRC) supports NCDOT's application for I-26 wildlife fence project which was developed with the North Carolina Department of Transportation in accordance with a recently signed Memorandum of Understanding (MOU). The MOU formalized inter-agency coordination on wildlife conservation, highway safety, and mitigation needs on existing and developing highway projects in North Carolina.

This project would add wildlife fencing to a section of interstate that currently has two dedicated wildlife crossing structures and one large bridge overpass. As noted by research, there is abundant wildlife activity in the area and the existing control-of-access fencing has limited effectiveness at controlling or directing wildlife. The NCWRC supports the application because the project should improve habitat connectivity for several species of wildlife, reduce wildlife vehicle collisions on a high-speed roadway, increase knowledge about implementing wildlife passage measures in mountainous terrain in the eastern United States, and help realize the benefits of wildlife passage investments that already have been made on this roadway.

Thank you for the opportunity to provide comments in support of this project.

Sincerely,

Cameron N. Ingram, Executive Director



September 3, 2024

US Department of Transportation
Federal Highway Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Federal Highway Administration Representatives,

The Safe Passage Fund Coalition (SPFC) is comprised of seven nonprofit organizations united to make it possible for the public to donate in support of improving wildlife connectivity and human safety in Western North Carolina. We believe it is possible to balance the needs of the rich biodiversity that inhabits our mountain region with the ever-growing human population.

Western North Carolina is home to large tracts of protected, public lands including the 522,427-acre Great Smoky Mountains National Park, and the Pisgah and Cherokee National Forests to the northeast (512,758 and 650,000 acres, respectively). These forests are home to a growing and dispersing elk population, a large and robust black bear population, white-tailed deer, and many other species of mammals, reptiles, amphibians, birds, and other taxa. Under current climate change predictions, the nationally significant habitat network formed by the National Park and National Forests will be critical for the long-term health northward flow of regional plants and animals.

The Safe Passage Fund Coalition has been actively engaging the invested public to draw attention to this urgent conservation matter. Through our communications and outreach, we have raised \$210,320 to support this work.

We are pleased to express our support of the North Carolina Department of Transportation (NCDOT)'s proposal for the following projects:

I-40 Haywood County: Groundhog Creek Area Wildlife Passage: In 2022, Wildlands Network and the National Parks Conservation Association published "[Road Ecology Research and Mitigation Strategies to Improve Wildlife Connectivity and Human Safety along I-40 in the Pigeon River Gorge](#)," one of the largest road ecology research projects ever completed in the eastern United States. This study aimed to identify locations with high incidents of wildlife-vehicle



collisions, monitor wildlife activity rates along the roadside, and evaluate roadway permeability by monitoring black bear, white-tailed deer, and elk. The results from this study show that black bear movement was highest at the Groundhog Creek culverts and the I-40 westbound tunnel that facilitates movement as an overpass structure but lacks directional fencing. Therefore, we support NCDOT's efforts to improve safe passage at Groundhog Creek and the tunnel as an excellent location to continue addressing these wildlife connectivity issues throughout the broader area of the Pigeon River Gorge.

I-26 Madison County: Wildlife Fence Installation for Wildlife Crossings and Roadway Safety: In 2022 and 2023, National Parks Conservation Association conducted two years of research on a 9-mile stretch of Interstate 26 in North Carolina. The evidence-based work resulted in recommendations that include adding directional fencing to existing wildlife underpass structures in that corridor.

We look forward to advancing our cause with the support of the Wildlife Crossing Pilot Program. Thank you for the opportunity for our organizations to work cooperatively.

Respectfully,

The Safe Passage Fund Coalition

Tim Gestwicki, Chair
North Carolina Wildlife Federation

Guenevere Abernathy
The Conservation Fund

Ben Prater
Defenders of Wildlife

Jeff Hunter
National Parks Conservation Association

Frances Figart
Smokies Life

Jill Gottesman
The Wilderness Society

Nikki Robinson
Wildlands Network

LAND OF SKY

RURAL PLANNING RURAL ORGANIZATION

FHWA WILDLIFE CROSSINGS PILOT PROGRAM
2024 GRANT APPLICATION
NCDOT REQUEST FOR SUPPORT

The [Wildlife Crossings Pilot Program | FHWA \(dot.gov\)](#) is a competitive grant program that awards grants to eligible entities for projects with the goal of reducing Wildlife Vehicle Collisions (WVC) while improving habitat connectivity for terrestrial and aquatic species.

In support of NCDOT's ongoing and longstanding coordination, incorporation and construction of wildlife crossings on transportation facilities in North Carolina, and the joint Wildlife Stewardship [MOU](#) with the NC Wildlife Resource Commission. The Land of Sky Rural Planning Organization would like to express our strong support for the NCDOT's application Wildlife Crossings Pilot Program Grant Funding for the following projects located in the Land of Sky Rural Planning Organization's planning boundary:

I-26 Madison County: Wildlife Fence Installation for Wildlife Crossings and Roadway Safety - This project proposes to install 6.5 miles of appropriately designed wildlife fencing to direct species, especially large mammals, to the existing wildlife crossing structures. The fencing would minimize highway access while directing wildlife to the underpasses and the Big Laurel Creek bridge.

I-40 Haywood County: Groundhog Creek Area Wildlife Passage Structures – This project seeks to install wildlife underpasses at Groundhog Creek as well as 2.2 miles of wildlife fencing to bracket the multiple hydraulic structures under I-40 near and Groundhog Creek. The fence will extend to the I-40 westbound tunnel, thereby incorporating the proposed passage improvements with an existing overpass that is used by wildlife. This will create a mix of wildlife crossing opportunities within a section of the Pigeon River Gorge.

The Land of Sky Rural Planning Organization also supports the following projects located in other parts of North Carolina:

US 64 Washington County: Wildlife Fencing to Reduce Wildlife Vehicle Collisions (64 SAFETY) – This project proposes to upgrade the existing wildlife underpasses with appropriate wildlife fencing for approximately 7 miles of US 64. The fencing will reduce WVC in an area with critically endangered red wolf, black bear, and white-tailed deer populations and improve habitat connectivity for all species within this corridor.

LAND OF SKY

RURAL PLANNING RURAL ORGANIZATION

US 64 Dare County: The Red Wolf Essential Survival Crossings Under Evacuation Route (RESCUER) - RESCUER proposes to reduce WVC and improve habitat connectivity for the entire length of US 64 within the Alligator River National Wildlife Refuge (ARNWR). This project is critical for the continued existence of the only wild population of the critically endangered Red Wolf in the world. This project is a joint application with the US Fish and Wildlife Service's Red Wolf Recovery Program and ARNWR. It is supported by Wildlands Network, the Center for Biological Diversity, and coalition partners through a \$2 million fundraising challenge to match a \$2 million anonymous donor. More information can be found [here](#).

Over the last 10 years vehicle strike mortalities have been the leading cause of mortality in Red Wolves. Installing wildlife fencing to reduce WVC along with multiple wildlife underpass structures to provide habitat connectivity for species including the critically endangered Red Wolf, black bear, white-tailed deer, meso-mammals, small mammals, and herpetofauna is an essential mitigation measure to address impacts from US 64 through ARNWR. Specific to this funding opportunity, this first phase addresses one of the WVC hotspots and is a main area of concern along US 64 identified by both Huijser and Begley (2023) based on all Red Wolf vehicle strike mortality data and previous WVC studies conducted on US 64.

Respectfully,



Vicki L. Eastland
Land of Sky RPO Director



09/03/2024

Marissa Cox
NC Department of Transportation
Environmental Policy Unit
1598 Mail Service Center
Raleigh, NC 27699

Dear Ms. Cox,

I am writing today to express National Parks Conservation Association's (NPCA) unwavering support for NCDOT's grant application to FHWA's Wildlife Crossings Pilot Program related to I-26 in Madison County, North Carolina. This application seeks funding to install 6.5 miles of wildlife fencing to direct wildlife, especially large mammals, to existing wildlife crossing structures.

National Parks Conservation Association (NPCA) is the leading voice for our national parks - an independent, nongovernmental, nonpartisan organization that works to protect and enhance our national parks. Through a nationwide network of offices and with more than 1.6 million members and supporters (including 30,216 members and supporters in Tennessee, and 47,218 members and supporters in North Carolina), we speak up for the more than 430 landscapes, seashores, cultural and historic places that make up our national park system and the ecological and human communities that support them.

In 2022 and 2023, NPCA conducted 2 years of research on a 14-mile stretch of Interstate 26 in Madison County, North Carolina and Unicoi County, Tennessee. That includes 9-miles of highway in North Carolina from exit 9 (Burnsville) to the NC/TN state line at Sam's Gap. NPCA's primary nexus of interest in the Appalachian National Scenic Trail, a 2197-mile footpath from Georgia to Maine. The trail crosses beneath I-26 at Sam's Gap. In addition to serving as a recreational resource, the trail is an important climate corridor for wildlife movement.

Our research involved placing wildlife cameras in the highway right-of-way to identify wildlife encroaching on the highway. We also conducted weekly driving surveys to look for animal carcasses. Our focal species were Black Bear and White-tailed Deer.

Asheville Field Office
775 Haywood Road, Suite A
Asheville, NC 28806
P 828-545-1401 | jhunter@npca.org



One of our first observations was the fencing associated with (2) wildlife underpasses in North Carolina is mis-aligned. Instead of flaring out parallel to the roadway to funnel wildlife to these structures, the fencing is currently functioning as an enclosure, or barrier to wildlife using these structures.

While our cameras did observe use of these structures by a variety of species, including our target species, use of the structures could be significantly improved by re-aligning the wildlife fencing to funnel animals to cross beneath the roadway. This will result in both reduced wildlife mortality and improved safety for motorists.

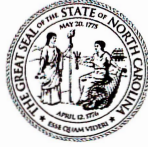
In closing, I want to make you aware that we have a Safe passage display at the I-26 North Carolina Welcome Center in Madison County. This is allowing us to educate and engage with the motoring public about our wildlife research on the I-26 corridor in Western North Carolina.

Respectfully,

Jeffrey Hunter

Southern Appalachian Director
National Parks Conservation Association

Asheville Field Office
775 Haywood Road, Suite A
Asheville, NC 28806
P 828-545-1401 | jhunter@npca.org



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

FHWA WILDLIFE CROSSINGS PILOT PROGRAM
2024 GRANT APPLICATION
NCDOT REQUEST FOR SUPPORT

The [Wildlife Crossings Pilot Program | FHWA \(dot.gov\)](#) is a competitive grant program that awards grants to eligible entities for projects with the goal of reducing Wildlife Vehicle Collisions (WVC) while improving habitat connectivity for terrestrial and aquatic species.

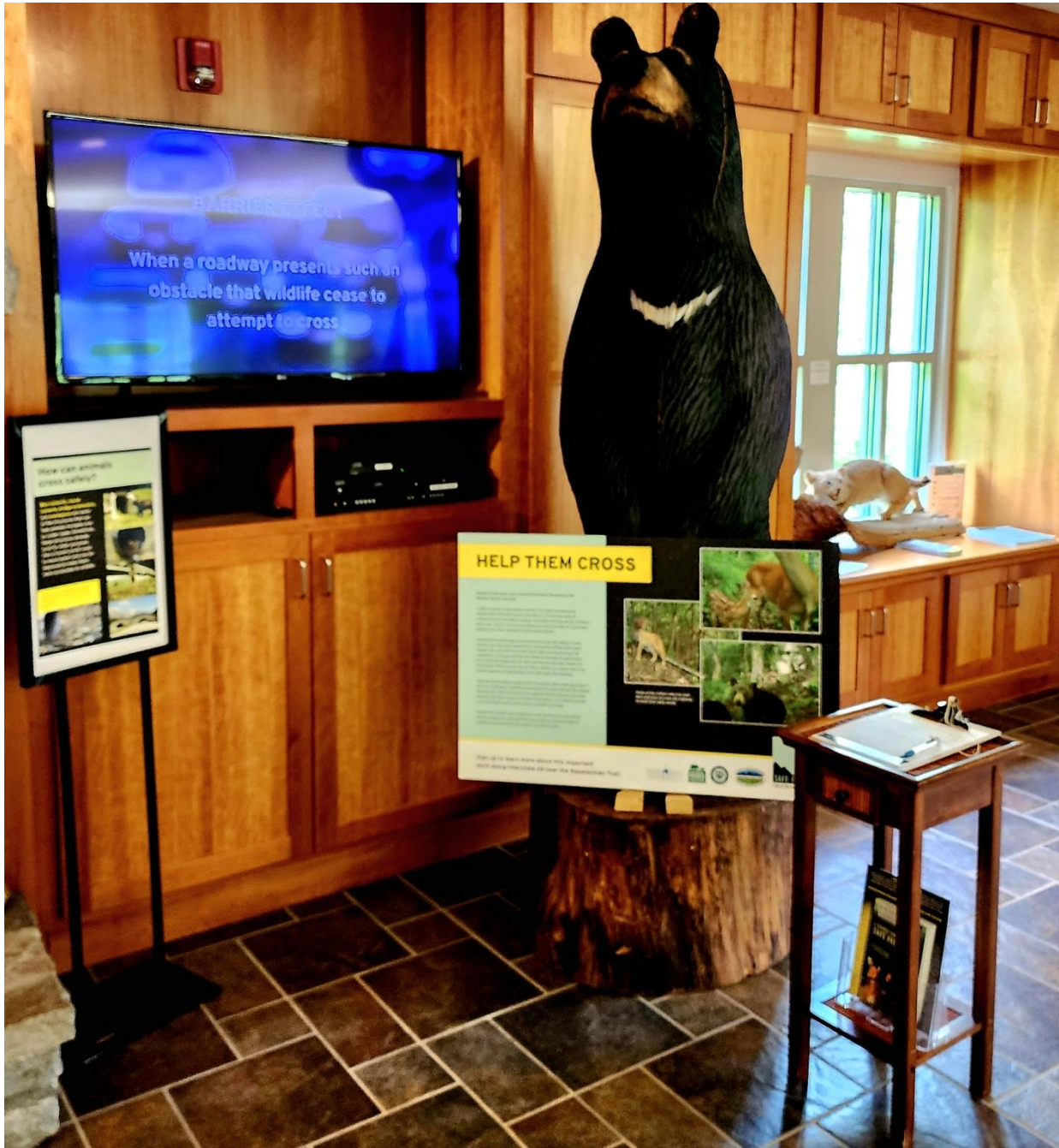
In support of NCDOT's ongoing and longstanding coordination, incorporation and construction of wildlife crossings on transportation facilities in North Carolina, and our joint Wildlife Stewardship [MOU](#) with the NC Wildlife Resource Commission, the NCDOT requests your support for the following projects:

I-26 West in Madison County

Vickie Sealock
Manager, I-26 West North Carolina Welcome Center

A handwritten signature in blue ink that reads "Vickie Sealock".

I-26 West North Carolina Welcome Center



Carved Black Bear by John Beaudet.

Video being shown is "Safe Passage I-26" about wildlife connectivity in Madison County, NC and Unicoi County, TN and can be found here: <https://youtu.be/mIYgQvdiS-8>

Photo credit and link provided to NCDOT by Steve Goodman, Wildlife Research Program Coordinator (SERO) | National Parks Conservation Association



North Carolina Department of Transportation &
North Carolina Wildlife Resources Commission
Wildlife Passage Guidance



I-140 Brunswick County



Wildlife cross or access roadways during foraging, mating, and dispersal activities. These interactions with roadways can compromise roadway safety and traffic reliability. Roadways can also impair wildlife conservation by fragmenting habitats and causing the mortality of rare species. Wildlife crossing structures are proven to enhance habitat connectivity and facilitate wildlife movement under or over North Carolina's roads.

In 2023 the North Carolina Department of Transportation (NCDOT) and the North Carolina Wildlife Resources Commission (NCWRC) entered into a *Wildlife Stewardship Memorandum of Understanding (MOU)* that is intended to foster and enhance communication and cooperation between the two agencies.

Considerations are expected to include:

- Cooperative project planning and coordination
- Public Safety
- Maintenance and expansion of habitat connectivity and wildlife habitat conservation
- Inventory, monitoring, and biological studies
- Impacts on wildlife due to vehicles
- Habitat loss due to invasive species
- Maintenance of recreational access
- Information and education
- Conflict resolution

The MOU identified this guidance document as a necessary tool to help facilitate communication and stewardship related to terrestrial wildlife passage. It is a living document; updates will be made as new information, techniques, and technologies are developed. This guidance is based on many years of study, implementation, observational data collection, and peer-reviewed reports and literature, as cited. For further information, you may contact: NCDOT's Environmental Policy Unit or Environmental Analysis Unit's Biological Surveys Group at epu@ncdot.gov or bsg@ncdot.gov and WRC's Eastern Habitat Coordinator, Travis Wilson at travis.wilson@ncwildlife.org or the Western Habitat Coordinator, Dave McHenry at david.mchenry@ncwildlife.org. (Note, this guidance also complements and should be used in conjunction with existing guidance for aquatic organism passage included in *NCDOT Guidelines for Drainage Studies and Hydraulic Design*.)

Background

The NCDOT and NCWRC have collaborated to construct numerous wildlife crossings of highway corridors statewide. NCWRC monitoring has shown that these properly planned and implemented dedicated wildlife crossings are effective in North Carolina. Dedicated crossings are costly and thus are typically focused on priority wildlife habitats, species conservation needs, and/or identified safety concerns. However, adding dry passage and other design modifications to bridge and culvert replacement projects can also provide opportunistic wildlife habitat connectivity on a much broader scale.

Many of North Carolina's 18,000 bridges and culverts already accommodate wildlife movements. Extending dry, clear passage areas under a bridge or improving a culvert crossing during replacement is the most cost-effective and practical method to connect wildlife habitats statewide. The addition of wildlife fencing can significantly improve the effectiveness of wildlife crossing structures. NCDOT and NCWRC have developed standard design features for bridges and culverts, including some lower or no cost considerations, as described in greater detail herein. Both agencies will educate staff and partners to better integrate wildlife passage into routine bridge and roadway designs for North Carolina highways. A multi-disciplinary approach has been proven to result in our most effective wildlife passage success stories, so both agencies strive to include an array of expertise for any wildlife crossing decision-making. For example,

when NCDOT’s hydraulic engineers are considering increased capacity in a culvert system, an opportunity arises for wildlife passage to also benefit from that needed floodplain capacity.

Animal-Vehicle Collision Data

NCDOT and NCWRC are continually improving the collection of wildlife-vehicle mortality data to help assess the need for warning signs, crossing structures, fencing, and other mitigative efforts (Figure 1). Reported animal-vehicle collision (AVC) data are available and may support mitigation measures for some projects¹. North Carolina had over 20,000 reportable AVCs including four fatalities in 2022, (NCDOT 2020-2022). The estimated comprehensive crash costs for all of North Carolina’s 2022 AVC is \$486,000,000 (based on NC Standardized Crash Cost 2022). Carcass removal data from other states has documented actual AVC occurrences more than five times greater (in Utah study) and nine times greater (in Virginia study) than the accident-reported AVC numbers (Olson, 2013; Donaldson & Lafon, 2008). Applying the most conservative correction factor to reportable AVC suggests there are closer to 100,000 large AVC occurring annually in North Carolina.



Figure 1 Wildlife warning on I-26 West, Madison County.

Techniques for Enhancing Design for Wildlife Passage

Increasing hydraulic capacity often results in larger structures that provide better habitat connectivity. Bridges typically provide more span length and opening than culverts and thus often better accommodate movements of a broader range of wildlife species. In-kind bridge-to-bridge replacements or culvert-to-bridge replacements should be evaluated on streams with frequent wildlife usage, such as along high-quality habitats and contiguous riparian corridors. In high-quality habitats, such as large floodplain wetlands, if sloping abutments preclude the ability to provide clear floodplain or streambank benches under the structure then bridge span should be increased or vertical abutments used. For single pipe or box culvert crossings, widths that allow bedload retention and floodplain/streambank construction should be pursued while also maintaining a natural stream channel width. Maintenance of a natural stream width may require notched sills or baffles, per NCDOT [Guidelines For Drainage Studies](#) (Figures 2 and 3). Where practical, high-flow floodplain barrels should be added to hydraulic crossings to provide dry passage areas

¹ Reportable crashes are those that involve injury or meet the \$1,000 property damage threshold.

for terrestrial wildlife; these would supplement the hydraulic design capacity and help to maintain the stream's baseflow channel dimensions for aquatic passage through the primary barrel(s) (Figures 4 and 5).



Figures 2 and 3. Wide corrugated metal pipe (Wayne County, SR 1300, Unnamed Tributary) retaining bedload (left) and aluminum box culvert (Transylvania County, #870163, North Prong Glade Creek) with notched sills and baffles buried by bedload (right, note partially exposed sill in photo right).

Benching

Floodplain or approach benches must be constructed to transition high-flow culvert barrels or dry benching in or under single pipes, boxes, or bridges, into the stream banks upstream and downstream of the structure (Figures 4 and 5). This will encourage wildlife use by creating unobstructed habitat connectivity under the roadway. Bank sloping may be required on incised stream channels to transition the floodplain or lower dry ground elevation down to the bench elevations (Figure 4).



Figures 4 and 5. Benching into box culvert (left, Transylvania County, #870012, Hogsed Creek) and benching with bank sloping (right, Mecklenburg, I-485 vicinity, unnamed tributary).



Rip Rap / Armoring

Full armoring of streambanks or sloping abutments can deter passage of wildlife that move along stream corridors, and it can encourage wildlife to attempt at grade road crossings. Widespread use of riprap creates barriers to wildlife movement; riprap should be avoided where effective soil stabilization can be achieved with vegetation. Where armoring must be used, the following guidance will enhance habitat connectivity.

1. Avoid the use of rip rap under new bridges if not needed for scour protection or slope stabilization (Figures 6-8). Unarmored stream banks under bridges often remain stable without matting or any stabilizing treatments (observations by NCWRC and NCDOT staff). Some situations such as a sharp channel meander may warrant armoring the outside of the meander while leaving the opposing bank unarmored to allow unobstructed wildlife passage.
2. Where plating is used, incorporate a rip rap-free area in the excavated slopes, or construct a path over the rip rap using aggregate, coarse stone, or floodplain material that eliminates voids and creates a flat surface (Figures 9, 10, and 11). (Note, topping treatments are not expected to be maintained post-construction due to access limitations. The fine materials will often accumulate over time naturally due to sediment deposition during floods.)
3. Where possible, rip rap should be keyed-in or embedded below grade before overfilling with native material or aggregate, as approved (Figures 12 and 13).
4. Rip rap used for floodplain benching and as backfill inside dry culvert barrels should be topped with native streambed/floodplain material to reduce roughness and rip rap voids that can deter wildlife use. (Figures 3 and 14). This is consistent with current NCDOT Guidelines for Drainage Studies and Hydraulic Design. Exceptions may include stream systems with heavy sediment loads, such as urban streams, that will fill in rip rap voids quickly during flood events. The construction engineer and environmental staff should approve all materials used.
5. The portions of lateral ditches that are armored and that cross floodplains should be topped to fill in voids similar to floodplain benching and dry culvert barrels to make it traversable for wildlife.
6. Erosion control matting with nylon mesh needs to be avoided on benches, or anywhere in riparian areas according to standard Division of Water Resources General Certification conditions, due to the entanglement hazard it poses for wildlife.

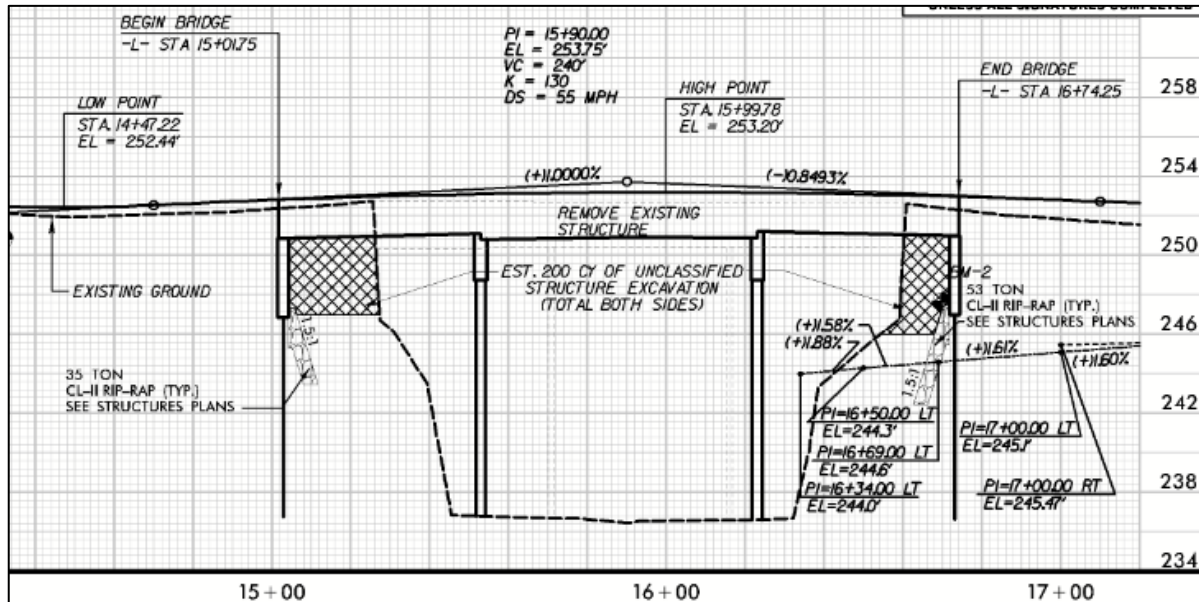


Figure 6. Unarmored slopes on proposed Anson bridge #030217 over Lanes Creek.



Figures 7 and 8. Unarmored floodplains under bridge in Iredell County (left, #480212, Patterson Creek) and large bridge in Stokes County (right, #840008, Dan River).

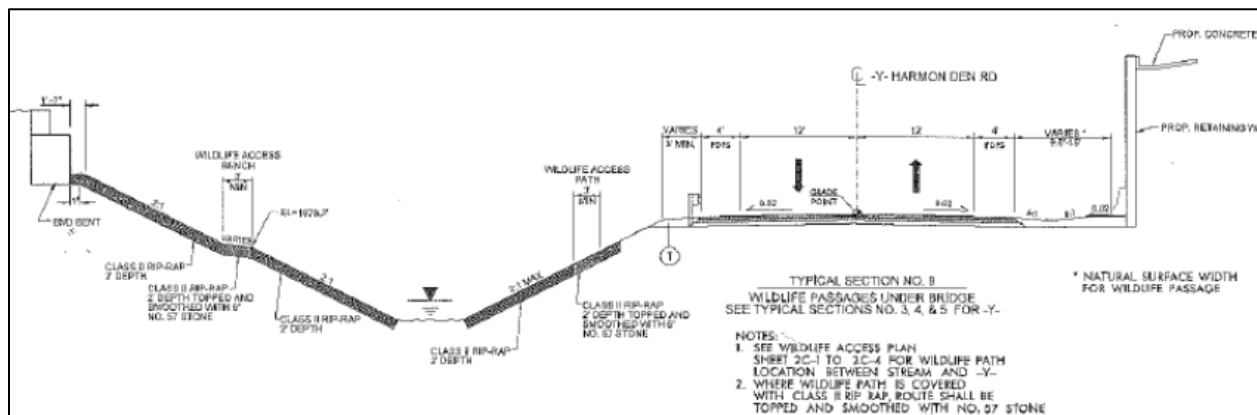


Figure 9. Wildlife pathway detail over rip rap (B-6054A, Haywood #430057)



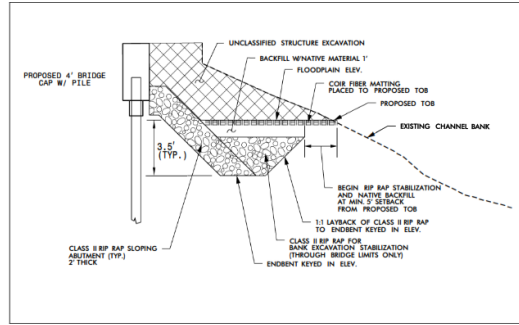
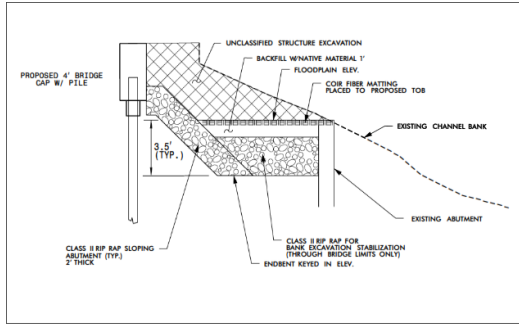
Figure 10. Wildlife pathway or "bench" as built from Figure 9.



Figure 11 Eno River bench, Orange County, NC.

BRIDGE FLOODPLAIN EXCAVATION STABILIZATION DETAIL

PROJECT REFERENCE NO.	SHEET NO.
REV. SHEET NO.	
DESIGNED BY	CHECKED BY
ENGINEER	ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



DETAIL NOTES:

1. FOR USE WHERE EXISTING ABUTMENTS AND BULKHEADS ARE NOT TO BE COMPLETELY REMOVED
2. EXCAVATE TO FLOODPLAIN ELEVATION AS SPECIFIED ON PRELIMINARY GENERAL DRAWINGS
3. FLOODPLAIN STABILIZATION TO BEGIN WITH A 5' MINIMUM SETBACK FROM PROPOSED TOB
4. FOR ALL LOCATIONS OF CLASS II RIPRAP, FILL VOIDS WITH CLASS B RIP RAP
5. COIR FIBER MATTING TO BE INSTALLED OVER LIMITS OF FLOODPLAIN EXCAVATION AND AREAS BACKFILLED WITH NATIVE MATERIAL

DETAIL NOTES:

1. FOR USE WHERE EXISTING ABUTMENTS AND BULKHEADS ARE TO BE COMPLETELY REMOVED
2. EXCAVATE TO FLOODPLAIN ELEVATION AS SPECIFIED ON PRELIMINARY GENERAL DRAWINGS
3. FLOODPLAIN STABILIZATION TO BEGIN WITH A 5' MINIMUM SETBACK FROM PROPOSED TOB
4. FOR ALL LOCATIONS OF CLASS II RIPRAP, FILL VOIDS WITH CLASS B RIP RAP
5. COIR FIBER MATTING TO BE INSTALLED OVER LIMITS OF FLOODPLAIN EXCAVATION AND AREAS BACKFILLED WITH NATIVE MATERIAL

Figure 12. Rip rap embedment detail for floodplain stabilization.



Figure 13. Construction of bench over embedded rip rap (Edgecombe County, # 320113, Otter Creek).



Figure 14. Native material backfilled over rip rap in aluminum box culvert (Henderson County, #440073, Greer Creek).

Dedicated Wildlife Crossing Design

The NCDOT is responsible for managing public funds while addressing an increasing number and complexity of regulatory and planning considerations to deliver transportation projects. The NCWRC is similarly charged with ensuring public funds are used for conservation priorities and objectives. Cost-benefit analysis of safety/habitat connectivity measures must validate the extra costs associated with providing habitat connectivity/safety measures.

Projects specifically identified for conservation needs or vehicle collision reduction will be planned and developed in accordance with the 2023 Wildlife Stewardship MOU under established procedures (e.g., NEPA/SEPA scoping, NEPA/404 merger). Such projects typically involve new roadways or upgrades to existing roadways including widening, areas with legacy conservation needs, and/or roadways where AVC issues have increased or developed over time. Available wildlife population and habitat information, wildlife mortality rates, cost-benefit analyses, and other pertinent supporting information will be collectively considered where these dedicated wildlife passage accommodations are pursued for either safety and/or conservation. The NCWRC has been monitoring wildlife crossing structures to collect data to assure the effectiveness of structures and help guide future project decisions. This monitoring will continue in accordance with the MOU.

Structure Types and Objectives

There are several dedicated wildlife crossing structures in North Carolina with different designs and objectives. Large wildlife crossing structures can be overpasses or underpasses that allow wildlife to travel over/under the roadway using a grade-separated bridge or culvert (Figures 15 and 16). North Carolina has constructed several successful wildlife underpasses that provide habitat connectivity for a full range of wildlife species. By contrast, site-specific or species-specific crossings will typically cover a much smaller area and may only utilize small crossing structures (Figure 17). Structures intended to promote ecological connectivity should provide both the ability to pass large mammals as well as small mammals, reptiles, and amphibians. Connectivity projects will often include multiple structures providing better habitat connectivity and conservation value, particularly for small and/or range-limited species.



Figure 15. Wildlife underpass on US 64 in Washington County.



Figure 16. Wildlife underpass on US 17 in Jones County for connecting habitat for a range of species.

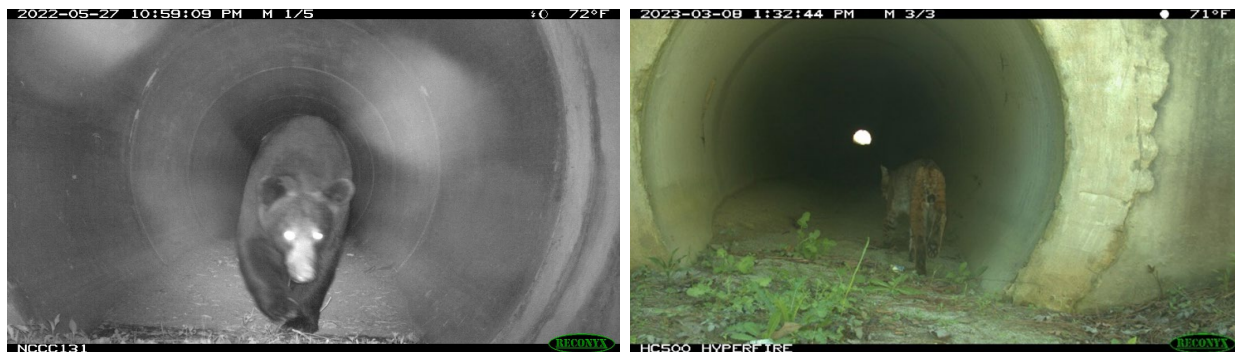


Figure 17. Culvert designed for small and medium animal passage on EF Middleton Blvd. Brunswick County.

Culverts

Culverts offer a wide range of designs and sizes to provide passage for small and medium species with some larger species commonly using them as well (Figure 18). When incorporating culverts for wildlife passages the following key design features are important and should be evaluated:

1. Align culverts to provide a clear line of sight through the structure (Figure 19)
2. Backfill culverts with a natural substrate.
3. Incorporate grates in the culvert to allow light and acclimatization to outside conditions (Figure 20)
4. Elevate grates and properly grade culvert approaches to prevent concentrated stormwater from entering the crossing structure. In some cases, specialized crossing structures such as full open grate structures may be necessary to effectively provide wildlife passage (Figure 21).



Figures 18 and 19. Bear in culvert, US 17 Wildlife Crossing Jones County (left), and daylight visible through culvert, US 17 Wildlife Crossing Jones County.



Figures 20 and 21. Grate in median of wildlife culvert, EF Middleton Blvd Brunswick County (left) and open grate crossing Ashe County.

Wildlife Fencing

Providing appropriate wildlife crossings with wildlife fences is a proven effective measure to reduce AVC. Fencing both provides a mechanism for excluding wildlife from the roadway corridor as well as directing wildlife toward a viable crossing location. Studies conducted within North Carolina and across North America have documented a reduction of AVC from 58% - 98.5% (NC US 64 wildlife 58% McCollister and Van Manen, 2010), (Utah I-15 deer 98.5% Bissonette and Rosa, 2012), (Trans-Canada Highway wildlife 80% Clevenger et al., 2001), (Arizona Preacher Canyon elk Dodd and Gagnon, 2008). Although traffic levels, road characteristics, and wildlife habitat vary considerably, review of NCDOT 2020-2022's AVC data shows wildlife crossings and fencing installed for I-140 in Brunswick County have reduced AVC on I-140 by 75% compared to a nearby unfenced stretch of US 17, and 50% for stretches of US 64. NCDOT's standard wildlife fencing details (866.07 Wildlife Fence with Chain Link & 866.08 Wildlife Fence for Rocky Soils with Chain Link) are designed for large mammals and smaller species with options to accommodate various terrains and durability needs. (Figure 22), When using wildlife fencing it should always be incorporated in conjunction with a crossing structure (Figures 23 and 24). Wildlife fencing without an appropriate wildlife crossing structure will increase habitat fragmentation. The fencing intends to exclude wildlife access to a roadway while also increasing the effective area of the structure. The design of wildlife fencing should complement the structure size and target species. For large mammal crossings, taller heavy fencing extending up to a few miles would be appropriate, while a crossing for reptiles and amphibians may be only 2-3 feet in height and relatively short as determined by habitat and species range. There are multiple options suitable for reptile and amphibian fencing. Considerations such as species, habitat, and fire frequency should be considered when determining the appropriate fence. Fence options include concrete or aluminum headwalls, small mesh wire fences, as well as specialized products marketed for reptiles/amphibians.

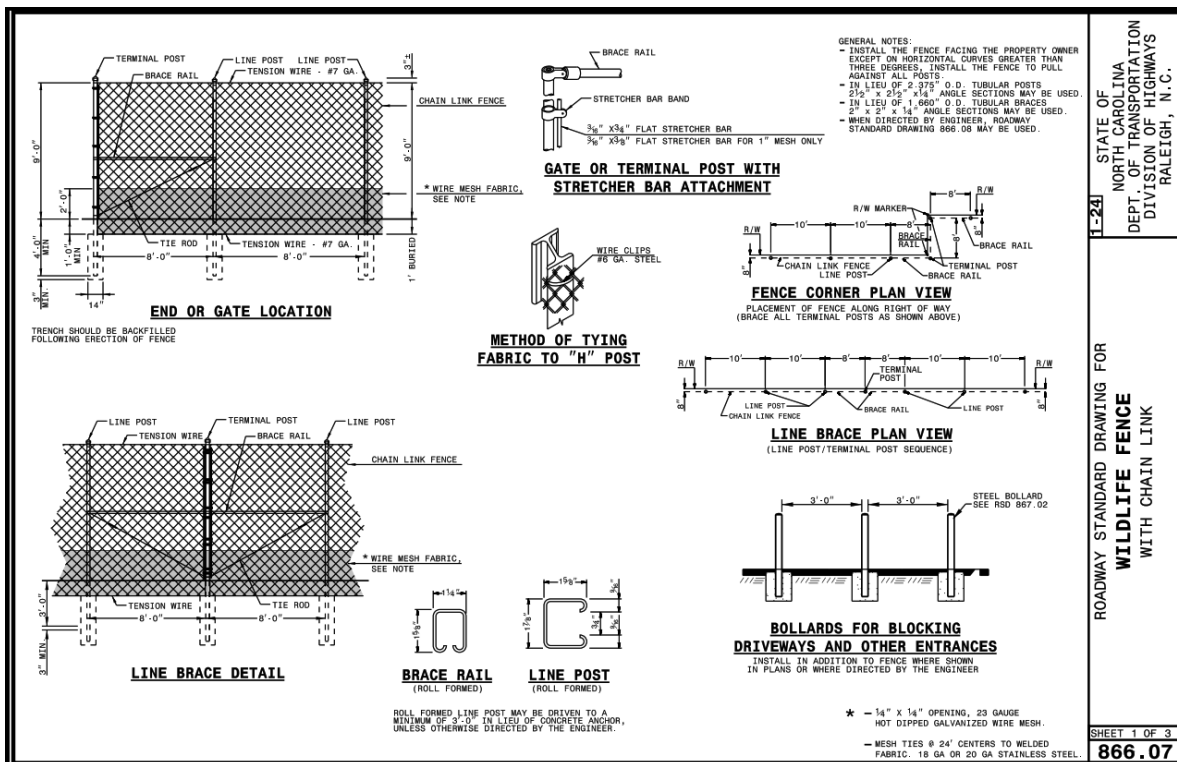


Figure 22. Wildlife fence standard detail (866.07).

Many factors must be considered with wildlife fencing such as terrain, private property, access points, ditch crossings, gates, maintenance, controlled access fence connections, etc. Gaps and openings in fences

create pathways for wildlife to access the roadside of the fencing therefore greatly reducing the effectiveness of the fence and risking AVCs. For NCDOT to properly provide maintenance, the fence should be placed within the limits of the right-of-way or permanent easement. Slope considerations should evaluate both the positive and negative effects of the slope alignment. A higher terrain on the roadside of the fence (Figures 23 and 24) that can provide a jump out for larger species such as white-tailed deer. Conversely, higher terrain outside the fence increases the possibility of wildlife jumping over the fence into the roadway.



Figures 23 and 24. Woven-wire wildlife fence run (left) and tie into crossing structure (right). US 17 Jones County

Greenway and Trail Considerations

The combined presence of greenways or trails providing wildlife passage is a common consideration. The two are not mutually exclusive; however, multiple factors need to be considered in these circumstances. Foremost is how the presence of people using the structure can shift the amount, timing, and type of usage by wildlife. How significant that shift is will vary depending on the type of trail and trail activity. For example, a high-use urban greenway will have a more significant impact on wildlife usage than a rural portion of the Mountains to Sea trail. When looking at trail type in conjunction with the wildlife passage objective, a busier more developed trail should provide physical separation from the wildlife corridor to the maximum extent practicable while also providing vegetated screening. This approach will help ensure the wildlife corridor will accommodate a broader range of wildlife species.

A designed wildlife bench or crossing may look very attractive in the future to use as part of a trail corridor. For this reason, it is important to document the original intent of the wildlife passage and consider the above factors when considering a trail addition.



Maintenance of Crossing Structures

In most cases wildlife crossing measures will not include maintenance beyond what NCDOT typically incurs for a standard structure; however, there are a couple of significant exceptions that are paramount to supporting the investment made in the crossing. These include:

1. Vegetation maintenance within a wildlife crossing should be coordinated with NCDOT environmental staff and/or NCWRC prior to cutting or spraying. Uncoordinated clearing activities have resulted in crossings being blocked or filled by brush often covering existing wildlife trails. Vegetation management is necessary for both NCDOT right-of-way maintenance and the success of the wildlife crossing. Vegetation management activities are typically more frequent in the earlier years post-construction until a suitable vegetation structure and setback are established.
2. Wildlife fence maintenance will insure both the integrity and longevity of the fence. Vegetation can easily grow through and over a fence eventually stressing the fence. Right-of-way setbacks and routine vegetation management around the fence can reduce problems, increase the life of the fence, and allow easy visual inspection from the roadway. Gaps in the fence that develop from tree falls, vehicle crashes, etc. should be repaired as soon as possible. Wildlife will quickly find new gaps in the fence and access the roadway, significantly increasing the likelihood of a wildlife-vehicle collision.
3. It is also important to coordinate with NCWRC on all projects adjacent to wildlife crossings to ensure the activities will not impact the effectiveness of the structure. Even inconspicuous projects (highway lighting, emergency management signs, utility work, access breaks, etc.) could have adverse effects on wildlife use of a crossing structure.



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MEMORANDUM OF UNDERSTANDING
BETWEEN
THE NORTH CAROLINA WILDLIFE RESOURCES COMMISSION
AND
THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

This Memorandum of Understanding (“MOU”) is made and entered into on the last date executed below, by and between the North Carolina Department of Transportation, an agency of the State of North Carolina, hereinafter referred to as “NCDOT” and the North Carolina Wildlife Resources Commission, an agency of the State of North Carolina, hereinafter referred to as “NCWRC”. The NCDOT and the NCWRC are referred to herein individually as “Party” and collectively as “the Parties.”

This MOU is intended to foster and enhance stewardship through communication and cooperative projects between the two agencies including, but not limited to, the following categories: cooperative project planning and coordination; public safety; maintenance and expansion of habitat connectivity and wildlife habitat conservation; inventory, monitoring, and biological studies; impacts to wildlife due to vehicles; habitat loss due to invasive species; maintenance of recreational access; information and education; and conflict resolution.

WHEREAS, NCWRC has statewide responsibility for the conservation and management of all wildlife resources in the State of North Carolina.

WHEREAS, NCDOT is responsible for connecting people, products, and places safely and efficiently with customer focus, accountability, and environmental sensitivity to enhance the economy and vitality of North Carolina.

WHEREAS, NCDOT provides funding for two NCWRC liaison staff via a reimbursement agreement, most recently renewed for a 5-year term in 2022.

WHEREAS, the Parties recognize and encourage a continued commitment to developing this working relationship because of the projected increase in population and consequent demand for movement of goods, services, and people in North Carolina and the impacts highways have on North Carolina’s wildlife and environment.

WHEREAS, vehicle mobility and wildlife conservation benefits are both State priorities and are the focus of this MOU.

NOW, THEREFORE, the parties hereto, each in consideration of the promises and undertakings of the other as herein provided, do hereby covenant and agree, each with the other, as follows:

ROLES AND RESPONSIBILITIES

1. NCWRC agrees:

- A. To make available to NCDOT its biological expertise, knowledge, and applicable data for consulting on highway/wildlife issues, identifying important conservation areas, planning highways, determining key areas of habitat connectivity, evaluating methods and means of mitigating highway effects on wildlife, and monitoring of the effectiveness of wildlife mitigation measures.
- B. To cooperate with NCDOT by having appropriate staff coordinate with NCDOT through long-range planning, project development, design, construction, and operations to identify concerns about impacts to wildlife and habitats, and motorists and produce effective guidance/feedback for wildlife and habitat mitigation pertaining to the safety of motorists and wildlife survivability.
- C. To analyze and provide supporting conservation information for the identification and prioritization of existing and targeted wildlife passage areas, which will aid project pursuits via conventional or grant funding by either of the Parties.

2. NCDOT agrees:

- A. To collaborate with NCWRC liaisons throughout long-range planning, project development, design, construction, and operations.
- B. To implement practicable recommendations made by NCWRC regarding effective wildlife techniques, designs, and processes that affect NCDOT facilities and resources.
- C. To explore stewardship guidance for inspection and long-term maintenance of wildlife passage structures/fencing when incorporated into a transportation project as an avoidance, minimization, or mitigation measure; and to explore potential funding mechanisms for the aforementioned inspection and long-term maintenance.
- D. To consider effects to existing wildlife passage structures/fencing prior to any future NCDOT activities that could impact wildlife usage of the structures/fencing.
- E. To create, manage, and utilize in project development processes a GIS dataset to include the following: all existing and proposed wildlife passage structures and fencing, targeted high priority wildlife corridors, and aquatic barriers.
- F. To provide applicable datasets to NCWRC and other parties (RPOs/MPOs, federal agency partners, etc.) for long-range planning and project development purposes.

3. The Parties mutually agree:

- A. To cooperatively seek to make highways less hazardous for wildlife and lessen the impact highways have on important habitats and ensure maximum benefit and consideration for mitigation efforts that promote wildlife habitat conservation and connectivity.
- B. To further develop methods for evaluating the success of wildlife mitigation measures, including monitoring crossing structures and fences to determine their effectiveness in facilitating wildlife passage.
- C. To create a wildlife vehicle collision data collection tool to be developed and implemented in the NCDOT GONC platform that will be made jointly available for encouraged use and contribution by both Parties (and possibly others) for traffic safety and conservation project evaluations. The tool will build upon existing data, with both Parties collaboratively defining pertinent locations of wildlife/vehicle conflict to develop means to quantify, prioritize, and minimize or eliminate these conflict locations. All efforts shall be made to make this data sharing platform available in the form of a mobile application.
- D. To cooperate on investigations of endemic or emerging wildlife diseases utilizing samples from road killed wildlife and to ensure sanitary disposal of carcasses.
- E. To develop effective and efficient passage structures and associated barriers for various species of wildlife to make highways less hazardous for motorists and wildlife while minimizing effects of habitat fragmentation.
- F. To jointly develop a “Wildlife Passage Guidance” document that will aid in the familiarity and incorporation of standard prescriptions for highway projects.
- G. To work together to investigate avenues to minimize highway impacts to federally-listed and other sensitive species, and their habitats.
- H. To collaborate on news releases, submission of grant or award applications, and other external communications affecting the agencies’ collective responsibilities to promote wildlife habitat conservation and connectivity.
- I. To cooperate during transportation long-range planning, project development, and operations for NCWRC to provide substantive wildlife resource recommendations to NCDOT.
- J. To utilize our mutual understanding of each other’s missions, goals, and objectives to seek opportunities and funding for cooperative projects and activities dealing with highway/wildlife issues.
- K. To meet annually, or more frequently as needed, to discuss matters affecting this MOU, including, but not limited to: (a) evaluating the coordination process; (b) discussing current and future NCDOT project planning, development and operations activities; (c) identifying cooperative work and priorities for the coming year; (d) evaluating the resulting partnership; (e) discuss needs, actions, and priorities associated with this MOU; and (f) determining whether the MOU should be maintained as is or be modified.

4. Conflict Resolution:

The NCWRC and NCDOT agree to work cooperatively to minimize conflicts in the implementation of this MOU. Where an impasse has been reached, each Party agrees to involve relevant agency management as necessary to resolve the conflict as quickly as possible.

5. Effective Date and Duration:

The Agreement becomes effective the date of execution and remains in effect for five (5) years, or until cancelled by either party as described herein. It shall automatically extend for an additional five (5) years if not terminated or otherwise modified.

6. Termination Generally:

- A. In the event either party to this MOU should choose to withdraw from this Agreement, written notification must be given to the other entity thirty (30) days prior to withdrawal. Basis for termination shall be as follows:
 - a. Either party may give notice not to extend this MOU prior to the date of auto-renewal.
 - b. Notwithstanding the foregoing or any other provision of this Agreement, failure on the part of either party to comply with any provisions included in the Agreement or subsequently approved will be grounds for the other party to terminate its participation in this Agreement.

7. Notices:

All written notices concerning this MOU shall be delivered via email or sent by certified mail, return receipt requested to the parties as follows:

- A. NCWRC:
David R. Cox, Supervisor
Habitat Conservation Division
NCWRC – Rogers Depot
1718 Hwy 56 West
Creedmoor, NC 27522
Travis.Wilson@ncwildlife.org
- B. NCDOT:
Marissa Cox, Group Leader
NCDOT EAU Biological Surveys Group
1598 Mail Service Center
Raleigh, North Carolina 27699-1598
mrcox@ncdot.gov

The parties may update the contact information as necessary; such approved changes will not necessitate a formal amendment to this MOU.

ADDITIONAL PROVISIONS

1. Non-discrimination: In carrying out the terms of this MOU, the Parties agree to comply with N.C. Gen. Stat. 125-16, prohibiting discrimination in employment, the provisions of which are incorporated herein.
2. Records Retention: All Parties are subject to North Carolina record retention statutes regarding all books, reports, files, electronic data, and other records relating to this MOU. Upon request, the Parties shall produce copies of all such records.
3. Other Agreements: This MOU in no way restricts either Party from participating in similar activities with other public or private agencies, organizations, or individuals.
4. Compliance with Applicable Law: All work performed pursuant to this MOU shall be in compliance with all applicable State and Federal laws and regulations.
5. Integration: This MOU constitutes the entire agreement between the Parties pertaining to the subject matter herein and accurately sets forth the rights, duties, and obligations of each Party. All prior or contemporaneous agreements and understandings, oral or written, are hereby superseded, and merged herein. The provisions of this MOU may be abrogated, modified, rescinded, or amended in whole or in part only by mutual written consent executed by the Parties.
6. Severability: In the event that any provision of this MOU or portion thereof is held invalid, illegal, or unenforceable, such provision or portion thereof shall be severed from this MOU and shall have no effect on the remaining provisions of this MOU, which shall remain in full force and effect.
7. This MOU may be amended by the mutual agreement of both parties. Any amendments shall be in writing and signed by both parties.
8. This MOU contains the entire agreement between the parties and there are no understandings or agreements, verbal or otherwise, regarding this Agreement except as expressly set forth herein.
9. This Agreement and any documents incorporated specifically by reference represent the entire Agreement between the parties and supersede all prior oral or written statements or Agreements.
10. A copy, facsimile copy, or digitally signed copy of the signature of any party shall be deemed an original with each fully executed copy of this Agreement as binding as an original, and the parties agree that this Agreement can be executed in counterparts, as duplicate originals, with facsimile signatures sufficient to evidence an agreement to be bound by the terms of this Agreement.
11. This MOU is intended as guidance and does not authorize funding or project effort, nor is it legally binding on or enforceable against the parties.

IN WITNESS WHEREOF, this Agreement has been executed, in duplicate, the day and year heretofore set out, on the part of NCDOT and NCWRC by authority duly given.

NC DEPARTMENT OF TRANSPORTATION

BY:

TITLE:

DATE:

NC WILDLIFE RESOURCES COMMISSION

BY:

TITLE:

DATE: