

## Chapter 1 — Introduction

October 15, 2021

Mr. Marcus Jones, P.E.  
Henderson County Government  
1 Historic Courthouse Square  
Hendersonville, NC 28792

**Kimley-Horn**

421 Fayetteville Street, Suite 600  
Raleigh, NC 27601  
TEL | 919 677 2000  
www.kimley-horn.com

### RE: REQUEST FOR LETTERS OF INTEREST (RFOI) FOR ENGINEERING SERVICES FOR HENDERSON COUNTY RAILS TO TRAILS (ECUSTA RAIL-TRAIL, TIP BL-0007)

Dear Mr. Jones and Members of the Selection Committee:

August 2021 was a big month for Western North Carolina! EcustaRails2Trails, LLC, a subsidiary of Conserving Carolina, closed on the purchase of the 19-mile Ecusta Rail-Trail corridor from Brevard to Henderson. The Ecusta Rail-Trail is envisioned as one of the premier destination greenways in the Southeast, with huge benefits to the neighboring communities. The stakeholders own the land and now need to build the trail. The **Kimley-Horn** team is the right team to get it designed, permitted, and built—bringing a dream to reality for the citizens of Henderson County. As you consider our qualifications, please consider the following statements among the reasons you should select Kimley-Horn:

- **Significant Federally Funded/North Carolina Department of Transportation (NCDOT)-Administered Locally Administered Project (LAP) Expertise.** The Kimley-Horn team has led, or is currently leading, **60** rail-trail, greenway, sidewalk, roadway, and streetscape improvement projects for **34** North Carolina municipal governments receiving federal, NCDOT, Congestion Mitigation and Air Quality (CMAQ), LAP, and/or STP-DA funds allocated to NCDOT by the Federal Highway Administration (FHWA) through municipal agreements—all within the last 12 years. With this unmatched experience, no other team has our level of understanding of federally funded projects for North Carolina municipalities and level of specific knowledge of NCDOT requirements. We know exactly what you need to comply with the accountability and transparency requirements on federally funded projects administered by NCDOT. *With Kimley-Horn you get a team that you can completely trust to be able to successfully navigate the NCDOT process through construction authorization and meet all of the necessary cost reimbursement requirements.*
- **Cost-Effective Design and Construction.** Our team will provide a cost-effective design, fostered by combining the senior leadership of project manager **Jeff Moore, P.E.**; responsible for budget, schedule, grant management, and NCDOT process navigation; specific discipline leadership from outstanding young professionals; and local Asheville firm leadership from **McGill Associates, P.A.**, including building site design, route location survey, utility coordination, Parks and Recreation Trust Fund (PARTF) grant support, who is on the Kimley-Horn team for hydrologic and hydraulic design.

*Cost-effective construction is fostered by using our identical experience on the Downtown Greenway Phase 4 (DGP4) and A&Y Greenway for the City of Greensboro, which included a rail-trail conversion through a railbanking agreement as follows:*

- **Falcon Engineering, Inc. (FEI)** will provide greenway foundation design and specifications for the Contractor to remove the existing ballast under the railroad track, grind the ballast into standard sizes of aggregate that meet NCDOT Standard Specification 1005, and incorporate the aggregate into the project's Aggregate Base Course.

The following information is provided as outlined in your RFOI:

- **Expression of interest.** The Kimley-Horn team is ready and eager to assist you with engineering services for Henderson County Rails to Trails (Ecusta Rail-Trail).
- **Register status.** Kimley-Horn is properly registered with the office of the Secretary of State and with the NC Board of Registration for Professional Engineers and Land Surveyors (Certificate No. F-0102).
- **Private Engineering Firm questionnaire.** Kimley-Horn's most recent private engineering firm qualification was approved by NCDOT and it is valid until May 31, 2022.
- **Conflict of interest.** To the best of our knowledge and belief, neither Kimley-Horn nor any of its employees has any potential conflicts of interest due to any other clients, contract, or property interests arising from this contract.
- **Summation of information.** The remainder of this submittal contains the items specified in your request for letters of interest, including our responses to your evaluation factors and supportive information.

- Since the Ecusta Rail-Trail project length is six miles from Kanuga Road to Brevard Road, we recommend that **Spatial Data Consultants, Inc. (SDC)** provide aerial photogrammetry, planimetric mapping, and orthoimagery for the project corridor. Based on our experience, this would be a cost-effective and innovative survey and data collection approach. SDC performed these services on the DGP4 project.
  - Bids are scheduled to be opened for the DGP4 project in January 2022. Due to project, pay item, and construction similarities, Kimley-Horn will be able to use the bid tabulations and unit prices from the DGP4 project for the Ecusta Rail-Trail construction estimate. This will prevent surprises at the bid opening on October 4, 2022.
- **Outstanding Public Engagement Program.** Kimley-Horn has developed the Hendersonville Pedestrian Plan (2007), Hendersonville Bicycle Plan (2018), Town of Laurel Park Pedestrian and Bicycle Plan (2018), and Village of Flat Rock Pedestrian and Bicycle Plan (2017). These studies and associated public engagement have created valuable relationships with project stakeholders and landowners through a significant series of meetings. We will leverage these relationships with the local municipalities and Blue Ridge Bicycle Club, and engage with Conserving Carolina and Friends of Ecusta Trail through a public engagement program that blends virtual and in-person outreach to maximize participation, meets changing public health conditions, and keeps participants engaged. Our team will create an immersive digital environment that creates two-way communication between the project team and the public and an interactive project website to serve as the Digital Hub for the Ecusta Rail Trail. *With Kimley-Horn you get a team with comprehensive knowledge of the corridor and stakeholder relationships, enabling us to immediately begin building consensus necessary for the project's implementation.*
  - **Immediate Availability and Deep Resources.** Kimley-Horn is completing its current greenway and sidewalk assignments and will be immediately available to serve the County on this project and will help ensure that it is built as soon as possible. Kimley-Horn has more than 400 team members in four North Carolina offices and more than 5,300 persons across the nation in more than 100 offices. Our letter of interest highlights 19 Kimley-Horn staff members to be assigned to the project, which forms a deep bench of design professionals to deliver the project on-time. However, is only a tiny fraction of resources available across the state and nation. To further deepen our bench of design professionals, Kimley-Horn has partnered with Asheville based firm **McGill Associates, P.A.** to lead several disciplines as shown above and split the heavy hydrologic and hydraulic design lifting with Kimley-Horn. McGill boasts 93+ employees in its Asheville and Hickory offices and solidifies our ability to efficiently design and build this project. *Simply put, the Kimley-Horn team offers you immediate availability, significant resources, and an unwavering commitment to get the Ecusta Rail-Trail built efficiently and as soon as possible.*
  - **Balanced National and Local Approach.** The Kimley-Horn team includes a perfect balance of local, state, and national greenway and rail-trail conversion expertise. Kimley-Horn has developed dozens of greenways across the state including the DGP4 rail-trail conversion, the northeast segment of the Atlanta BeltLine, and the Legacy Trail Extension. McGill has developed the final design for several greenway projects in western North Carolina, including the Thermal Belt Rail Trail. *With this team, you get Kimley-Horn's depth of national rail-trail experience and unparalleled knowledge of NCDOT requirements and McGill's local presence and positive reputation in western North Carolina — a team you can trust.*

Thank you for considering our qualifications. Our Kimley-Horn team is genuinely excited about this opportunity to partner with the County on this important project. Should you have any questions about our qualifications, please do not hesitate to contact me.

Sincerely,

**KIMLEY-HORN**



Jeff Moore, P.E., Project Manager  
 919 601 6538 | jeff.moore@kimley-horn.com



## Chapter 2 — Team Qualifications

### RECENT, SIMILAR PROJECTS

#### EB-6037, Downtown Greenway Phase 4 and A&Y Greenway | Greensboro, NC

The City of Greensboro and Action Greensboro have acquired the inactive Norfolk Southern railroad corridor through railbanking and the National Trails System Act. The purpose of this project is to convert the inactive rail to trail (similar to the Ecusta Rail-Trail), create an urban loop around the center city of downtown Greensboro, emphasize public art that tells stories and engages users of the trail, and enhance the landscape with green space that promotes fitness, connectedness, and well-being for residents and visitors. It is partially funded with federal funds administered by NCDOT through a municipal agreement between the City and NCDOT.

Our team designed a 12-foot-wide asphalt greenway along a single track railroad bed between Spring Garden Street and the existing A&Y greenway north of Markland Drive (3.2 miles). Kimley-Horn provided the categorical exclusion, erosion control, streetscape design, pavement marking plans, public involvement, aerial photogrammetry (SDC), signal design, threatened and endangered species survey, environmental permitting, stream restoration design, NC Land and Water Fund Grant support, traffic control plans, urban roadway design, utility coordination, wetland and stream delineation, geotechnical recommendations (FEI), multi-use trail design, pedestrian bridge design for 4 bridges, trailhead design, hydrologic and hydraulic design, NCDOT coordination, and bid phase services. The project is scheduled to be advertised for construction in December 2021.

**Date Completed:** 2021 (Design) | **Contact:** Eric Tart, City of Greensboro,  
336 373 4313 | [eric.tart@greensboro-nc.gov](mailto:eric.tart@greensboro-nc.gov)



DGP4 Trail



DGP4 Rendering

#### EB-5827, Fonta Flora State Trail | Burke County, NC

Kimley-Horn was selected to provide engineering design services for this Burke County project that included 2.5 miles of a 10-foot-wide, asphalt multi-use path paralleling Powerhouse Road (Laurel Ridge Court to Cobb Avenue) before heading west on Cobb Avenue to Harris Whisnant Road. Kimley-Horn provided project coordination, categorical exclusion, streetscape design, pavement marking and signing plans, public involvement, signal design, environmental permitting, urban roadway design, wetland and stream delineation, geotechnical recommendations, preliminary multi-use trail design, grading and drainage plans, retaining wall design, hydrologic and hydraulic design, right-of-way negotiation and acquisition, and NCDOT coordination. The project was cancelled due to funding challenges.

**Date Completed:** 2021 (Design) | **Contact:** Shane Prisby, Burke County  
828 764 9034 | [shane.prisby@burkenc.org](mailto:shane.prisby@burkenc.org)



Cross Charlotte Trail Rendering

#### Cross Charlotte Trail | Charlotte, NC

The Cross Charlotte Trail (XCLT) will be a 26-mile, continuous, separated, and connected greenway system from the North Carolina/South Carolina state line through Uptown Charlotte and north to Cabarrus County. Since 2014, Kimley-Horn has been the lead engineering consultant on five trail segments and a 15-foot-tall dual soldier pile retaining wall system connecting XCLT to Matheson Avenue across the existing Norfolk Southern Railway and the CATS Blue Line Light Rail Transit Extension project. Kimley-Horn has provided all phases of greenway planning and design, including preplanning, route analysis, feasibility studies, community engagement, preliminary and final design, wetland and floodplain permitting, real estate coordination. The segments have required significant NCDOT coordination and encroachment permitting under existing and future bridges, through culverts, across roadways at-grade, and parallel to highway rights-of-way; and included multiple linear parks, pocket parks, and trailheads

**Date Completed:** Ongoing (Design) | **Contact:** Joe Frey, P.E., City of Charlotte  
704 336 5276 | [jfrey@charlottenc.gov](mailto:jfrey@charlottenc.gov)



Cross Charlotte Trail Construction

## Gary Shell Cross-City Trail | Wilmington, NC

The City of Wilmington has constructed the Gary Shell Cross-City Trail, a 15-mile multiuse trail from Wade Park to Wrightsville Beach, that provides bicycle and pedestrian access to numerous recreational, cultural, and educational destinations in Wilmington. Kimley-Horn has performed the design services for 8 miles of the 15-mile trail system through eight separate City of Wilmington projects: Phases II, IIIA, IIIB, IIID, IIIE, IIIG, IIIZ, and U-5534B. Four of those projects were partially funded with federal funds administered by NCDOT through a municipal agreement between the City and NCDOT: EB-5121B (Phase II), EB-5118CA (Phases IIIA and IIID), EB-5544 (Phase IIIE), and U-5534B (Heide Trask Drawbridge Walkway).

Kimley-Horn provided project coordination, categorical exclusion, erosion control, streetscape design, pavement marking plans, public involvement, signal design, environmental permitting, traffic control plans, urban roadway design, utility coordination, wetland and stream delineation, multiuse trail design, pedestrian bridge and boardwalk design, hydrologic and hydraulic design, grading and drainage plans, NCDOT coordination, and bid phase services.

**Date Completed:** 2016 (Construction) | **Contact:** Mike Kozlosky, City of Wilmington  
910 342 2781 | [mike.kozlosky@wilmingtonnc.gov](mailto:mike.kozlosky@wilmingtonnc.gov)



Gary Shell Cross-City Trail

## Atlanta BeltLine Northeast Trail Design | Atlanta, GA

Kimley-Horn is leading the design of the Atlanta BeltLine Northeast Trail corridor from Westminster Drive to Mayson Street. The project includes the design of a 14'-wide concrete multiuse path with 3' to 5' shoulders on each side and extending approximately 1.5 miles. This project is being advanced in conjunction with Georgia Power's replacement of the "hairpin" transmission tower line between I-85/Buford Highway and Clear Creek at Ansley Mall. Kimley-Horn has worked closely with Atlanta BeltLine, Inc. and Georgia Power to coordinate the design of retaining walls, stormwater features, and other elements of the multiuse trail with construction of the new transmission towers. Additional site elements include planting, lighting, vertical connections to intersecting streets at Piedmont Avenue and Montgomery Ferry via ramps and stairs, storm drainage, signage/wayfinding, and the repurposing of two existing freight rail bridges. Kimley-Horn also has evaluated compatibility with future transit within this segment of the corridor, and developed interim and long term designs for the trail.

**Date Completed:** Ongoing (Design) | **Contact:** Shaun Green, Atlanta BeltLine, Inc. | 404 463 2437,  
[sgreen@atlbeltline.org](mailto:sgreen@atlbeltline.org)



Atlanta BeltLine Rendering

## Legacy Trail Extension Design | Sarasota County, FL

Kimley-Horn provided Sarasota County with trail design and related engineering and landscape architectural services for the Legacy Trail Extension project from Culverhouse Nature Park to Payne Park as well as the North Port Connector trail from the east end of pavement on Forbes Trail to Warm Mineral Springs Park. For these two segments, Kimley-Horn provided trail design and related civil engineering, structural/bridge engineering, bridge inspection, planning/landscape architecture, environmental assessment/permitting, stormwater management, utilities infrastructure, communication system, and community involvement.

The Legacy Trail Extension segment of the project (approximately 8.9 miles) consists of trail improvements along the old Seminole Gulf Railroad right-of-way and includes trail improvements; drainage; landscaping; and three trailheads, including lighting, seven rest stops, two trail bridges (to be inspected and evaluated for rehabilitation), numerous at grade crossings, requiring signing and markings, signalization, and landscape improvements along the entire trail. Additionally, this segment of the project includes utility improvements consisting of a new water main, reclaimed water main, and communication conduit with fiber.

**Date Completed:** 2018 (Design) | **Contact:** Curtis Smith, P.G., Sarasota County, 941 861 0564 |  
[crsmith@scgov.net](mailto:crsmith@scgov.net)



The Legacy Trail

**Thermal Belt Rail Trail | Forest City, NC | McGill Associates, P.A.**

This Town of Forest City project included the conversion of a portion of the Thermal Belt Rail Line to a trail system. Rutherford County and the communities of Forest City, Spindale, Rutherfordton, and Ruth (the Trail Partners) recognized the importance of tourism to the local economy and the need for passive recreation for health benefits to the community. The 13.4-mile rail-trail conversion was identified as one such needed improvement. McGill Associates prepared a master plan for the corridor that connects the Trail Partners, including a linear park, and eventually developed final construction plans for the 10-foot multiuse path, obtained environmental permits, conducted the bid phase, and administered construction of the project. The master plan was used to secure \$5.35 million in construction funding from multiple funding agencies.

**Date Completed:** 2019 (Design) | **Contact:** Barry Spurlin, Town of Forest City | 828 287 6883, [barryspurlin@townofforestcity.com](mailto:barryspurlin@townofforestcity.com)

**Joseph McDowell Historical Catawba River Greenway Design | Marion, NC | McGill Associates, P.A.**

This City of Marion project consisted of the design, surveying, permitting, and construction engineering services for 1.4 miles of asphalt multi-use path along the Catawba River. McGill Associates prepared a no-rise certification and accompanying flood study for approximately 2,100 feet of greenway trail, driveway, parking area, picnic shelter, canoe launch, and approximately 200 feet of Catawba River bank stabilization. These facilities were designed and constructed under Phase 3. McGill performed further flood modeling and design for an additional 3,800 linear feet (LF) of greenway trail and sidewalk, which included a 100-foot pedestrian bridge over Nicks Creek.

**Date Completed:** 2019 (Design) | **Contact:** Bob Boyette, City of Marion | 828 652 3551, [bboyette@marionnc.org](mailto:bboyette@marionnc.org)

**Wilcox Pedestrian Bridge Inspection and Repairs | Davidson County, NC | Wetherill Engineering, Inc. (WEI)**

This Davidson County project included inspection and repair recommendations for this 98-year-old pedestrian bridge. The Wilcox bridge is a historical 1300-foot open spandrel reinforced concrete deck arch bridge spanning the Yadkin River. **Erin Krayer, P.E.** led the bridge inspections, which included routine element level inspection, underwater inspections, repair recommendations, and preliminary construction cost estimates. Teams inspected the deck, girders, and substructures and documented the size, location, severity, and estimated repair cost of individual defects. WEI prepared rehabilitation and preservation plans for the bridge that included concrete spall repair, joint replacement, bearing replacement, concrete crack repair details, and technical specifications for a concrete aesthetic coating.

**Date Completed:** 2021(Construction) | **Contact:** Dwayne Childress, Davidson County | 336 242 2030, [dwayne.childress@davidsoncountync.gov](mailto:dwayne.childress@davidsoncountync.gov)

**Lake Norman Campground Expansion and Improvements | Lake Norman, NC | Mathews Architecture, P.A.**

This North Carolina Division of Parks and Recreation (NCDPR) project included replacement of an outdated shower and restroom facility that serves the Lake Norman campground. NCDPR wanted to use a similar facility constructed at South Mountain State Park (SMSP) as the new prototype for its parks. Mathews designed the same facility at SMSP and Lake Norman, and developed a master plan, design, and construction of a new 1,020 square foot shower restroom facility along with various site amenities and utility improvements. The restroom facility utilizes natural materials, such as heavy timber and ceramic tile.

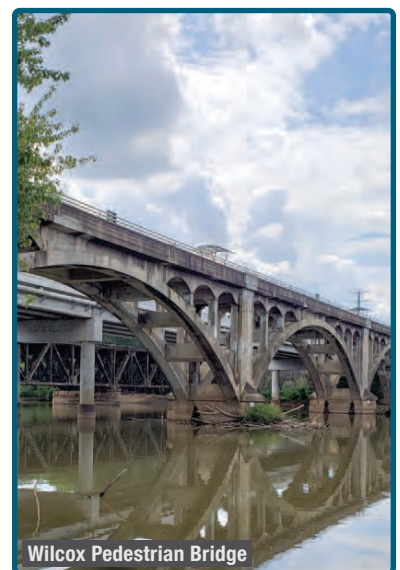
**Date Completed:** 2021 (Design) | **Contact:** Mark Lyons, NCDNR, Parks and Recreation | 919 707 9317, [mark.lyons@ncparks.gov](mailto:mark.lyons@ncparks.gov)



Thermal Belt Rail Trail



Joseph McDowell Historical Catawba River Greenway



Wilcox Pedestrian Bridge

**EB-6037C, Downtown Greenway Phase 4 and A&Y Greenway | Greensboro, NC | [Spatial Data Consultants \(SDC\)](#)**

As a subconsultant to Kimley-Horn, SDC performed project technical planning and consulting; ground control planning; digital airborne imagery; airborne GNSS-INS data and post processing; digital aero-triangulation; digital planimetric mapping; digital topographic mapping; digital terrain model feature mapping; color-RGB digital orthoimagery; and project technical reporting and certification for the 3.2-mile corridor. Since the Ecusta Rail-Trail project length is 6 miles from Kanuga Road to Brevard Road, aerial photogrammetry would be a very cost-effective and innovative survey and data collection approach and Kimley-Horn recommends that the County consider it for the project.

**Date Completed:** 2016 (Aerial Photogrammetry) | **Contact (Owner):** Eric Tart, City of Greensboro | 336 373 4313 | [eric.tart@greensboro-nc.gov](mailto:eric.tart@greensboro-nc.gov)

**EB-5539, South Tar River Greenway, Phase 3 | Greenville, NC | [Falcon Engineering, Inc. \(FEI\)](#)**

As a subconsultant to Kimley-Horn, FEI provided geotechnical engineering services (roadway and structure foundation investigation and design) for a pedestrian bridge (70-foot length) and four separate timber boardwalks (251-foot total length) as part of this City of Greenville project. This project included a 10-foot-wide asphalt multiuse trail that extended two miles from Moye Boulevard to Pitt Street and included a proposed railroad underpass of the CSXT bridge over the Tar River. The greenway featured bicycle and pedestrian trails and boardwalks through upland and wetland forests along the South Tar River floodplain. It is partially funded with federal funds administered by NCDOT through a municipal agreement with the City.

**Date Completed:** 2020 (Geotechnical) | **Contact (Owner):** Lynn Raynor, City of Greenville | 252 329 4467, [lraynor@greenvillenc.gov](mailto:lraynor@greenvillenc.gov)

**EB-5547, Black Mountain Riverwalk Greenway | Black Mountain, NC | [Bunnell Lammons Engineering \(BLE\)](#)**

This Town of Black Mountain project constructed a 1.5 mile connection between the Flat Creek and the Oaks Greenways and is a critical connection of the Fonta Flora State Trail. The greenway runs along Flat Creek in downtown Black Mountain and allows for safe, off-road pedestrian and cycling facility from the east to the west sides of town. The alignment consisted of three bridges across Flat Creek, the conversion of a large highway box culvert under Highway 9 into a pedestrian tunnel, and a cut and cover tunnel through a Norfolk Southern railroad embankment. It is partially funded with federal funds administered by NCDOT through a municipal agreement between the Town and NCDOT, similar to the Ecusta Rail-Trail. BLE provided geotechnical engineering services, including roadway and pavement design investigation and design.

**Date Completed:** 2020 (Design) | **Contact:** Fred Grogan, Michael Baker International | 828 253 6856, [fred.grogan@mbakerintl.com](mailto:fred.grogan@mbakerintl.com)

**Virginia Rail Passenger Corridors Acquisition | Northern VA | [Mott MacDonald](#)**

This Virginia Department of Rail and Public Transportation (DRPT) project includes corridor acquisition to expand passenger rail service. **Paul Worley, P.E.** is providing advisory support and expertise in the acquisition of the rail corridors, which include more than 350 miles of railroad right-of-way and 225 miles of track from CSX Transportation. Services included developing negotiation strategies, agreement key terms and conditions, service plan requirements, and governance approaches. This experience in advisory support for VDOT is very similar to the support offered for the Ecusta Rail-Trail and proves our team's ability to support the County and Conserving Carolina in navigating the remainder of the railbanking process.

**Date Completed:** Ongoing | **Contact:** Jennifer Mitchell, Virginia DRPT | 804 786 4440, [j.mitchell@drpt.virginia.gov](mailto:j.mitchell@drpt.virginia.gov)



# Chapter 3 — Team Experience

## ORGANIZATION CHART



### Project Manager

Budget, Schedule, and Grant Management  
NCDOT Process and Coordination

★ Jeff Moore, P.E.

★ Key Team Member

**316 Multi-Use Trail Design, Survey and Layout**  
**269 Urban Roadway Design**  
**247 Traffic Control Plans**  
**155 Pavement Marking Plans**  
**Preliminary Engineering**  
**Bid Phase Services**

★ Jeff Moore, P.E.  
★ Everett Loving, P.E.  
Tori Golaszewski, P.E.  
Alex McIntyre, P.E.

**143 NBIS Bridge Inspection**  
**Structural Analyses, Testing, and Report**  
**Structure (Bridge/Culvert/Wall) Design**

★ Erin Krayer<sup>2</sup>  
★ Andrew Phillips

**McGill Associates, P.A. Lead**  
**Quality Control/Quality**  
**Assurance**

★ Mark Cathey, P.E.<sup>1</sup>

**32 Categorical Exclusion**  
**63 Environmental Assessment /**  
**Finding of No Significant Impacts**  
**106 Historic Architectural Surveys**  
**of Standing Structures**

★ Teresa Gresham, P.E.  
Sean Yates, P.E.

**433 Basic Hydrologic and Hydraulic Design**  
**70 Erosion Control**  
**Cross-Pipe Condition Survey**  
**Grading Plan and Drainage Design**

★ Dan Robinson, P.E., CFM  
★ Michael Hanson, P.E., LEED AP<sup>1</sup>  
Jason Lawing, P.E.  
Scott Burwell, P.E.<sup>1</sup>

**171 Public Involvement**  
**Oversight Committee Presentations**  
**City of Hendersonville Coordination**

★ Jeff Moore, P.E.  
★ Kristina Whitfield, P.E., AICP  
Stephen Stansbery, AICP  
Jonathan Guy, P.E., AICP, PTOE

**270 Utility Coordination**  
Mike Dowd, P.E.<sup>1</sup>

**132 Landscape and Streetscape Design**  
**Wayfinding and Information Signage**  
**ADA Innovative Compliance**  
**and Sustainability**  
**Kiosk and Educational Opportunity Design**  
**Trailhead Layout and Design**

★ Matt Gross, PLA  
Laura Handleton, PLA

**294 Roadway Foundation**  
**Investigation and Design**  
**295 Structure Foundation**  
**Investigation and Design**

Jeremy Hamm<sup>5</sup>

**434 Tier II Complete Hydrologic and**  
**Hydraulic Design**

★ Michael Hanson, P.E., LEED AP<sup>1</sup>  
Amanda Hollingsworth, P.E.

**296 Retaining Wall**  
**Investigation & Design**  
**297 Pavement Design**  
**Investigation**

Jesse Jacobson, P.E.<sup>6</sup>

**243 Threatened & Endangered Species Survey**  
**280 Wetlands and Stream Delineation**  
**Environmental Permitting**  
**Stream Bank Scour Analysis and Treatment**  
**Stream Restoration Design**  
**Stormwater Quality Improvement**  
**NC Land and Water Fund Grant Support**

★ Chris Tinklenberg, PWS  
★ Jennifer Murphy, P.E.

**332 Building Design**  
**338 Building Site Design**

★ Jane Mathews, FAIA, LEED AP BD+C<sup>3</sup>  
Ben Cathey, P.E.<sup>1</sup>  
Scott Burwell, P.E.<sup>1</sup>

**Railroad Banking Consultation**

★ Paul Worley, CPM<sup>7</sup>

**PARTF Grant Support**

LuAnn Bryan<sup>1</sup>

**207 Signal Design**  
**Intersection Safety Analysis**  
**Trail User Projection Analysis**  
**289 Signal Systems Inspection**

★ Stacie Phillips, P.E.  
★ Erin Krayer, P.E.<sup>2</sup>  
Melissa Helbert, P.E.

### Subconsultants

1. McGill Associates, P.A.
2. Wetherill Engineering, Inc. (HUB/SPSF)
3. Mathews Architecture, P.A. (DBE/WBE/HUB/SPSF)
4. Spatial Data Consultants, Inc. (SPSF)
5. Falcon Engineering, Inc. (DBE/WBE/HUB/SPSF)
6. Bunnell-Lammons Engineering, Inc.
7. Mott MacDonald I&E, LLC

**Aerial Photogrammetry**  
**199 Route Location Survey**  
**Subsurface Utility Engineering**

Mark Schall, PLS<sup>4</sup>  
Dallas Gordon, PLS<sup>1</sup>  
Wally Little, NASSCO<sup>2</sup>

### Design Segments:

Kimley-Horn: Kanuga Road to Landia Drive

McGill Associates: Landia Drive to Brevard Road

The Kimley-Horn team includes 16% SPSF participation with four highly qualified SPSF partners

**NAMES, CLASSIFICATIONS, CREDENTIALS, EXPERIENCE, AND LOCATIONS OF NORTH CAROLINA EMPLOYEES**

Name	Classifications	Credentials	Years of Experience	Location
Jeff Moore	Project Manager	Professional Engineer	27	Raleigh
Mark Cathey	Quality Control Engineer	Professional Engineer	27	Asheville
Michael Hanson	Water Resources Engineer	Professional Engineer, LEED AP	31	Asheville
Dan Robinson	Environmental Engineer	Professional Engineer, Certified Floodplain Manager	25	Raleigh
Jane Mathews	Architect	LEED Accredited Professional Architect	43	Asheville
Paul Worley	Senior Railroad Advisor	Certified Public Manager	33	Raleigh
Stacie Phillips	Transportation Engineer	Professional Engineer	17	Raleigh
Erin Krayner	Structural Engineer	Professional Engineer	18	Charlotte
Andrew Phillips	Structural Engineer	Professional Engineer	11	Raleigh
Chris Tinklenberg	Environmental Scientist	Professional Wetland Scientist	14	Charlotte
Jennifer Murphy	Environmental Engineer	Professional Engineer	9	Raleigh
LuAnn Bryan	Parks/Recreation Consultant	None	44	Hickory
Mark Schall	Photogrammetric Engineer	Professional Land Surveyor	42	High Point
Dallas Gordon	Land Surveyor	Professional Land Surveyor	29	Asheville
Stephen Stansbery	Planner	American Institute of Certified Planners	27	Charlotte
Mike Dowd	Utility Coordinator	Professional Engineer	27	Asheville
Ben Cathey	Building Site Design Engineer	Professional Engineer	22	Asheville
Jason Lawing	Environmental Engineer	Professional Engineer	19	Charlotte
Jesse Jacobson	Geotechnical Engineer	Professional Engineer	21	Arden
Wally Little	SUE Specialist	NASSCO Certified	16	Raleigh
Scott Burwell	Erosion Control Engineer	Professional Engineer	14	Asheville
Jeremy Hamm	Geotechnical Engineer	Professional Engineer	13	Cary
Tori Golaszewski	Greenway Engineer	Professional Engineer	7	Charlotte
Matt Gross	Landscape Architect	Professional Landscape Architect	6	Raleigh
Kristina Whitfield	Transportation Engineer and Planner	Professional Engineer, American Institute of Certified Planners	5	Raleigh
Everett Loving	Greenway Engineer	Professional Engineer	5	Raleigh
Amanda Hollingsworth	Environmental Engineer	Professional Engineer	5	Raleigh
Melissa Helbert	Transportation Engineer	Professional Engineer, TEASS Qualified	5	Raleigh
Laura Handleton	Landscape Architect	Professional Landscape Architect	5	Charlotte
Alex McIntyre	Greenway Engineer	Professional Engineer	4	Charlotte

*\*Teresa Gresham is located in our Kimley-Horn Salt Lake City, UT office; Jonathan Guy in our Charleston, SC office; and Sean Yates in our Atlanta, GA office.*

**CAPACITY CHART/AVAILABLE WORKFORCE**

Kimley-Horn is completing its current federally funded greenway and sidewalk assignments and will be immediately available to serve the County on the Ecusta Rail-Trail project and will ensure that it is built as soon as possible. Kimley-Horn has over 400 team members in four North Carolina offices and more than 5,300 persons nationwide. To further deepen our bench of design professionals, Kimley-Horn has also partnered with Asheville based firm **McGill Associates, P.A.** to lead several major disciplines as well as six other highly qualified firms to perform other disciplines. **The chart to the right illustrates the availability of our team’s work force and the sufficiency of the financial resources and workload capacity of the Kimley-Horn team to provide the proposed services.**

Name	Availability Percentage
Kimley-Horn and Associates, Inc.	60%
McGill Associates, P.A.	65%
Wetherill Engineering, Inc.	75%
Mathews Architecture, P.A.	65%
Spatial Data Consultants, Inc.	75%
Falcon Engineering, Inc.	80%
Bunell-Lammons Engineering, Inc.	80%
Mott MacDonald I&E, LLC	50%



## UNIQUE QUALIFICATIONS AND EXPERIENCE OF KEY TEAM MEMBERS



**Jeff Moore, P.E.** has 27 years of experience with federally funded rail-trail, greenway, sidewalk, roadway, streetscape, and roundabout projects. Of the 60 municipal-led and federally funded projects mentioned on page 1, Jeff has led 33 of them for 17 different North Carolina municipalities receiving federal funds allocated to NCDOT by FHWA through municipal agreements and worked on several others. These projects, dating back to the American Recovery and Reinvestment Act of 2009, include the Downtown Greenway Phase 4 and A&Y Greenway Rail-Trail conversion project in Greensboro and numerous projects across the state. In 2019, Jeff led the Integrated Project Delivery—Design Team, and was instrumental in developing the new Project Delivery Network (PDN) and Master Project Schedule that is being implemented on all NCDOT projects. His work on the PDN and federally-funded locally-administered project experience sets Jeff completely apart in his ability to navigate the NCDOT process for the County.



**Mark Cathey, P.E., McGill Associates, P.A.** has 27 years of design and management experience with a strong background in civil and environmental engineering. He has managed a substantial number of engineering projects from concept to completion—including trails and greenways, parks and recreation, roadways, sidewalks, storm drainage, utilities, solid waste, and GIS-related projects. Mark has developed a noteworthy reputation for his ability to adhere to the client's needs and complete projects in a timely, yet efficient manner. He also has considerable experience with projects that involve extensive permitting. For this project, Mark will lead all of McGill's services, ensure adequate resources, and serve as quality assurance and quality control engineer for all engineering services. Mark understands that applying quality control and assurance measures during every phase of a project, not just at the end, greatly contributes to successful project completion.



**Michael Hanson, P.E., McGill Associates, P.A.,** has 31 years of experience managing and designing a variety of projects. His hydrologic design experience includes watershed assessments, stormwater master planning and flood mapping using a variety of hydrologic and hydraulic models, including HEC-HMS, HEC-RAS, EPA SWMM, XP-SWMM (2D) and ICPR. Michael's design experience includes projects related to wetland creation, greenways, stream restoration, dam design, and regional flood control. He has performed all aspects of project delivery including NPDES and environmental permitting; LOMR/CLOMR submittals, plan preparation, CADD and GIS production, cost estimating, preparation of technical specifications and contract documents, stakeholder facilitation and construction administration.



**Dan Robinson, P.E., CFM** has 25 years of experience and is one of Kimley-Horn's most experienced stormwater professionals. He specializes in the design of stormwater infrastructure improvements associated with NCDOT and municipal roadway improvement projects as well as stand-alone stormwater capital improvement projects. His design experience includes stormwater planning studies, existing infrastructure evaluation, stormdrain system design, bridge/culvert modeling (using HEC-RAS and XPSWMM), scour analysis, floodplain hydraulics, permit preparation, pond design, utility conflict identification and resolution, erosion and sediment control design, and FEMA coordination for CLOMRs and LOMRs. Dan manages the production of stormwater and roadway improvement projects for Kimley-Horn's Raleigh office, has served as project manager for NCDOT's On-Call Hydrologic/Hydraulic Design Studies contracts since 2002, and is currently managing the firm's NCDOT On-Call Highway Stormwater/BMP Retrofit Program Contract.



**Jane Mathews, FAIA, LEED AP BD+C, Mathews Achitecture, P.A.** brings 43 years of experience and established their Asheville office in 1992. She has served as President of the Asheville Section of the AIA and various other AIA and local committees throughout the years. She currently serves on the Asheville Area Riverfront Redevelopment Commission and is chair of the Riverfront Planning & Design Review Committee. She led the development of the French Broad River and Haw Creek Parks for the City of Asheville. The French Broad River Park included structures located at the confluence of the French Broad and Swannanoa Rivers. The structures (pavilion and bathroom facility) were designed to comply with local flood ordinances as flow-through structures, particularly the pavilion in the original Riverside Park lost to flooding in 1916. The Haw Creek Park included trails, combined picnic shelter, restroom facility adjacent to the parking area, and a gazebo along the trail system.



**Paul Worley, CPM, Mott MacDonald,** brings 33 years of experience in the management of rail projects involving federal, state and local governments. He serves as Mott MacDonald's Transportation Planning Practice Leader for North America and Rail & Transit Practice Leader for the Eastern United States. While at the NCDOT Rail Division for 29 years, Paul developed NCDOT's initial program to preserve, manage and maintain railbanked corridors by NCDOT as per the state Rail Corridor Preservation Act of 1988. He possesses thorough knowledge of transportation issues from a public sector point of view, with a focus on rail freight and passenger services, safety, funding, and public policy. He is known for developing productive and lasting collaborations among governments and rail industry stakeholders that have resulted in improved system safety, delivery of capacity improvements and economic growth.



**Teresa Gresham, P.E.** is a planner and engineer with 19 years of experience. She manages multidisciplinary teams, balances traditional and creative solutions, and incorporates community and staff input with data-driven findings. Teresa primarily prepares NEPA and SEPA documentation, develops and leads public involvement activities, completes community impact studies, and develops prioritized recommendations based on project evaluation analyses. She has prepared environmental documentation and led public outreach activities for dozens of greenway and other multimodal projects. Teresa has also coordinated with railroad companies on many NCDOT and municipal roadway projects, including in both a project manager and a supporting role through the planning and NEPA phases. She has been project manager or environmental lead throughout North Carolina.



**Erin Krayer, Wetherill Engineering, Inc. (WEI),** brings 18 years of experience and joined WEI in 2003. She currently leads WEI's Charlotte office, has gained considerable experience in structural design and bridge inspection, and has extensive expertise with a multitude of computer software programs. Erin led the bridge inspections for the Long Branch Greenway Pedestrian Bridge project for the City of Winston-Salem and currently leads the statewide NBIS On-Call Bridge Inspections contract for NCDOT which has included inspections for 777 structures in 34 North Carolina counties. These experiences are directly applicable to the Ecusta Rail-Trail and will prove extremely beneficial to the County in terms of cost and schedule savings.



**Andrew Phillips, P.E.** has 11 years of experience as a structural engineer and has designed a variety of structural components consisting of reinforced concrete, pre-stressed concrete, and structural steel for projects varying in scope, budget, and complexity. Andrew has acted as the lead structural engineer and point of contact for Low Impact Bridge Replacement projects and design-build pursuits with responsibilities, including attending meetings, setting bridge geometry, and QA/QC review. He has an excellent working knowledge of the NCDOT bridge design standards and practices and has coordinated with clients, colleagues, subcontractors, and various state agencies to accommodate and resolve many site-specific engineering and design concerns for the projects on which he has worked. Andrew develops unique solutions to various geometric and site constraints for greenway projects, while being cognizant of project budgets and schedules.



**Stacie Phillips, P.E.** is a traffic and intersection safety expert with 17 years of experience and specializes in transportation design and operations. Having designed more than 1,000 traffic signals in North Carolina and coordinated more than 2,000 traffic signals nationally, she is thoroughly familiar with balancing operational and safety objectives of all modes of transportation. She serves on the Transportation Research Board Traffic Signal Systems Committee and is the chair of the Multimodal and the Joint Intersection Subcommittees. Stacie recently performed intersection safety studies for the EB-5121B, Gary Shell Cross-City Trail, Phase II, for the City of Wilmington, which included greenway crossings of seven busy roadways along Independence Boulevard including a major signalized intersection with US 76 (Oleander Drive).



**Chris Tinklenberg, PWS** has 14 years of experience as an environmental scientist, specializing in natural resource investigations including wetland and stream delineation, aquatic resources functionality assessments, Section 404/401 permitting, protected species habitat assessments and surveys, aquatic resources enhancement and restoration, mitigation, and tree and forestry surveys. He has worked on numerous projects for public and private clients, including local county and municipal governments in the greater Charlotte Metro area, NCDOT, and various residential, commercial, and industrial developers. Chris has developed strong relationships with—and routinely works with—the permitting agencies including the U.S. Army Corps of Engineers (USACE) and the North Carolina Division of Water Resources (NCDWR), and is proficient in ArcGIS for general spatial analysis and data management.



**Jennifer Murphy, P.E.** specializes in stream restoration, stormwater, and natural resource planning and design projects. She has contributed to a wide variety of stormwater and natural resource planning and design projects. Jennifer has worked on several BMP retrofit projects for quantity and quality purposes. Jennifer has completed Rosgen Stream Training Levels I-III and has experience coordinating with municipalities, NCDOT, permitting agencies, greenway designers, and landscape architects to create cohesive projects that are beautiful and functional. Jennifer worked with the Piedmont Conservation Council (a non-profit) to submit an application for a NC Land and Water Fund grant on behalf of the City of Greensboro for the DGP4 project. As a result, the Council received \$400,000 in funding and Jennifer led the stream restoration design.



**Matt Gross, PLA** brings six years of greenway design, greenway and parks master planning, and landscape architecture for facilities across the state of North Carolina. He is passionate about transforming spaces that cultivate community and activate public and private outdoor spaces. Matt brings innovation and intentionality to each project, ensuring both clients and end users have a meaningful experience. He is able to engage the public realm and contribute to the overall health of the communities in which he works. In the past, Matt has served Mecklenburg County on the Four Mile Creek Greenway and McAlpine Greenway Planning and Design projects and the Parks and Recreation Master Plan for the Town of Jamestown. Most recently, he developed the linear park design for the federally funded C-5604FA, Zebulon Beaverdam Creek Greenway for the Town of Zebulon.



**Kristina Whitfield, P.E., AICP** is a transportation engineer with multimodal transportation planning experience at the local and national level. She has facilitated and participated in numerous public outreach efforts, including charrettes, workshops, stakeholder groups, committee meetings, and local community events. Kristina is passionate about developing actionable public outreach strategies that generate meaningful input and useable data. She strives to work with local communities to best understand who they are trying to reach and the most effective way to engage these audiences. Kristina assisted in the development of the Hendersonville Bicycle Plan (2018), Town of Laurel Park Pedestrian and Bicycle Plan (2018), and Village of Flat Rock Pedestrian and Bicycle Plan (2017) which sets her apart in relationships with local municipalities and Blue Ridge Bicycle Club.



**Everett Loving, P.E.** specializes in roadway engineering and design with experience in drainage, utilities, lighting, signals, traffic control, and signing and pavement markings for several public- and private-sector projects. Everett has designed several widening and intersection improvements in restricted right-of-way environment, including work on the horizontal and vertical greenway design for the Legacy Trail Extension Project, where Kimley-Horn designed 7.5 miles of rail-to-trail conversion that is currently under construction. He also has experience designing rural roadways with proposed continuous flow intersections and challenging driveway connections. He has designed interchange improvements in NC, involving the reconstruction of existing ramps, bridges, and other roadway improvements. In addition to his project specific roadway experience, Everett is familiar with Microstation, OpenRoads Designer, and NCDOT project standards.

## Chapter 4 — Technical Approach

### PROJECT APPROACH

The following represents Kimley-Horn's project approach and methodology that **details the routine and unique conditions of this project and how our design and administration will lead to success** for the County. It reflects our team's tremendous and relevant **experience with similar projects and with funding and regulatory organizations relevant to the project.**

### STRUCTURAL ASSESSMENT

Six railroad timber bridges exist along the project corridor. The County desires to retain and use as much of the existing bridge substructures as possible rather than replace them. To save significant cost and schedule to the overall project budget, certified NBIS bridge inspector, WEI's **Erin Krayer, P.E.** will perform a structural inspection and assessment of the existing timber bridges.

Erin will first perform a thorough element-based inspection of each substructure member to determine its current condition. She will measure and record steel members for section loss with an Ultrasonic Thickness Gauge (D-meter). Once the condition of the substructures is determined, structural engineers will analyze the load capacity to determine if they can withstand the proposed new trail bridge deck. If repair recommendations are required to strengthen the substructure members, WEI will design, detail, and prepare repair plans to fit with the proposed bridge deck.

**Andrew Phillips, P.E.** will lead the bridge superstructure design and any full substructure replacement design, as required, based on WEI's inspection. The most cost-effective approach, if the substructures can be retained or repaired, is for Kimley-Horn to develop performance specifications design criteria for prefabricated bridge superstructure trusses. Kimley-Horn will determine the structural load and geometry requirements and develop preliminary bridge plans and details. The bridge manufacturer will complete the final span design in the form of shop drawings.

**Kimley-Horn has used this approach on numerous trail projects in the past, and believe it would prove tremendously beneficial to the County in terms of cost and schedule savings.**

### STREAM AND STORMWATER QUALITY

Stream bank stabilization and enhancement can be applied at strategic locations along the project area, based on a field assessment and prioritization using the available budget, bank erosion hazard index (BEHI) scores, and proposed trail proximity to stream banks. Stabilization and enhancement strategies may include bank grading, natural material installation, such as logs or boulders, to prevent

erosion and native plantings. Opportunities for additional water quality treatment can be identified within the existing easement and right of way, including treatment swales, bioretention areas, and regenerative stormwater conveyance systems. Stormwater control measures (SCMs) could be installed along the trail, on adjacent cooperating properties, such as schools or parks, or along required drainage systems installed for the greenway.

**Kimley-Horn's stream design team has extensive experience in prioritizing stream repair, based on protection of existing and proposed infrastructure, enjoyment of greenway users, stream condition, water quality, and riparian habitat.**

### GRANT APPLICATION SUPPORT

Kimley-Horn worked with the Piedmont Conservation Council to submit an application for a NC Land and Water Fund on behalf of the City of Greensboro for the DGP4 project. The Council was granted \$400,000 for design and construction of a stream enhancement and restoration project adjacent to a proposed greenway along a former railroad bed. This type of grant can be used to fund stream and wetland restoration/enhancement and innovative stormwater quality projects. Kimley-Horn also assisted the City of Greensboro in obtaining \$1.5 million in NC land and water fund grants for a separate four-phase stream restoration project.

### PUBLIC ENGAGEMENT

Kimley-Horn seeks to create a public engagement process that is transparent, effective, and meaningful as shown below.

**Engagement Series** — Kimley-Horn envisions three major engagement series taking place during the project development. For each engagement series, Kimley-Horn will work with County staff to determine the right mix of activities and tools to gain needed feedback in meaningful ways. These will likely include traditional workshop-style meetings and online survey instruments. While these tools have been used in tandem for years, our team has innovated in how we blend virtual and in-person outreach to maximize participation, meet changing public health conditions, and keep participants engaged. As a part of the engagement series, we see the benefit of including stakeholder interviews with adjacent landowners, existing advocacy groups like the Blue Ridge Bicycle Club, and other partner agencies.

**Project Communications** — While others may create a simple static landing page and call it a website, Kimley-Horn recognizes the importance of creating an immersive digital environment that creates two-way communication between the project team and the public. Kimley-Horn will create an interactive project website to serve as the

Digital Hub for the Ecusta Rail-Trail. The Hub, using a platform such as Social Pinpoint, will include up-to-date information; opportunities to provide feedback, including interactive maps, idea walls, and surveys; and a schedule of events and key process points. Kimley-Horn will set up, manage, and curate content for the duration of the planning process. The Hub also will include periodic updates to update the community and stakeholders on any project-related news. The Hub can be a conduit to sharing engagement opportunities and material with existing social media outlets.

Additionally, Kimley-Horn proposes creating a series of web and email-friendly project spotlights—infographics that convey key project information and highlight milestones. Kimley-Horn envisions releasing a project spotlight at the beginning and conclusion of the project, as well as prior to each engagement series.

### RAILROAD BANKING CONSULTATION

**EcustaRails2Trails, LLC**, a subsidiary of Conserving Carolina, has closed on the rail corridor purchase through railbanking and the National Trails System Act. There are many remaining steps to complete the railbanking process, such as Watco filing the railbanking consummation notice with the Surface Transportation Board.

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**Mott MacDonald's Paul Worley, CPM has joined the team to serve as Senior Railroad Advisor and support the County and Conserving Carolina with navigating the remaining steps associated with successfully completing the railbanking process.**

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While at the NCDOT Rail Division for 29 years, Paul developed NCDOT's initial program to preserve, manage, and maintain railbanked corridors by NCDOT as per the state Rail Corridor Preservation Act of 1988. He and his team are committed to providing advice to the County and Conserving Carolina and coordination with railroad entities and regulators through face-to-face meetings and conference calls, as necessary, to answer questions, offer strategy on next steps, and provide guidance through the remainder of the railbanking process.

### INTERSECTION SAFETY ANALYSIS

**Stacie Phillips, P.E.** will evaluate and make recommendations on the safest crossing treatment for each roadway crossing by reviewing safety concerns at the existing Oklawaha Greenway and evaluating future crossing locations of the Ecusta Rail-Trail. Kimley-Horn understands that there are existing safety concerns at the existing Oklawaha greenway. It is important to understand these existing safety concerns to help ensure similar concerns do not arise with this proposed location. To evaluate the existing greenway, Kimley-Horn proposes to use the Traffic Engineering Accident Analysis System and highly prequalified individuals, including **Melissa Helbert, P.E.**, to pull

and analyze crash data at the existing crossings and determine whether any crash patterns are present. In addition to the crash data, a site visit to evaluate the perceived safety of the crossings and document crossing treatments and conditions.

To determine the appropriate roadway crossing treatment at each location, previous studies will be reviewed to determine if the previously proposed crossing treatment is still applicable. To further evaluate the appropriate crossing treatment, Kimley-Horn will document the existing characteristics of the crossing roadway, such as daily traffic volumes, roadway width, and speed and potential projections of bicycle and pedestrian volumes into a memorandum.

To estimate projected bicycle and pedestrian volumes, trail traffic counts and projected volumes on the Oklawaha Greenway will be used to determine appropriate crossing treatments. Based on this data, resources such as the *NCDOT Pedestrian Crossing Guidance (NCDOT, 2015)* and the *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations (FHWA, 2019)* will be used to determine the appropriate crossing treatment for each roadway and findings in a memorandum.

### TRAIL USER PROJECTION ANALYSIS

The Design Guidelines contained within the Ecusta Rail-Trail Planning Study and Economic Impact Analysis recommends a multi-use trail width of 12 feet in most situations. Trail widths will be limited to 10 feet in some locations, due to environmental and physical constraints. However, Kimley-Horn will perform a projection and cost benefit analysis based on the data obtained during the Intersection Safety Analysis above to determine whether a wider trail is warranted in some locations based on anticipated pedestrian, bicyclist, and equestrian use.

**Sustainability and Trailhead Design** — Many trail systems are most successful when the linear movement is interrupted by opportunities for pause, gathering, and preparation where the trail converges with trailheads. Much like a river, a trail is fed by these trailheads and nodes, which offer users the chance to merge into the flow of the system. Trailheads, by definition, are "places where the trail begins." With this definition in mind, the design of these spaces sets the tone for the user's experience. As trails flow through communities, sustainability is a crucial component within design.

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**Trails offer an excellent opportunity to incorporate sustainable and innovate solutions as they are not confined to a singular parcel. The marriage of sustainability and trail design creates an experience which educates and promotes healthy communities and ecosystems.**

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## CROSS-PIPE CONDITION SURVEY

Kimley-Horn will visually evaluate all existing cross pipe locations along the trail corridor for their current structural conditions. We will generate a detailed Cross-Pipe Condition Survey spreadsheet, which documents the general pipe condition, locations of specific structural or operation and maintenance (O&M) issues for each pipe. The survey also will provide a recommendation of whether pipe should be considered for replacement, repair, or further closed-circuit camera (CCTV) investigation. All existing cross pipe locations also will be evaluated from a hydraulic capacity and condition perspective and if deemed undersized, replacement sizes will be documented on the Cross Pipe Condition Survey spreadsheet.

## HYDROLOGY AND HYDRAULIC DESIGN

**The conversion of the existing rail corridor to trail will involve making smart, environmentally-conscious design decisions throughout the corridor to accommodate the existing and proposed stormwater runoff.**

The project footprint and types of stormwater improvements will vary relative to the specific area. To minimize impacts to undisturbed natural areas along the corridor, a significant portion of the proposed trail will be located in the same footprint as the existing railroad bed. This approach will mimic existing drainage patterns, reduce the land disturbance footprint, and reduce potential fill within regulated floodplain areas. This approach will still require a thorough evaluation of the existing drainage patterns, deficiencies, and recommended stormwater improvements needed to convey offsite and onsite runoff along and under the proposed trail. The general approach to stormwater management will be a balance between draining the trail corridor and minimizing concentrated runoff to prevent erosive ditch/stream velocities that can cause stream erosion.

Proposed drainage design will include maintaining sheet flow conditions where applicable, linear ditch design, and cross pipes design. During our field walk, hydraulic engineers will document existing conditions and develop design concepts. Concepts will be fully vetted with the greenway engineers to ensure the proposed trail is in the ideal horizontal and vertical location to accommodate the proposed drainage design features and cross pipes.

There will be times where the trail alignment may need to deviate from the existing rail bed to create a less impactful stream crossing design. This could occur if the existing stream crossing/cross pipe passing under the existing railroad bed has a severe skew and the proposed trail location can be shifted to cross the existing stream at more of a perpendicular angle, thereby reducing the overall stream impact length. Another large factor in the drainage design considerations is the trail location relative to topography. Where possible, we want to use existing topography to create areas of sheet flow (less erosive)

instead of ditch designs that concentrates runoff. Efforts to minimize runoff increases to existing outfalls will be incorporated through stormwater control measures (SCMs) and best management practices (BMPs) when applicable. All stormwater designs will be done in accordance with NCDOT Stormwater Guidelines and local stormwater and buffer requirements.

## FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) COMPLIANCE

Within the proposed project area, there are three FEMA-regulated streams. Wash Creek is a FEMA detailed studied stream with a regulatory floodway. Shaw and Battle Creeks are both FEMA limited detailed studied streams with established non-encroachment areas. Based on our preliminary investigation and field work, it is anticipated that the proposed greenway may encroach into the designated floodway, non-encroachment, and floodplain areas along the streams and at the various FEMA stream crossings. Encroachments into the FEMA-regulated floodways and non-encroachment areas will be minimized to the maximum extent practical to aid in the approval process. The design of the greenway will involve consideration for limiting natural grade changes within the floodway areas to improve the chance that base flood levels will not increase.

The Kimley-Horn team will conduct hydraulic evaluations to determine impacts to base flood levels associated with the greenway. Using the FEMA data as a base model, Kimley-Horn will create Duplicate Effective, Corrected Effective, Existing, and Revised HEC-RAS modeling plans to analyze impacts of the proposed project. To minimize cost, schedule time, and impacts to the FEMA floodplain, we will attempt to avoid a FEMA Map Revision by achieving a No-Rise condition for the proposed project. If the existing bridge substructures can be retained or repaired based on the existing timber bridge structural inspection and assessment, a No-Rise Certification is more likely to be achieved as it reduces proposed impacts to the stream.

**For the FEMA regulated Buffalo Creek bridge crossing on the DGP4 project, Kimley-Horn performed a structural inspection and assessment of the existing four-span timber bridge, retained the existing timber bridge, submitted a No-Rise Certification to NCFMP, and received approval from NCFMP.**

If the hydraulic evaluation demonstrates that no increases in base flood levels result from the proposed greenway, then a No-Rise Certification document will be prepared and submitted to the North Carolina Floodplain Mapping Program (NCFMP) for review and approval. If the project increases base flood levels, then the team will submit a Conditional Letter of Map Revision (CLOMR) package documenting the results of the hydraulic evaluation and proposed Flood Insurance Rate Map changes.

Our ongoing relationship with NCFMP, FEMA-related documentation experience, and attentive project tracking and review coordination have earned us a tested track record for some of the quickest FEMA review and approval times possible.

During our investigation of the NC Flood Risk Information System website, we found that, in addition to Henderson County, the National Flood Insurance Program (NFIP) political areas along Wash Creek within the project area include the City of Hendersonville and the Town of Laurel Park. If it is determined that any of the project encroachments fall within the NFIP jurisdiction for either of these entities, Kimley-Horn will coordinate the local Floodplain Administrator to ensure that the project is in compliance the local Flood Damage Prevention requirements.

**PROJECT SCHEDULE**

The following detailed schedule was developed by Kimley-Horn to design, permit, and bid the Henderson County Rails to Trail. The RFL0I proposed contract time from January 2022 to January 2023, but Kimley-Horn’s schedule achieves a Construction Notice to Proceed on October 31, 2021. This schedule can only be achieved due to our team’s significant federally funded and NCDOT-Administered LAP expertise, immediate availability, and deep resources. Kimley-Horn has developed a solid reputation for meeting aggressive schedules and we intend to demonstrate that ability to Henderson County.

MILESTONE	DATE	MILESTONE	DATE
County Selects Kimley-Horn	Nov 17, 2021	Receive Comments on No-Rise Certification from NCFMP	May 31, 2022
Scoping Meeting with County and NCDOT	Nov 24, 2021	Submit Erosion Control Plans	June 21, 2022
Submit Design Contract To County and NCDOT	Dec 8, 2021	Submit 404 Permit Applications to USACE	June 21, 2022
Receive Design Contract Approval from County	Dec 15, 2021	Submit 401 Permit Application to NCDEQ DWR	June 21, 2022
Receive NCDOT Audit of Fee Estimate	Dec 22, 2021	Submit Revised No-Rise Certification to NCFMP	June 28, 2022
<b>Design Notice to Proceed</b>	<b>Jan 4, 2022</b>	Submit 90% PS&E to County and NCDOT	July 12, 2022
McGill Begins Route Location Surveys	Jan 4, 2022	Receive Conditional Letter of Approval from DEMLR	July 19, 2022
Send Scoping Letters to Agencies	Jan 25, 2022	Receive Encroachment Agreements from Structure Owners	July 26, 2022
Complete Wetland/Stream Delineation	Jan 25, 2022	Receive 90% PS&E Comments from Town and NCDOT	July 26, 2022
County Submits NC Land and Water Fund Application	Feb 7, 2022	County Requests Right-of-Way Certification from NCDOT	July 26, 2022
Wetherill Completes Structural Assessment and Report	Feb 8, 2022	Receive 404 Nationwide Permit from USACE	August 2, 2022
Submit JD Package to Agencies	Feb 8, 2022	Submit 100% Sealed PS&E to County and NCDOT	August 2, 2022
McGill Completes Route Location Surveys	Feb 8, 2022	County Receives Right-of-Way Certification from NCDOT	August 9, 2022
Complete Intersection Safety Analysis	Feb 8, 2022	Receive Design Concurrence Memorandum from NCDOT	August 9, 2022
Complete Trail User Projection Analysis	Feb 8, 2022	NCDOT Requests Construction Authorization from FHWA	August 9, 2022
Field Meeting with Agencies	Feb 22, 2022	Receive 401 Permit from NCDEQ DWR	August 16, 2022
Submit 30% Plans to County and NCDOT	March 8, 2022	Receive Certificate of Plan Approval from DEMLR	August 18, 2022
Receive Agency Responses on Scoping Letter	March 22, 2022	Receive No-Rise Certification Approval from NCFMP	August 23, 2022
Receive JD Approval from USACE	March 22, 2022	<b>NCDOT Receives Construction Authorization from FHWA</b>	<b>August 30, 2022</b>
30% Plans Review Meeting with County and NCDOT	March 22, 2022	Receive NC Land and Water Fund Grant Award	Sep 1, 2022
Submit No-Rise Certification to NCFMP	April 5, 2022	Bid Advertisement	Sep 4, 2022
Public Informational Meeting	April 12, 2022	Pre-Bid Meeting	Sep 20, 2022
Submit Categorical Exclusion to NCDOT	April 19, 2022	Letting/Bid Opening	October 4, 2022
Receive Categorical Exclusion Approval from NCDOT	May 17, 2022	County Requests Contract Concurrence from NCDOT	October 6, 2022
Submit 60% Plans to County and NCDOT	May 17, 2022	County Receives Contract Concurrence from NCDOT	October 13, 2022
County Requests Right-of-Way Authorization from NCDOT	May 17, 2022	County Board Approves Construction Contract	October 19, 2022
County Receives Right-of-Way Authorization from NCDOT	May 31, 2022	Pre-Construction Meeting	October 24, 2022
Submit Encroachment Agreements to Structure Owners	May 31, 2022	<b>Construction Notice to Proceed</b>	<b>October 31, 2022</b>
60% Plans Review Meeting with County and NCDOT	May 31, 2022		

- Major Schedule/Contract Milestones
- Environmental Documentation
- Environmental Permitting
- No-Rise Certification


**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
PRIME CONSULTANT  
TO BE USED WITH PROFESSIONAL SERVICES CONTRACT ONLY  
RACE AND GENDER NEUTRAL**

Ecusta Rail-Trail, TIP BL-0007

*TIP No. and/or Type of Work (Limited Services)*

Kimley-Horn 56-0885615

*(Consultant/Firm Name and Federal Tax Id)*

<i>SERVICE / ITEM DESCRIPTION</i>	<i>Anticipated Utilization</i>
32 – Categorical Exclusion 63 – Environmental Assessment / Finding of No Significant Impacts 70 – Erosion Control 106 – Historical Architectural Surveys of Standing Structures 132 – Landscape and Streetscape Design 155 – Pavement Marking Plans 171 – Public Involvement 207 – Signal Design 243 – Threatened and Endangered Species Survey 247 – Traffic Control Plans 269 – Urban Roadway Design 280 – Wetlands and Stream Delineation 316 – Multi-Use Trail Design, Survey, and Layout 433 – Basic Hydrologic and Hydraulic Design 434 – Tier II Complete Hydrologic and Hydraulic Design	55%
<b>TOTAL UTILIZATION:</b>	<b>55%</b>
<b>RECOMMENDED BY:</b>	
CONSULTANT: Kimley-Horn	
	
*BY: Jeff Moore, P.E.	
TITLE: Project Manager	
SPSF Status:      Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

**“PRIME CONCONSULTANT” (FORM RS-2)**  
**RACE AND GENDER NEUTRAL**

**Instructions for completing the Form RS-2:**

1. Complete a Prime Consultant Form RS-2 for the prime consultant firm.
2. Insert TIP Number and /or Type of Work (Limited Services)
3. Complete the Consultant/Firm name and Federal Tax ID Number for the primary firm information.
4. Enter Service/Item Description – describe work to be performed by the Prime Firm
5. Enter Anticipated Utilization – Insert dollar value or percent of work to the Prime Firm
6. \*Signature of the Prime Consultant **is required** on each RS-2 Form to be submitted with the Letter of Interest (LOI) to be considered for selection
7. Complete “SPSF Status” section - Check the appropriate box regarding SPSF Status, check Yes if SPSF or No if not SPSF



**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
SUBCONSULTANT  
TO BE USED WITH PROFESSIONAL SERVICES CONTRACT ONLY  
RACE AND GENDER NEUTRAL**

Ecusta Rail-Trail, TIP BL-0007


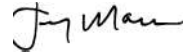
*TIP No. and/or Type of Work (Limited Services)*

Kimley-Horn 56-0885615

*(Consultant/Firm Name and Federal Tax Id)*

McGill Associates, PA 56-1396980

*(Subconsultant/Firm Name and Federal Tax Id)*

<b>SERVICE / ITEM DESCRIPTION</b>		<b>Anticipated Utilization</b>
70 (Erosion Control), 199 (Route Location Survey), 270 (Utility Coordination), 338 (Building Site Design), 433 (Basic Hydrologic and Hydraulic Design), 434 (Tier II Complete Hydrologic and Hydraulic Design)		27%
<b>TOTAL UTILIZATION:</b>		27%
<b>SUBMITTED BY:</b> SUBCONSULTANT: McGill Associates, PA	<b>RECOMMENDED BY:</b> CONSULTANT: Kimley-Horn and Associates, Inc.	
		
*BY: Mark Cathey, P.E.	*BY: Jeff Moore, P.E.	
TITLE: Principal / Asheville Office Manager	TITLE: Project Manager	<input type="text"/>
SPSF Status:    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

**“SUBCONCONSULTANT” (FORM RS-2)  
RACE AND GENDER NEUTRAL**

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Ecusta Rail-Trail, TIP BL-0007

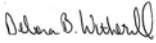
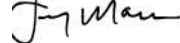
*(TIP No. and/or Type of Work (Limited Services))*

Kimley-Horn 56-0885615

*(Consultant/Firm Name and Federal Tax Id)*

Wetherill Engineering, Inc. 56-0811912

*(Subconsultant/Firm Name and Federal Tax Id)*

<b>SERVICE / ITEM DESCRIPTION</b>		<b>Anticipated Utilization</b>
143 (NBIS Bridge Inspection), 289 (Signal Systems Inspection)		6%
<b>TOTAL UTILIZATION:</b>		6%
<b>SUBMITTED BY:</b> SUBCONSULTANT:	<b>RECOMMENDED BY:</b> CONSULTANT: Kimley-Horn and Associates, Inc.	
		
*BY: Debora B. Wetherill	*BY: Jeff Moore, P.E.	
TITLE: President	TITLE: <span style="border: 1px solid black; display: inline-block; width: 50px; height: 15px;"></span> Project Manager	
SPSF Status:    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

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Ecusta Rail-Trail, TIP BL-0007

*(TIP No. and/or Type of Work (Limited Services))*

Kimley-Horn 56-0885615

*(Consultant/Firm Name and Federal Tax Id)*

Mathews Architecture, P.A., 56-2172478

*(Subconsultant/Firm Name and Federal Tax Id)*

<b>SERVICE / ITEM DESCRIPTION</b>		<b>Anticipated Utilization</b>
332 (Building Design)		5%
<b>TOTAL UTILIZATION:</b>		5%
<b>SUBMITTED BY:</b>		<b>RECOMMENDED BY:</b>
SUBCONSULTANT:		CONSULTANT:
Mathews Architecture, P.A.		Kimley-Horn and Associates, Inc.
<i>Jane Gianvito Mathews, FAIA</i>		<i>Jeff Moore</i>
*BY:		*BY:
Jane Gianvito Mathews, FAIA		Jeff Moore, P.E.
TITLE:		TITLE:
President/Principal		Project Manager
SPSF Status: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

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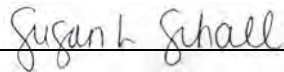
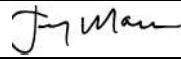
*TIP No. and/or Type of Work (Limited Services)*

Kimley-Horn 56-0885615

*(Consultant/Firm Name and Federal Tax Id)*

Spatial Data Consultants, Inc. 56-1963091

*(Subconsultant/Firm Name and Federal Tax Id)*

<i>SERVICE / ITEM DESCRIPTION</i>		<i>Anticipated Utilization</i>
Aerial Photogrammetry*		2%
*This service is not required per the RFLOI.		
<b>TOTAL UTILIZATION:</b>		2%
<b>SUBMITTED BY:</b> SUBCONSULTANT: Spatial Data Consultants, Inc.	<b>RECOMMENDED BY:</b> CONSULTANT: Kimley-Horn and Associates, Inc.	
		
*BY: Susan L. Schall	*BY: Jeff Moore, P.E.	
TITLE: President	TITLE:	<input type="text"/>
SPSF Status:    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Project Manager	

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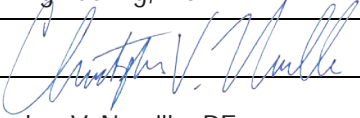
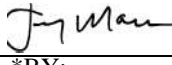
*TIP No. and/or Type of Work (Limited Services)*

Kimley-Horn 56-0885615

*(Consultant/Firm Name and Federal Tax Id)*

Falcon Engineering, Inc. 26-1942169

*(Subconsultant/Firm Name and Federal Tax Id)*

<b>SERVICE / ITEM DESCRIPTION</b>		<b>Anticipated Utilization</b>
294 (Roadway Foundation Investigation and Design), 295 (Structure Foundation Investigation and Design)		3%
<b>TOTAL UTILIZATION:</b>		3%
<b>SUBMITTED BY:</b> SUBCONSULTANT: Falcon Engineering, Inc.	<b>RECOMMENDED BY:</b> CONSULTANT: Kimley-Horn and Associates, Inc.	
		
*BY: Christopher V. Norville, PE	*BY: Jeff Moore, P.E.	
TITLE: Vice President	TITLE: Project Manager	<input type="text"/>
SPSF Status:      Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

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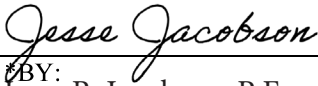
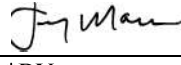
*TIP No. and/or Type of Work (Limited Services)*

Kimley-Horn 56-0885615

*(Consultant/Firm Name and Federal Tax Id)*

Bunnell-Lammons Engineering, 57-1056336

*(Subconsultant/Firm Name and Federal Tax Id)*

<b>SERVICE / ITEM DESCRIPTION</b>		<b>Anticipated Utilization</b>
296 (Retaining Wall Investigation and Design), 297 (Pavement Design Investigation)		1%
<b>TOTAL UTILIZATION:</b>		1%
<b>SUBMITTED BY:</b> SUBCONSULTANT:	<b>RECOMMENDED BY:</b> CONSULTANT: Kimley-Horn and Associates, Inc.	
		
*BY: Jesse R. Jacobson, P.E.	*BY: Jeff Moore, P.E.	
TITLE: Asheville Branch Manager	TITLE: Project Manager	<input type="text"/>
SPSF Status:      Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

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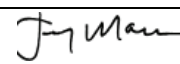
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Kimley-Horn 56-0885615

*(Consultant/Firm Name and Federal Tax Id)*

Mott MacDonald I&E, LLC 22-1613021

*(Subconsultant/Firm Name and Federal Tax Id)*

<i>SERVICE / ITEM DESCRIPTION</i>		<i>Anticipated Utilization</i>
Railroad Banking Consultation		1%
<b>TOTAL UTILIZATION:</b>		1%
<b>SUBMITTED BY:</b> SUBCONSULTANT: Mott MacDonald I&E, LLC	<b>RECOMMENDED BY:</b> CONSULTANT: Kimley-Horn and Associates, Inc.	
		
*BY: Brian Speight, P.E.	*BY: Jeff Moore, P.E.	
TITLE: Vice President	TITLE: Project Manager	<input type="text"/>
SPSF Status:      Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

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