NCDOT Technical Services Division

Division of Highways

- Environmental Analysis Unit
- Environmental Policy Unit
- Geotechnical Engineering Unit
- Hydraulics Unit
- Location and Surveys Unit
- Photogrammetry Unit
- Professional Services Management Unit
- Project Management Unit
- Roadway Design Unit
- Utilities Unit

Prepared by NCDOT
Technical Services Office

Launch Your Career With

NCDOT TECHNICAL SERVICES

NCDOT's Technical Services Division offers specialized knowledge and high-value services in a wide range of disciplines supporting transportation infrastructure, the environment and the public.

Opportunities for high school and college graduates abound, in careers ranging from biologists to engineers.

Join one of our units and work on the cutting edge of delivering North Carolina's transportation needs.

Pursue your passion while earning excellent pay and benefits, confident that the stability of state government employment provides a place you can learn, grow and thrive professionally.

Specialty Areas

Technical Services units work in these diverse areas.

Environmental Analysis – supporting development of sustainable transportation infrastructure that minimizes environmental and cultural impacts.

Environmental Policy – ensuring compliance with state and federal environmental policy.

Geotechnical Engineering – advising and supporting projects on all things earth, planning and design through construction and maintenance.

Hydraulics – providing drainage and stormwater guidance and design at every project phase.

Location & Surveys – surveying and mapping services that precede and support land acquisition, infrastructure design and construction.

Photogrammetry – aerial imagery and geospatial information products for planning, design, construction and maintenance.

Professional Services Management – procuring professional and specialty consultant talent for units and projects at all levels and phases.

Project Management – team leaders managing scope, schedule, budget, quality and risk for a broad range of transportation projects.

Roadway Design – providing roadway design guidance, support and plans at every stage of project development.

Utilities – managing permitting, installation and relocation of utilities for NCDOT highways and rights of way.

www.ncdot.gov/divisions/highways/Pages/technical-services.aspx

Questions? Contact Terry Canales, P.E., tcanales@ncdot.gov

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

TECHNICAL SERVICES DIVISION • DIVISION OF HIGHWAYS • NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NCDOT TECHNICAL SERVICES

Employment Opportunities

Build your future working with skilled Technical Services teams shaping North Carolina's transportation future through jobs like these.

Environmental Analysis Unit

- Air Quality and Traffic Noise Engineer
- Archaeologist
- Architectural Historian
- Biologist/Ecologist
- Botanist
- Community Planner
- Design Visualization Specialist
- Engineer (Environmental/Civil)
- Environmental Permit Specialist
- Geospatial Analyst
- Soil/Wetland Scientist
- Wildlife Biologist

Environmental Policy Unit

- Environmental Policy Manager
- Environmental Regulations Specialist

Geotechnical Engineering Unit

- Driller and Driller Helper
- Grouter
- Geoenvironmental Engineer
- Geologist
- Geological Engineer
- Geopavement Engineer
- Geotechnical Engineer

Hydraulics Unit

- Coastal Engineer
- Environmental Scientist
- Hydraulic/Floodplain Modeler
- Hydraulic/Hydrologic Engineer
- GIS Specialist

Location & Surveys Unit

- Bathometric Surveyor (Sonar)
- CADD Mapping Technician
- High Density Laser Surveyor (LiDAR)
- Professional Land Surveyor
- Route Location Surveyor
- Survey Field Technician
- Uncrewed Aircraft Pilot (Drones)

Photogrammetry Unit

- Aerial Image and LiDAR Processor
- Aerial Image Mapper
- Professional Land Surveyor
- Unmanned Aircraft Pilot

Professional Services Management Unit

- Engineer

Project Management Unit

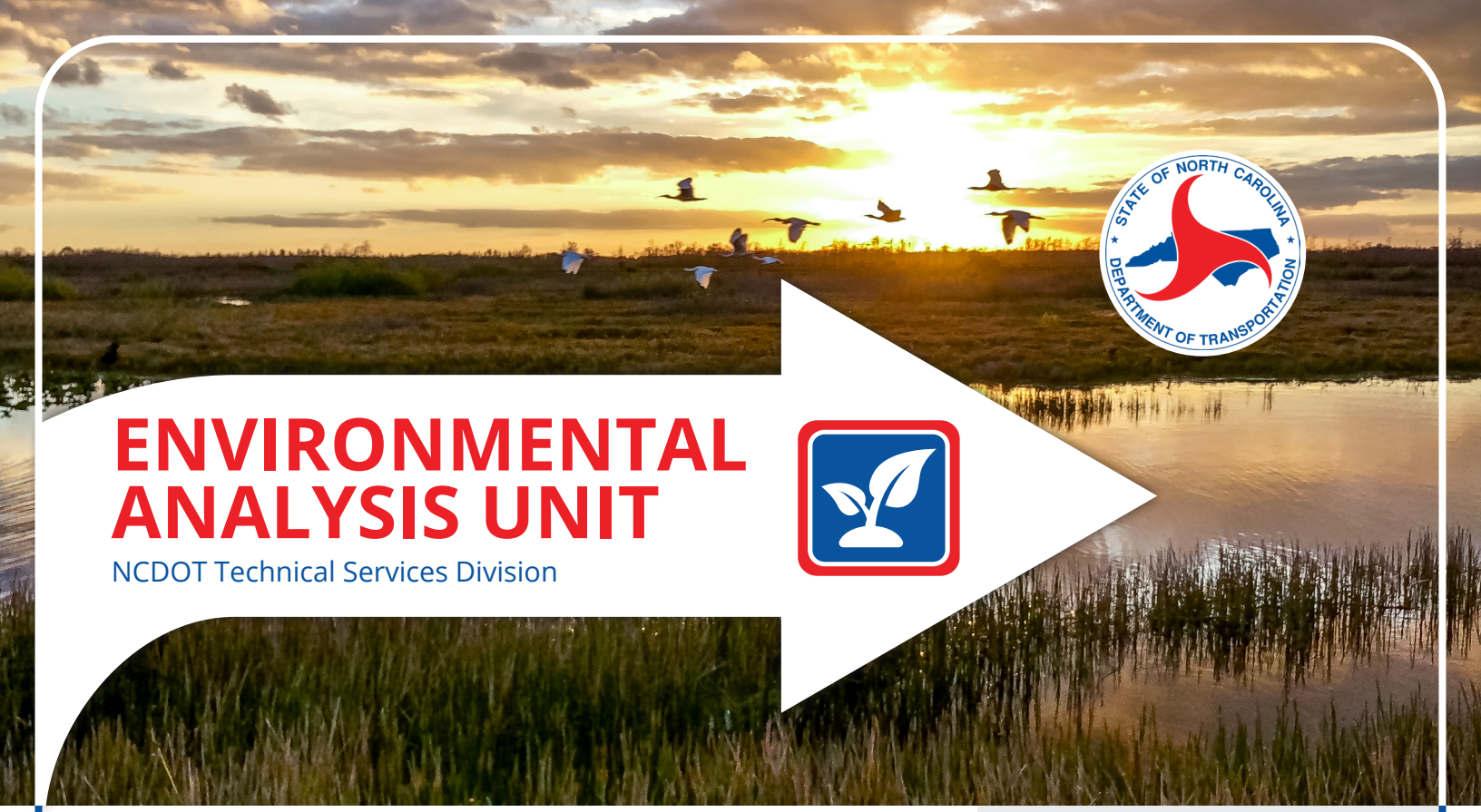
- Project Manager (a wide range of degrees are eligible for project management roles)

Roadway Design Unit

- Engineer
- Lighting/Electrical Engineer

Utilities Unit

- Broadband Coordinator/Engineer
- Encroachment Engineer
- Utility Coordinator
- Utility Engineer



ENVIRONMENTAL ANALYSIS UNIT

NCDOT Technical Services Division

The Environmental Analysis Unit (EAU) is a one-stop shop for supporting development of sustainable transportation infrastructure that minimizes impacts on the human and natural environment.

EAU staff bring broad experience, solid relationships with regulatory agencies and a network of on-call engineering firms that support NCDOT units at every project phase. EAU ensures projects comply with all state and federal regulations, minimize environmental impacts and meet delivery timelines.

In the planning phase, EAU ensures appropriate studies are conducted to determine cultural and environmental impacts. During design, EAU ensures projects minimize environmental impacts and acquire necessary permits from state and federal regulatory agencies.

During construction and beyond, EAU manages permit modifications, as changes occur, and ensures required mitigations are implemented and monitoring conducted.

EAU teams provide guidance, agreements, procedures and templates for streamlined project delivery.

Contact

Contact EAU early in your project to identify steps that can avoid project delays.

Find EAU contacts, policies, procedures, templates and more on the EAU Connect site.

connect.ncdot.gov/resources/Environmental/EAU/Pages/

Services

- Air quality analysis and compliance
- Community studies and impact assessments
- Cultural resources analysis and compliance
- Environmental impact assessment and compliance
- Environmental research and training
- Mitigation planning, design, modeling, monitoring and stewardship
- Permitting coordination
- Public involvement coordination and visualization
- Study scoping, estimates and negotiations with private firms
- Threatened and endangered species surveys, analysis and compliance
- Traffic noise studies and analysis
- Water quality analysis
- Wetland, stream and habitat modeling projects

NCDOT Technical Services Division

ENVIRONMENTAL ANALYSIS UNIT

PROJECT EXAMPLES

ASSESSMENT OF IMPACTS TO CULTURAL RESOURCES

Cultural Resources staff worked to map the archaeological sites and mitigate vibratory effects to an 18th Century grist mill and pond structure during the replacement of a bridge near Yates Mill Pond in Wake County.

MITIGATION OF TRAFFIC NOISE IMPACTS

The Traffic Noise and Air Quality Group oversaw the modeling, analysis and recommendations of 10 noise walls along 13 miles of I-40 widening in Wake County. The group ensured the placement of the walls complied with federal law and state policy while providing a substantial traffic noise reduction for more than 400 homes.

MITIGATION OF JURISDICTIONAL IMPACTS

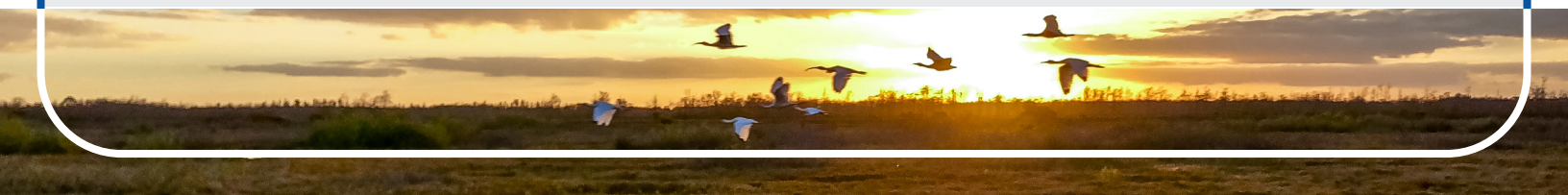
The Mitigation and Modeling Group and Stewardship and Monitoring Group worked with state and federal agencies to develop and implement the Beane Wetland Mitigation Site in New Hanover County. The Beane Site will restore hydrology and native species vegetation in an altered wetland and provide mitigation for jurisdictional impacts associated with the Hampstead Bypass.

STATE AND FEDERAL REGULATORY COORDINATION

The Biological Surveys and Environmental Coordination and Permitting Groups coordinated with state and federal regulatory agencies to thread the Wayah Road bridge replacement design around many environmentally sensitive areas in Macon County. Wayah Road has five crossings of the Nantahala River and is naturally constrained in the Nantahala Gorge. The road must remain open to traffic during construction.

ENGAGING THE PUBLIC

The Public Involvement, Community Studies and Visualization Group held specialized meetings to engage the public for the Kinston By-pass. Staff identified and assisted with outreach to traditionally underserved communities as well as the general public to facilitate understanding and encourage participation in the project selection process.



ENVIRONMENTAL POLICY UNIT

NCDOT Technical Services Division

The Environmental Policy Unit ensures transportation projects comply with all state and federal environments policies and regulations.

As experts in the environmental realm, we bring solid understanding of state and federal environmental laws and regulations, requirements and permitting as they apply to transportation projects and issues.

Our staff develop, interpret, provide guidance and policies, and lead initiatives that enable units to meet and document compliance with national and state environmental policy act (NEPA and SEPA) requirements.

We provide training for NCDOT staff and partners to improve their knowledge of SEPA/NEPA requirements and the processes required for compliance.

We regularly help NCDOT staff and consultants navigate the regulatory complexities and timelines of projects.

We continually innovate policies and initiatives that streamline project delivery.

Contact

EPU@ncdot.gov

Find resources, information and contacts on our Connect site.

connect.ncdot.gov/resources/environmental/epu/pages/

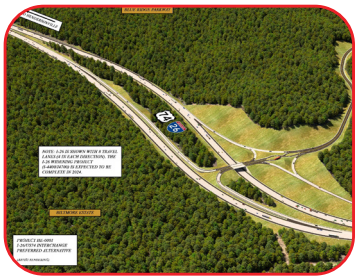
Services

- Advising on environmental best practices
- Agency communication
- Document reviews
- NEPA/404 merger coordination
- Policy interpretation and guidance
- Process improvement
- Project planning
- Project streamlining
- Stakeholder coordination
- Subject matter expertise
- Training

NCDOT Technical Services Division

ENVIRONMENTAL POLICY UNIT

PROJECT EXAMPLES

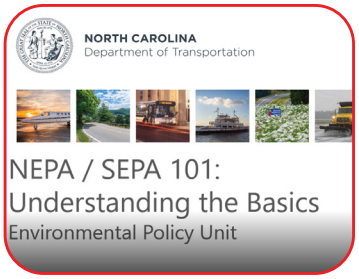


MANAGING COMPLEX CONSTRAINTS AND STAKEHOLDER REQUIREMENTS

Environmental Policy staff worked closely with NCDOT and consultant staff to shepherd the Interstate 26 interchange widening project in Buncombe County through a complex set of environmental constraints, regulatory approvals and its relationship to an economic development project.

PREPARING PERMIT DOCUMENTATION AND SITE ASSESSMENTS

Environmental Policy staff prepared documentation to secure permits required to replace the Interstate 95 bridges over the protected Lumber River in Robeson County, including meeting on-site to assess aesthetic concerns, investigating regulatory requirements and coordinating drainage needs of the National Park Service.



PROVIDING NEPA/SEPA TRAINING

The Environmental Policy Unit developed and offers in-person and online, on-demand training modules for NCDOT staff and consultants covering foundational knowledge about NEPA/SEPA requirements and processes that ensure compliance.

GEOTECHNICAL ENGINEERING UNIT

NCDOT Technical Services Division

The Geotechnical Engineering Unit provides scoping, planning, design, technical expertise and management services related to soil, rock, slopes and foundations for roadway and structure projects.

During the prescoping and document stage, unit staff and their consultant partners identify and map areas of contamination, unsuitable soils, unstable slopes and high groundwater to inform planning.

During planning and preconstruction, they collect subsurface data and provide construction recommendations for roadways, pavement subgrades, bridge and culvert foundations, retaining walls, sound barriers and special ditches for final plans and to help guide right of way limits and acquisition. Other recommendations provided prior to project let are assessments of vibration impacts, infiltration rates of soil for basins, acidic rock, ponds, dam assessment, contaminated soil and groundwater and how to mitigate and manage them.

During construction, unit staff review blasting plans, foundation, retaining wall and other submittals and advise on unexpected issues as they arise.

Contact

Turn to Geotechnical Engineering staff early on for project screening and preconstruction design and through the construction process for expertise, connections to appropriate consultants and assistance.

Visit the unit's Connect site for contact information and resources.

connect.ncdot.gov/resources/geological/pages

Services

- Consultant prequalification
- Contaminant identification and mitigation support
- Encroachment reviews
- Foundation item testing
- Full-depth pavement reclamation investigations
- Geotechnical review of project areas
- Ground subsidence and sink hole repair plans
- Grouting voids and raising slabs
- Infiltration basin studies
- Plan reviews
- Pond surveys and dam investigations
- Retaining wall recommendations and repair plans for failing walls
- Settlement monitoring
- Slope/reinforced slope recommendations
- Stakeholder engagement
- Subgrade and pavement distress improvement recommendations
- Subsurface investigations and construction recommendations
- Vibration impact assessment and mitigation recommendations

NCDOT Technical Services Division

GEOTECHNICAL ENGINEERING UNIT

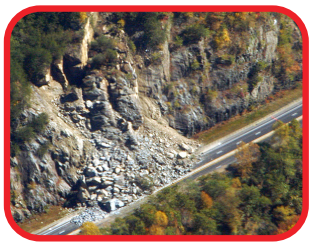
PROJECT EXAMPLES

BLOWING ROCK BYPASS

The Geotechnical Engineering Unit supported Division 11 in designing and constructing the Blowing Rock Bypass, U.S. 321. Decades before, the unit conducted geologic mapping to identify the best corridor. During design and construction of the project, Geotechnical staff designed more than 30 retaining walls, recommended slope steepness and assisted with solutions to mitigate rock and embankment slides, such as temporary rock wall fencing to mitigate risk to traffic during blasting. Unit staff also engaged extensively with local officials, in collaboration with the Environmental Analysis Unit, to ensure the project proceeded successfully and without damage to homes and structures.

GREENVILLE 10TH STREET EXTENSION

Geotechnical Engineering Unit staff supported Division 2 with a project to extend 10th Street in Greenville. In the planning and scoping phase, they identified sites of potential contamination from dry cleaning businesses, gas stations and other businesses and recommended appropriate subgrade for the project. Unit staff conducted site assessments to identify the location and types of soil and groundwater contamination and underground storage tanks and made right of way acquisition recommendations. They managed mitigation of contaminants, including tank and contaminant removal, including securing a consultant design for cleaning contaminated groundwater so it was suitable for sewerage treatment or groundwater runoff.



INTERSTATE 40 LANDSLIDE

The Geotechnical Unit supports divisions managing major land and rock slides, such as the major slide in 2009 that closed Interstate 40 for six months at milepost 2.5 near the Tennessee border. Unit staff designed the repair, adjusting it over time as the project proceeded. They advised on the design of the slope above the road, including the location of nearly 600 anchors required to stabalize it, and recommended testing instrumentation to monitor movement. Their work spanned the entire project, offering recommendations and helping to develop the emergency contract to repair the slide.

HYDRAULICS UNIT

NCDOT Technical Services Division

The Hydraulics Unit provides technical expertise, guidance, design and quality assurance to manage stormwater, riverine and coastal impacts in and around roadways for the protection of the public, the environment and NCDOT assets.

CONVENIENT. We are a one-stop shop for hydrologic and hydraulic studies, technical and legal expertise, and assistance managing all things stormwater, riverine and coastal on transportation projects.

RESPONSIVE. We ensure projects comply with federal laws regulating floodplain development and stormwater discharge and provide rapid, low-cost response for emergency pipe repairs.

KNOWLEDGEABLE. We are heavily engaged in research and development of new and improved methods, tools and guidance for managing water and we maintain a database of historical hydraulic reports and guidelines for drainage studies.

Contact

Email **hydraulics_notify@ncdot.gov** or contact staff directly using our employee directory at **connect.ncdot.gov/resources/hydro/pages/**

Find guidelines and resources for hydraulic design and highway drainage on the Hydraulics Connect site.

connect.ncdot.gov/resources/hydro/pages/

Stay up to date on Hydraulics Unit policies, procedures, innovations, updates and advertisements by signing up for our newsletter.

forms.office.com/g/VeXDGD6PJp

Services

- Bridge and culvert recommendations
- Coastal modeling
- Contracted hydraulic services management
- Design and construction consultation
- Drainage investigation and studies
- Emergency design, scoping and review
- Encroachment/Subdivision review
- Expert testimony
- Flood warning tools
- Floodplain encroachment assistance
- Hydraulic project support
- Hydroplaning analysis
- Permitting assistance
- Project planning and scoping
- Quality control and assurance
- Resiliency studies
- Research assistance
- Risk assessment modeling
- Riverine modeling
- Scour response support
- Stormwater consultation and design
- Training

NCDOT Technical Services Division

HYDRAULICS UNIT

PROJECT EXAMPLES

EMERGENCY RESPONSE

The Hydraulics Unit investigates storm-related washouts, rock slides, sink holes and roadway failures and recommends pipe or bridge replacement(s) and remediation. Our staff prepare hydraulic and hydrology reports required by the Federal Emergency Management Agency (FEMA) and the Federal Highway Administration (FHWA) for eligible reimbursement.

PROJECT DESIGN

The Hydraulics Unit provides hydrological and hydraulic design for State Transportation Improvement (STIP) and Division Design Construct (DDC) projects such as the U-6223, N.C. Highway 42 extension in Johnston County.

RESOLVING CHALLENGING PERMITTING ISSUES

Hydraulics Unit staff provided expertise, crafted permit language and assisted with stream monitoring to keep the Interstate 26 widening project on schedule and mitigate right of way and construction concerns.

STORMWATER RETROFIT

Through the Highway Stormwater Program, the Hydraulics Unit can design and construct stormwater retrofits for sites in and around the right of way that experience nuisance flooding such as this intersection of N.C. 12 and Dogwood Trail in the Town of Southern Shores.

GUIDANCE FOR DRAINAGE STUDIES, HYDRAULIC TOOL DEVELOPMENT AND FLOOD WARNING SYSTEMS

The Hydraulics Unit continuously develops and supports guidance, tools and templates to aid in drainage studies and project delivery. Examples include the new Hydroplaning Assessment Tool, Outfall Analysis Tool, 2D modeling guidance, inundation maps and FIMAN-T.

LOCATION and SURVEYS UNIT

NCDOT Technical Services Division

The Location & Surveys Unit provides engineering and geomatics analysis, surveying, mapping and other data for NCDOT Units and other state agencies that precede and support land acquisition, infrastructure design and construction.

We bring extensive in-house knowledge and experience with state transportation projects and processes. With offices conveniently located in all 14 NCDOT Divisions, we deliver timely response, easy project scoping and streamlined communications.

Location and Surveys staff use the latest technologies and apply best professional engineering and surveying practices consistent with all laws and regulations governing North Carolina's highway system.

Our close working relationship with North Carolina Geodetic Survey and North Carolina Emergency Management streamlines interagency coordination. We maintain limited-service agreements with private engineering firms that can support your projects.

Call on Location and Surveys for support with every project phase, from early project planning through design process, right-of- way acquisition and construction.

Contact

LocationSurveysContactUs@ncdot.gov
(919) 707-6800

connect.ncdot.gov/resources/location/pages/

Services

- Aerial mapping, video, photography, assessments
- Base mapping
- Deed descriptions
- Digital terrain models
- Geodetic network controls
- Hydrographic surveys
- LiDAR surveys
- Localized horizontal and vertical project control
- MAP Act exhibits
- Photogrammetric controls
- Preliminary design surveys
- Property condemnation maps
- Right of way staking/ monumentation
- Right of way plan sets
- Sonar/Bathymetric surveys

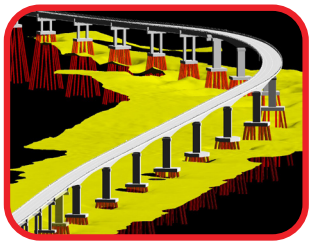
NCDOT Technical Services Division

LOCATION AND SURVEYS UNIT

PROJECT EXAMPLES

FULL SURVEYS OF LARGE ECONOMIC DEVELOPMENT PROJECT SITES

L&S's Central Region developed full surveys of a 300-acre parcel of land at Piedmont Triad International Airport selected by Boom Supersonic for its aircraft manufacturing facility three months after the project kickoff meeting to meet an accelerated timeline. The full surveys used photogrammetry, QL2 LiDAR, unmanned aerial vehicle technology, mobile LiDAR and conventional survey methods to survey the parcel, which included 29 lane miles of interstate roadway, 44 properties, 150 drainage structures, 1.5 miles of creeks, wetlands and underground utilities.



3D IMAGING AND BATHYMETRIC SURFACE MODELING OF MARINE ENVIRONMENTS

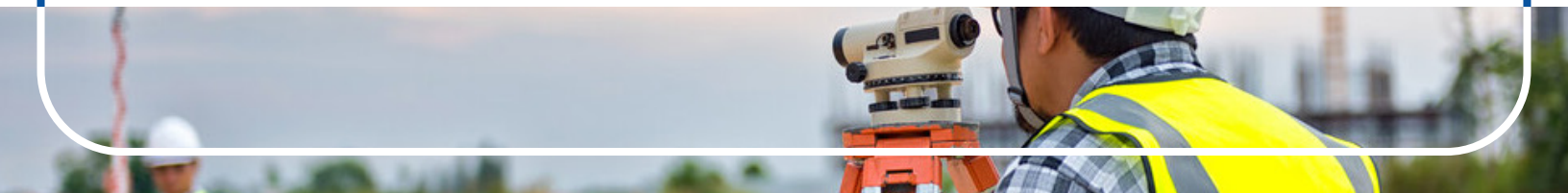
L&S's East Region used mobile, terrestrial and marine LiDAR to develop a three-dimensional view of the dynamic scouring environment around the Basnight Bridge at Oregon Inlet and its effect on the structure's individual pile embedment. A bathymetric surface model was developed using sonar technology aboard the team's 25-foot sonar vessel.

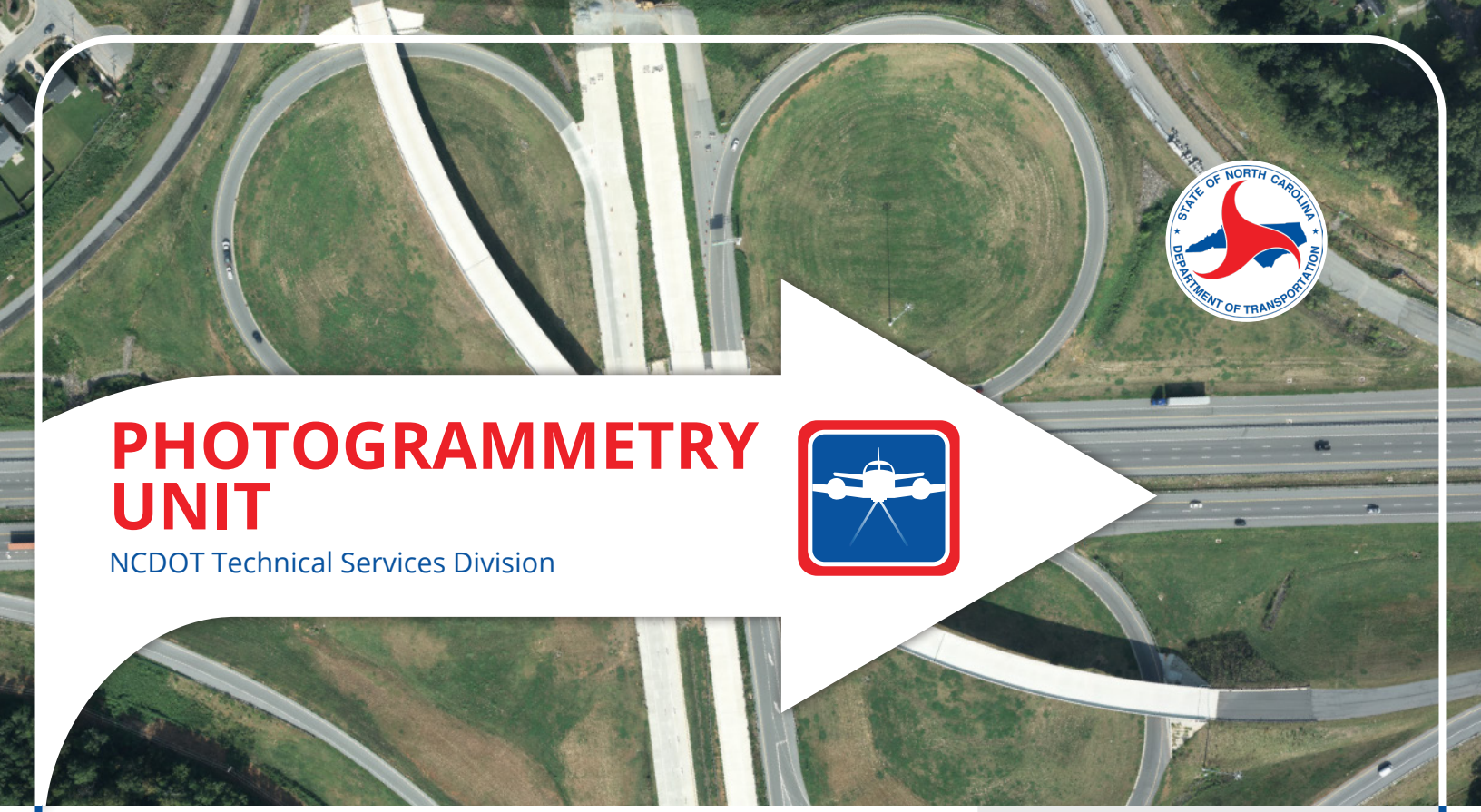
STRUCTURE INVENTORY AS-BUILTS

L&S's Terrestrial LiDAR Scan Group contracted surveys for as-built dimensions for 132 signs of varying sizes, including overhead sign structures on interstates. Lettering and overall panel sizes were obtained with measurements to the nearest 1/8 of an inch. Due to the utilization of a terrestrial static scanner, all survey personnel were stationed safely on the road shoulder and all fieldwork was completed without the need for lane closures or extensive traffic control devices.

3D DIGITAL TERRAIN MODELING OF CRACKED ROADWAY

L&S's West Region identified the best applicable technology and contracted with a highly skilled on-call firm to utilize a hybrid LiDAR drone to obtain and provide a three-dimensional digital terrain model of the Cowee Mountain area plagued by roadway cracks due to an ancient landslide. The team completed the modeling in record time, saving the Department time, money and resources when compared to conventional survey methods.





PHOTOGRAMMETRY UNIT

NCDOT Technical Services Division

The Photogrammetry Unit acquires aerial imagery and generates geospatial information products used for transportation planning, design and construction for NCDOT and projects for other state agencies.

NCDOT owns and maintains a large-format metric camera and aircraft that is used to provide airborne survey and mapping products, offering significant advantage for NCDOT uses, particularly for emergency response terrain mapping and imagery. We also use unmanned aircraft systems (UAS, or drones) for small site project-specific georeferenced raster digital image products, digital elevation models and earthwork pay quantity survey reports.

Photogrammetry can provide faster, more affordable alternatives to ground survey mapping and elevation data collection that does not require traffic interruption and safer alternatives for surveying dangerous areas such as landslides.

Turn to the Photogrammetry Unit for your geospatial products needs.

Photogrammetry partners with other government agencies for statewide orthophotography and aerial LiDAR elevation data programs, serving as NCDOT's subject matter experts for aerial surveying.

Services

- Construction earthwork quantification
- Digital mosaics
- Elevation data (digital elevation models and digital terrain models)
- Emergency response terrain mapping and imagery
- Geospatial products (submerged aquatic vegetation mapping and imagery, QL1/ QL2 LiDAR, county GIS-based property boundaries, cut/fill heat map, change detection)
- Planimetric mapping with digital terrain and surface models

Contact

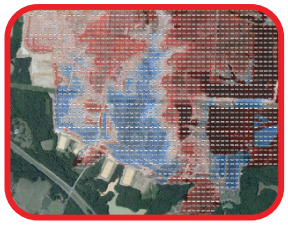
photogrammetry@ncdot.gov

connect.ncdot.gov/resources/photogrammetry/pages/

NCDOT Technical Services Division

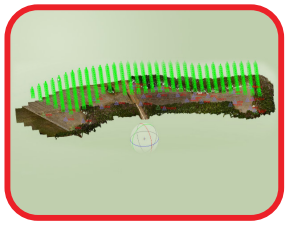
PHOTOGRAMMETRY UNIT

PROJECT EXAMPLES



EARTHWORK PROJECT MAPPING

Photogrammetry can provide geospatial products for large projects such as the 1,600-acre Greensboro Randolph Megasite in a short amount of time. These products include preliminary change detection swipe maps, cut/fill heat maps and preliminary volume calculations via Structure from Motion, which support oversight and management decision-making.



UAS-DERIVED DIGITAL ELEVATION DATA

Digital data secured via drone flights produce highly accurate elevations ideal for use on small bare earth construction sites and borrow pits. Monthly flying of construction sites, borrow pits and stockpiles with UAS can provide accurate digital elevation data showing amounts of material moved in a timely and cost-effective manner.

PLANIMETRIC AND DIGITAL TERRAIN MAPPING

Photogrammetry has flown thousands of missions to provide planimetric and digital terrain mapping to support the planning, design and construction of transportation projects throughout the state of North Carolina.

SUBMERGED AQUATIC VEGETATION MAPPING

Seasonal aerial mapping of the migration of North Carolina coastal seagrass meadows for the N.C. Department of Environmental Quality Marine Fisheries Division and Albemarle-Pamlico National Estuary Partnership helps scientists monitor marine health that inform conservation and fishing practices.

PROFESSIONAL SERVICES MANAGEMENT UNIT

NCDOT Technical Services Division

NCDOT's Professional Services Management Unit (PSMU) manages procurement of all professional and specialty consultant talent that support NCDOT divisions, units and projects at all levels and phases.

As the central source for consultant procurement, PSMU provides administration and management of professional service contracts plus knowledge and expertise that enable NCDOT units to secure the contract talent they need for project delivery.

PSMU's Connect site serves as a one-stop information hub for companies seeking to do business with NCDOT.

It contains tools and guidance on becoming prequalified, guidelines and forms, listings of advertised work and selection results for consultant contracts.

An online Professional Services Management Resources site provides information and tools to guide NCDOT staff through the talent procurement process.

Contact

Email psmu-411@ncdot.gov with your talent procurement questions or schedule a consultation to discuss procuring talent for your next project.

Find PSMU contacts, policies, procedures, templates and more on the PSMU Connect site.

connect.ncdot.gov/business/consultants/Pages/

Services

- Advertisements for consultant services
- Conflict/claim resolution
- Consultant workload tracking
- Contract, scope definition, preparation and execution
- Payment mechanism identification
- Procedural guidance
- Procurement policy development
- Qualifications-based consultant selection
- Training on procurement process

NCDOT Technical Services Division

PROFESSIONAL SERVICES MANAGEMENT UNIT

PROJECT EXAMPLES

CONSULTANT PROCUREMENT

PSMU procures nearly $1 billion in contracting authority each year for consultant services to support NCDOT units and projects. The unit's online information hub markets work opportunities by listing current and upcoming advertisements and allows consultants to sign up for email alerts when new advertisements are posted.

MODERNIZED SUBMITTAL PROCESS

Our newly revamped online submittal system streamlines the consultant procurement process.

CONSULTANT EVALUATION MANAGEMENT

A web-based portal provides work performance evaluations of partnering firms.

EMERGENCY RESPONSE PREPARATION

PSMU works with NCDOT units to get emergency service contracts in place before storms occur to support units responding to natural disasters such as hurricanes and ice storms.

PROJECT MANAGEMENT UNIT

NCDOT Technical Services Division

The Project Management Unit (PMU) provides knowledgeable and skilled project managers who support Division project delivery for transportation projects across the state with highly customized services, from scheduling and budgeting to quality and risk.

READY. PMU project managers can help divisions tackle complex projects that require more time, projects that arise during peak workloads and projects requiring emergency response.

EXPERIENCED. Our staff bring diverse backgrounds and experience managing projects across the state. They draw on this experience to apply best practices, innovative approaches and efficiencies to projects.

COLLABORATIVE. PMU collaborates with Department staff to establish project teams and keeps them informed throughout the project.

FLEXIBLE. We provide wholesale delivery support, overseeing projects from planning through construction, whether leading centrally managed and delivered projects, supporting Division-managed projects or working alongside Division project managers to co-manage projects.

Contact

Call on the Project Management Unit for assistance managing all or part of your next project.

Email ProjectManagement@ncdot.gov.

Find resources, information and contacts on our Connect site.

connect.ncdot.gov/projects/Project-Management/Pages/

Services

Project Delivery

- Contract management
- Risk and quality management
- Schedule, scope and budget management
- Stakeholder coordination and engagement

Support Services

- Policy development
- Procedural guidance
- Process improvement guidance and assistance
- Project management-related training

NCDOT Technical Services Division

PROJECT MANAGEMENT UNIT

PROJECT EXAMPLES

EMERGENCY REPAIR FOR STIP ROADWAY PROJECT

PMU worked with the Roadway Design and Hydraulics units and a prime contractor to coordinate a design submittal, review and plan change/ construction revision repair in one week to meet NCDOT's goal of repairing collapsed sections of U.S. 401 in Franklin County after heavy rains caused flooding. The sections were part of a $45 million STIP project to widen U.S. 401 in Franklin County from two to four lanes.

ACCELERATED DELIVERY OF ENVIRONMENTAL DOCUMENT

PMU used a previously established LEDPA Merger decision to accelerate completion of an environmental document required for the $262.6 million STIP project to replace and relocate Lindsay C. Warren Bridge on U.S. 64 over the Alligator River in Dare and Tyrrell counties with a modern two-land, fixed-span, high-rise bridge north of its current location. To expedite this project on a tight time frame, PMU formed a strong multi-disciplinary team with environmental planning, hydraulic modeling, geotechnical investigation and structural design expertise, hosted bi-weekly meetings to keep the project on track and performed on-site constructability reviews and value engineering studies.

LAND ACQUISITION AND MANAGEMENT OF ROAD WIDENING

PMU is managing the $197 million STIP project to widen N.C. 211 in Moore and Hoke counties in time for the June 2024 and 2025 U.S. Open Championships in Pinehurst. The project requires extensive coordination of public, private and military stakeholders to acquire more than 480 parcels and relocate utilities prior to letting and construction.

ROADWAY DESIGN UNIT

NCDOT Technical Services Division

The Roadway Design Unit offers roadway design guidance, support and plan development at every stage of project delivery.

Roadway Design staff provide technical expertise to help ensure designs are complete, constructable and in compliance with state and national guidance.

We work with other technical disciplines and divisions to effectively and efficiently resolve design challenges that arise during plan production or construction.

We review ongoing research to aid NCDOT in setting design guidance, policies and procedures.

Our support services team develops, tests and maintains all roadway-related CADD standards. They also provide CADD support and training to all NCDOT staff and consultants.

Our lighting and electrical team designs lighting and electrical assemblies for installations such as interchanges, tunnels, weigh stations and novelty items.

Contact

Email rdyresources@ncdot.gov with roadway design questions or for plan development support on your project.

Find resources, information and contacts on our Connect site.

connect.ncdot.gov/resources/projects/Roadway/Pages/

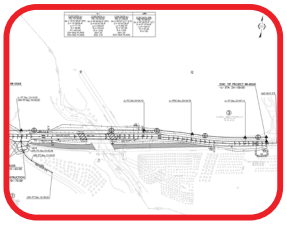
Services

- CADD support for roadway design workspaces
- Encroachment and locally administered project reviews
- Lighting and electrical needs evaluation and plan development
- Interpretation of design guidance
- ORD implementation support
- Prequalification of private engineering firms
- Quality assurance reviews of consultant plans
- Roadway design plan development and quantities
- Technical and CADD training
- Workday estimates

NCDOT Technical Services Division

ROADWAY DESIGN UNIT

PROJECT EXAMPLES



ROADWAY DESIGN PLAN DEVELOPMENT

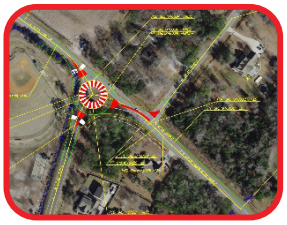
Roadway Design assisted Structures Management in preparing roadway designs from alternate selection through final plans to replace 20 bridges, including developing right of way plans and final using Bentley's OpenRoads Designer (ORD) (pictured) and public meeting maps.

SLOPE REPAIR

Roadway Design completed construction plans and quantities for a Division 14 slope repair in Jackson County that incorporated hydraulic and geotechnical solutions to reestablish and reinforce a failing side slope.

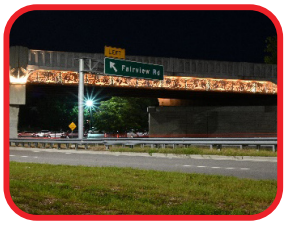
EMERGENCY BRIDGE EMBANKMENT REPAIR

Roadway Design helped Division 13 and the Hydraulics Unit develop construction plans for repairing an embankment in Yancey County that washed out during heavy rainfall.



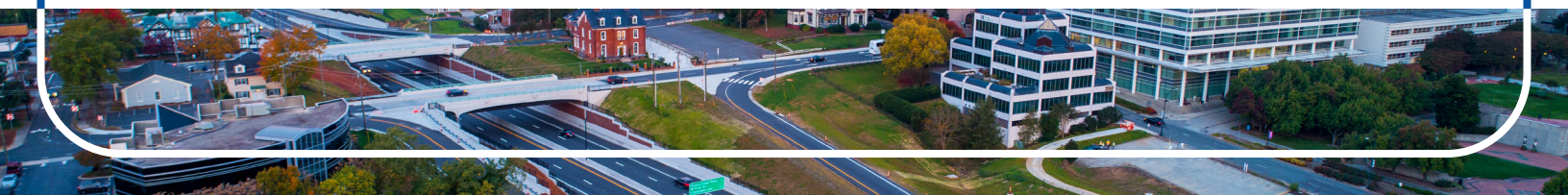
EXPRESS DESIGN

Roadway Design staff developed the express design for a single lane roundabout in Pender County.



LIGHTING AND ELECTRICAL SYSTEMS DESIGN

Roadway Design's Lighting and Electrical Team design the lighting and electrical systems for bridges, such as these that illuminate the artistic facia on girders and concrete medallions on the Wade Avenue Bridge over Capitol Boulevard in Raleigh.



UTILITIES UNIT

NCDOT Technical Services Division

The Utilities Unit supports both central and field-based NCDOT staff for utility-related needs.

We coordinate and support project managers with the relocation, adjustment, removal and addition of utilities and non-utilities along NCDOT highways and rights of way, often serving as the first point of contact to investigate potential utility conflicts that can significantly impact construction of a project.

Our knowledge of laws and regulations governing utilities and long-standing partnership with utility owners help pave the way for transportation projects.

Regionalized staff provide area-specific knowledge, connections and service to minimize, mitigate and avoid utilities on projects and save taxpayer dollars.

Contact

Utilities Unit:
ncdotutilities@ncdot.gov

Encroachments:
encr@ncdot.gov

Find utility resources and contacts on our Connect site.

connect.ncdot.gov/municipalities/utilitiespages

Services

- Alternative delivery utility coordination
- Broadband project/plan review, implementation, approval and registration process assistance
- Cost responsibility determination
- Encroachment technical reviews, approvals and permitting
- Guidance and advice for NCDOT unit, utility owner and the public
- Impact mitigation and avoidance
- Policy and procedure development and interpretation
- Utility coordination, engineering and project management
- Permanent utility easement determination
- Utility Agreement Management System support
- Utility and workday estimates
- Utility relocation plan design review

NCDOT Technical Services Division

UTILITIES UNIT

PROJECT EXAMPLES

IMPLEMENTING PERMANENT UTILITY EASEMENTS

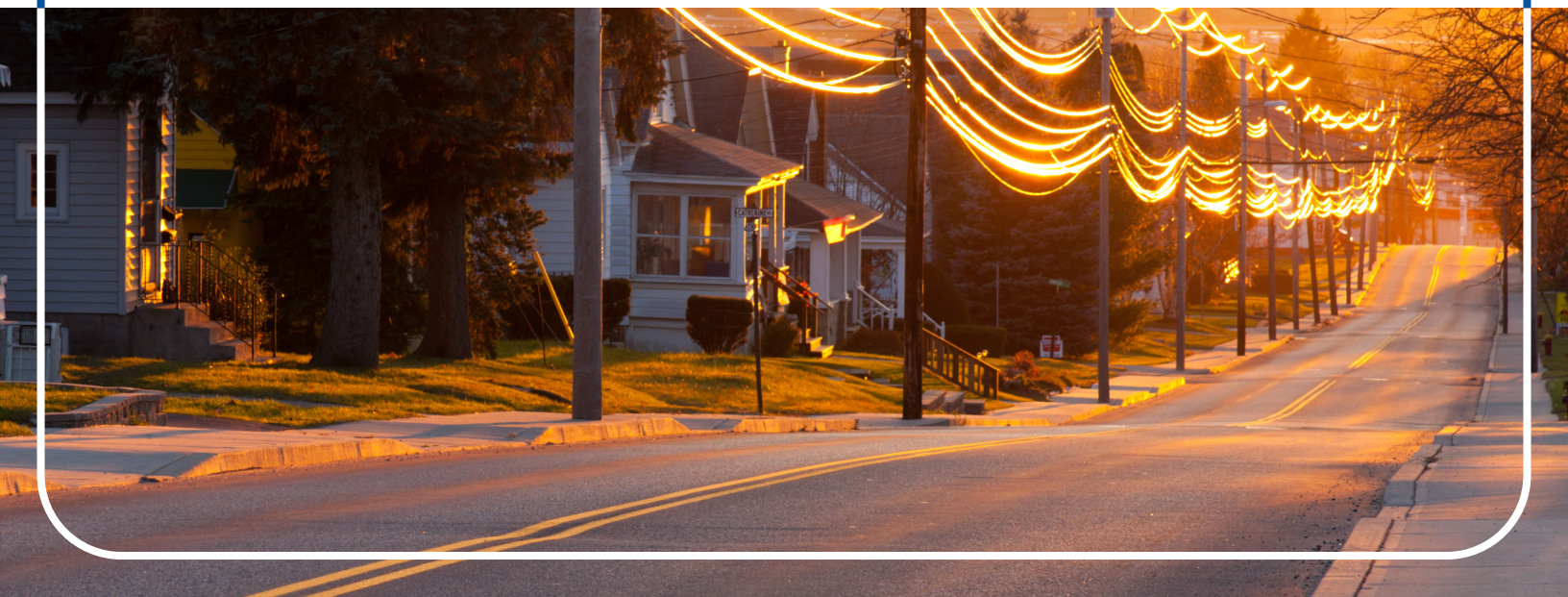
Our relocation of utilities along a permanent utility easement on New Hope Church Road in Raleigh shifted utilities away from the grade separation over the railroad, reduced right of way claims and associated costs and allowed utility companies to relocate once the easement was acquired, saving time and money.

UTILITY RELOCATION COORDINATION

Through extensive investigation and collaboration with Division 6 on an NCDOT project, we successfully led 10 utility companies to relocate over $24 million in facilities for Fayetteville Public Works Commision while resolving conflicts with power distribution and transmission, multiple telecommunication companies, water companies, sewer lines and gas lines with minimal right of way.

UNC PROJECT ENCROACHMENT REVIEW AND APPROVAL

We collaborated with UNC Hospitals to review and authorize plans and construction of a new pedestrian bridge over a NCDOT-maintained road connecting a new wing of the hospital and a parking deck by collaborating with multiple disciplines at NCDOT, NCDOT field offices, Board of Transportation, design firms, construction companies and the Town of Chapel Hill.



Prepared by NCDOT
Technical Services Office