

PROJECT UNDERSTANDING

This project includes a functional design for the segment between Raleigh and Research Triangle Park; and a concept level plan for the segment between Research Triangle Park and Chapel Hill. The work should deliver a proposed implementation plan and planning level cost estimates by segment. The following objectives should be met by this study:

- > Serves as a commuter alternate to I-40 along a direct and mostly parallel path.
- > Provides design recommendations and best practices for the NC 54 multi-use path that is proposed to be built as part of TIP project
- > U-5774 in Durham and connecting to existing and proposed multi-use paths along NC 54 in Chapel Hill to US 15/501(Fordham Boulevard to the west, as well as pursuit of a direct connection (with options if necessary) to the North Carolina Museum of Art to the east;
- > Establishes a methodology for “bikeway” standards, and for standards for when bikeways run parallel to walking paths and recreational trails;
- > Would provide a more direct link for the East Coast Greenway through the Triangle. Current miles biked per year on the East Coast Greenway in the Triangle (from Durham to Clayton) are estimated at 11,225,000;
- > Provides potential links to transit access in Cary, Morrisville, Raleigh and RTP, Durham, and Chapel Hill;
- > Provides potential links to existing and planned bicycle facilities and multi-use paths in Cary, Morrisville, Raleigh, RTP, Durham, Chapel Hill, Umstead State Park, and RDU Airport.
- > Analyze connection alternatives between the Park Center and the Research Triangle Park Headquarters building
- > Addresses the latent demand for active commuting if safe and convenient infrastructure were provided;
- > Defines parking and trail access along the bikeway, incorporates amenities along the trail for users including lighting, rest stations, observation areas, and transit stops;
- > Addresses the multi-use purpose access of the trail for pedestrians, bicyclists, inline skaters, scooters, and wheelchairs;
- > Facilitates stakeholder and decision-maker involvement that informs, educates, receives, documents, and responds to all input;
- > Defines the party or multiple parties that will build and maintain the trail;
- > Secures stakeholder buy-in on preferred alternatives and implementation strategies and priorities;
- > Thoroughly documents the planning process, including documentation regarding selected versus non-selected transportation alternatives in a manner suitable for packaging for the project development process;
- > Designs and implements a robust public involvement process and documents all public involvement efforts, including comments, survey results, or other input received from the public and;
- > Considers all federally-required Title VI and Limited English Proficiency regulations associated with regional transportation planning public engagement efforts.

TASK 1 – PROJECT MANAGEMENT + STAKEHOLDER COORDINATION

McAdams' project management approach is to provide regular communication to ensure that CAMPO staff is well informed and able to make timely decisions to keep the Triangle Bikeway Project moving forward. Administrative tasks associated with project management include invoicing, resource allocation, coordination with sub-consultants and budget and schedule management. In addition to these tasks McAdams' approach to effective project management includes a bi-weekly, recurring coordination call with CAMPO's project manager and other staff as needed.

Stakeholder communication and facilitation will be a major component of the Triangle Bikeway project. McAdams will establish and facilitate an effective multi-jurisdictional Triangle Bikeway Working Group (TBWG) that will meet monthly. Given the heavy meeting schedule that many of these Stakeholders face, McAdams will take great care to make each meeting meaningful through clear communication, careful preparation and engaging agendas that move the project forward. The TBWG will be the main venue for conducting the analysis and work of the study. In addition to TBWG meetings the team will develop a list of key stakeholders along the corridor that require focused engagement. These may include Duke Energy, State Parks, local public works departments and others as determined with the TBWG.

The Triangle Bikeway is an audacious vision that will transform our region by providing a legitimate commute alternative. To reinforce the power of this vision, McAdams proposes to kick-off the project with a half-day workshop that could include case studies or speakers from similar projects, a listening session to develop a deep understanding of the organizational pressures, boundaries and metrics for each stakeholder and establish the ground rules that will govern the group over the life of the project. This foundational work will pay dividends and result in higher trust within the Working Group.

Key elements of this phase include:

- > Administrative project management tasks, including invoices and progress reports submitted in accordance with contract provisions
- > Definition of working group participants
- > Bi-weekly project manager coordination calls
- > Coordination and facilitation of half-day stakeholder kick-off workshop
- > Coordination and facilitation of Monthly Triangle Bikeway Working Group (TBWG) Meetings
- > Direct coordination with key stakeholders

Meetings:

- > Staff kick-off meeting (1)
- > Updates to Joint MPO Meetings (2)
- > TBWG Working Group Half-Day Work Session (1)
- > Monthly TBWG Meetings (9)
- > Updates to MPOs (2)

- > Key Stakeholder Meetings (Duke Energy, RDU, State Parks, others) (5)

Deliverables:

- > Project status reports
- > Meeting minutes
- > Materials to support kick-off workshop
- > Materials to support monthly TBWG and stakeholder meetings
- > Milestone schedule to be updated throughout the project, including anticipated and actual dates for key deliverables, meetings and presentations

TASK 2: REVIEW OF EXISTING PLANS + CONCURRENT AREA PLANNING EFFORTS

Our team will synthesize data from each member of the TBWG on planned projects and improvements. We will also work with the planning staff from each jurisdiction to gather information on private development projects along the corridor. Planned bicycle and pedestrian, trail and roadway projects will be documented for all jurisdictions. A review of relevant local and state policies that may impact or shape the project will also be completed. Examples of policies include NCDOT Control of Access and local access across public works facilities. The product of this phase will be an integrated base map that captures a complete picture of all planned projects along the corridor. This mapping effort will be supported with detailed information on each project to understand schedules and key coordination milestones. The TBWG will review and verify the accuracy of the base planning map.

McAdams will further develop the base map to include all the many features that shape the alignment of a bicycle facility including stream crossings, FEMA floodways, utility corridors, cultural and natural resources, topography, parcels, roadways, railroads and existing trails. Crossings along the corridor will be studied to understand how the Triangle Bikeway and could cross major/minor streets and link to other trail or bikeways. Fieldwork will identify missing elements of data and will be incorporated into the GIS dataset. Base maps will highlight bicycle facilities, sidewalks, greenways/multiuse paths, proposed infrastructure, crashes, priority areas of need, and traffic volumes for street crossing locations.

Mapping will be field verified to ensure accurate representation and understanding of existing conditions. Field investigations will be documented with photography that will be used in TBWG meetings, mapping, public involvement and the final Triangle Bikeway Plan.

Key elements of this phase include:

- > GIS Data Collection
- > Data validation with TBWG members
- > Field investigations

Deliverables:

- > Triangle Bikeway base map

- > Crossing analysis
- > Corridor photography
- > Policy review

TASK 3: DESIGN EXPECTATIONS + CLARIFICATIONS (FULL CORRIDOR ANALYSIS)

With a robust base map in place, McAdams will analyze the entire corridor from Raleigh to Chapel Hill. This phase will also include case studies presented to the TBWG on how other cities have created regional bikeway facilities and education on design techniques, safety and costs of alternative facility types.

In coordination with the TBWG and the community, alternatives will be developed for further analysis. Alternatives will include those identified in the previous Feasibility Study as well as others that were not explored. McAdams will facilitate the development of a weighted decision matrix with CAMPO, the DCHC MPO and the TBWG. Weights will be established that reflect the values and priorities of the TBWG and the public for the Triangle Bikeway. This decision matrix will be used to evaluate each alternative across a range of issues including; safety, variety of user types, connections to transit and destinations, separation from vehicles, directness, cost, constructability, property impacts, utility impacts and other items of importance to the community. McAdams will present alternative mapping, opportunities and constraints analysis and the decision matrix to the TBWG for alternative selection. Consensus on alternative selection will be critical especially for the section between Trenton Road and Park Center Research Triangle Park (RTP) as this alternative will be further developed into functional design.

Key elements of this phase include:

- > Case studies
- > Facility type education
- > Alternative development + mapping
- > Project values + priorities weights
- > Opportunities + constraints analysis
- > Alternative analysis matrix

Deliverables:

- > Case studies presentation
- > Facility type presentation
- > Alternative mapping
- > Opportunities + constraints report
- > Alternative evaluation matrix

TASK 4: TRANSIT CONNECTIONS (WSP)

The team will coordinate with the various transit agencies to update our understanding of the future planned transit routes and facilities. WSP and McAdams are currently working on the Western Bus Rapid Transit (BRT) project and will coordinate with the team that is preliminarily exploring expansion of BRT service to Morrisville.

Additionally, we will document existing and proposed transit service in the corridor and stay actively engaged in the conversations about potential additional BRT service in Durham due to the demise of the Durham Orange Light Rail. This exercise will result in a map of existing and potential future transit service, including the anticipated future stop locations, vehicle types and planned or potential future amenities at each of the stops. The project team will recommend amenities that could reasonably be implemented at key transit stops and on the vehicles to better accommodate cyclists and will work in concert with the transit agencies to recommend changes to the transit plans that further promote utilization of the Triangle Bikeway and create viable multimodal commuting options.

We anticipate that transit connections will be an important value in alternative analysis. WSP will evaluate each alternative for effective transit connection and rate accordingly in the alternative evaluation matrix.

Key elements of this phase include:

- > Existing and planned transit connections within the corridor
- > Coordination with area transit agencies
- > Field investigations of existing stops

Deliverables:

- > Transit route and stop mapping of corridor
- > Recommended transit connections / amenities
- > Transit rating for alternative evaluation matrix

TASK 5: PUBLIC ENGAGEMENT

Meaningful community input is critical for all successful projects. McAdams' public involvement / community engagement specialists strive to connect a variety of techniques that are tailored to each community. Our active engagement process focuses on tapping into existing community networks and events and allows us to reach members of the public that may not come to a traditional public meeting. Our public engagement approach is inclusive and responsive to the entire community, not just the loudest voices. A precise public engagement plan that details to locations, dates and objectives for meetings and outreach will be one of the first deliverables of the project. McAdams will engage with each jurisdiction to understand public engagement issues, policies and strategies specific to their communities. These lessons learned and community values will be incorporated into the overall public engagement plan.

Building stakeholder consensus during the public outreach and programming phase is essential to the planning process. Initial stakeholder meetings include everyone and are often preceded by an informational campaign to make sure the community knows how and when to participate. These early meetings typically focus on aspirational goals; identifying desired destinations; discussing gaps; and providing basic education about the corridor, design considerations, timelines and costs. Alternatives will be presented, once fully vetted, to solicit input that will be part of the overall alternative selection process and decision matrix. Subsequent workshops focus on challenges and opportunities, project character and the unique characteristics of the communities

along the Triangle Bikeway Corridor. These workshops result in an understanding of the community’s overall values that inform the final vision for the corridor.

While traditional public meetings will be an important part of the engagement plan McAdams will also conduct “pop-up” meetings throughout the study to connect with members of the community that may not know about the project. These pop-up meetings can be located at high-traffic businesses or community institutions. Often these meetings are held prior to traditional public meetings to increase attendance and participation.

Surveys will be used throughout the project to gather input and develop the overall vision for the project. These surveys will be deployed on the project website, through TBWG member websites and mailing lists and via paper and tablets at public meetings and pop-up events. The content of surveys and collected data will be developed and reviewed by the TBWG.

While those of us in the design profession interact with maps and plans everyday, many people in the communities we work with rarely need to do so. We strive to make our materials easy to understand, with clear landmarks and road networks identified so citizens can find their homes, desired destinations and their favorite project. Additionally, McAdams has a specialized team of graphic communicators who develop presentations, 3D models, photomontages and video fly-throughs to help various audiences understand proposed improvements. Because the public and elected officials can “see” a potential project with these tools, they are able to provide meaningful feedback.

Video simulations will include a base tool to use with the TBWG, an 8-10 minutes video of the entire corridor that highlights details of the selected alignment and a 2-3 minute summary video of the entire corridor. Videos will be developed for the selected alternative only and does not include individual videos for separate corridors/alignments. Videos will be suitable for use on the project website and other internet platforms.

Public Meetings:

- > Full Corridor Analysis Meetings (2)
 - Input meeting
 - Alternative review and selection
- > Trenton Road to Park Center Functional Design (2)
 - Input meeting
 - Alternative review and selection
- > Park Center to US 15/501 Feasibility (2)
 - Input meeting
 - Alternative review and selection
- > Pop-Up Meetings (8)

Key elements of this phase include:

- > Coordination of public meetings

- > Facilitation of public meetings
- > In person and online surveys (non-statistically valid surveying)
- > Graphic visualization of corridor
 - Base video of corridor
 - 8-10 Min Full Corridor Video
 - 2-3 Min Summary Video

Deliverables:

- > Stakeholder and Public Engagement Plan
- > Content + mapping for public meetings
- > Online + paper surveys
- > Public input documentation + summaries
- > Video fly over of corridor
- > Photo realistic visualization of alternatives and design solutions

TASK 6: WEBSITE DEVELOPMENT (WSP)

The project team will develop and host an interactive website, similar to those developed for the NC 98 Corridor Study and the Triangle Tolling Study, which will include information about Triangle Bikeway, frequently asked questions, a glossary of terms, a resource library and contact information for the project team. The website will also include a “Latest News” section which will provide periodic updates on the study process and link to important documents as they are developed. The social media feeds of CAMPO and the Durham-Chapel Hill-Carrboro MPO (DCHC) will be integrated into the website and links will be provided to CAMPO and DCHC’s various social media platforms and websites. Upon project completion, all web files will be provided to CAMPO and DCHC to allow for continued hosting of the website on other web platforms. The project website will be updated on an as-needed basis during the course of the study (at least bi-weekly) and will be maintained for 3 years after completion of the study, with transfer of all web files to CAMPO and DCHC upon completion of the study.

Key elements of this phase include:

- > Development and maintenance of Triangle Bikeway website
- > Deployment of web-based surveys

Deliverables:

- > Triangle Bikeway Website
- > Updates to website
- > Website performance reporting
- > Community input reporting

TASK 7: DEVELOP PERFORMANCE STANDARDS + CROSSING DESIGN GUIDE (TOOLE)

Toole Design will lead the development of the Design Guide based on similar work for national organizations like FHWA, NACTO and AASHTO as well as municipalities across the country. The project team will develop a menu of intersection design features specific to the Triangle Bikeway that are suitable for implementation.

Intersection designs will focus on user safety and comfort while including specific features that clearly indicate the design character of the bikeway itself. Design features in the intersection menu will increase the legibility of each intersection that is crossed. Along with wayfinding, the Triangle Bikeway intersection design menu will reduce user conflicts and assist bikeway users through intuitive and fairly uniform intersection treatments throughout the length of the corridor, no matter the complexity of the intersection crossing. This will involve data collection in areas with known challenges, assessment of barriers and accessibility, evaluation of current standards and policies, and a review of best practices for trail design and crossings.

Relying on both the data collected and a review of existing GIS data, the Project Team will conduct a barriers analysis and accessibility assessment for the Triangle Bikeway. Both the barriers analysis and accessibility assessment will combine the use of existing data, fieldwork, and applicable input from the public participation to deliver a result that balances objective and subjective criteria. The analyses will be used to identify:

- > Critical crossings
- > Connections to other bikeways and trails
- > Connections to existing and proposed transit routes
- > Existing barriers to accessibility
- > Gaps between the proposed Triangle Bikeway and existing or planned bikeways and trails

Analysis of barriers and accessibility will be essential in developing recommendations and intersection design strategies. We anticipate that barriers and accessibility will be an important value in alternative analysis. WSP will evaluate each alternative for effective transit connections and rate accordingly in the evaluation matrix.

The Project Team will use our expertise to provide a comprehensive review of trail crossing best practices. Toole Design's experience as the authors of the 2012 and upcoming *AASHTO Guide for Development of Bicycle Facilities* as well as other federal design guidance document, will be drawn upon to describe and illustrate how bikeway crossing facilities must be designed to attract users. We will provide a summary of key design features that may benefit the implementation of the Triangle Bikeway.

Intersection typologies will be developed to categorize bikeway crossings based upon various characteristics. The Project Team will work with the TBWG to develop and refine a list of intersection components that will determine typology. Intersection characteristics could include but are not limited to:

- > Number of travel lanes
- > Existing or planned traffic control device
- > Existing or planned intersecting bikeway
- > Proximity to residential uses
- > Proximity to commercial uses
- > Access to transit

Bikeway crossing treatments will be developed for each typology. Some typologies may have several intersection treatments that are suitable. The menu of intersection designs will illustrate the crossing of the Triangle Bikeway to reduce conflicts with other roadway users. Additionally, the menu will identify how users

along other bikeways will access the Triangle Bikeway and vice versa. A final menu of intersection designs will be highly graphical and with content that describes how the crossing treatment increases safety and comfort for users. This analysis will be conducted for the entire corridor.

Key elements of this phase include:

- > Analysis of existing crossings
- > Assessment of barriers and accessibility
- > Evaluation of best practices for trail crossings
- > Recommended design palette

Deliverables:

- > Menu of bikeway crossings (draft and final)
- > Crossing and accessibility ratings for alternative evaluation matrix

TASK 8: PROJECT DELIVERABLES

TRENTON ROAD TO PARK CENTER FUNCTIONAL DESIGN

Based on available GIS and LIDAR data McAdams engineers will develop a CAD model of the selected alternative from Trenton Road to Park Center. Functional design will define the typical section for the bikeway, at-grade and grade separated crossing layouts, structure type recommendations, conceptual grading limits and right of way requirements (permanent and temporary construction). Rough impacts to jurisdictional streams and wetlands and FEMA floodway/floodplain will be calculated.

Meetings

- > Jurisdictional Meetings (5)

Deliverables:

- > 30% Functional design plans
- > Photos of field conditions
- > Escalated construction cost estimates including construction administration and construction materials testing costs
- > Preliminary horizontal and vertical alignment
- > Property impact matrix: PIN#, owner, acreage, tax value, recommended easement size
- > Location and recommended type of bridges and boardwalks
- > Location and recommended surface for bench modifications under roadway / railroad bridges
- > Interim routing options and costs
- > Permitting obligations
- > Likelihood of CLOMR / LOMR on alignment within FEMA regulated stream corridor
- > Recommended transit connections
- > Recommended connections to other bicycle and pedestrian facilities

- > Location and type of amenities (parking, trailheads, lighting, rest stops, potable water and observations areas)
- > Recommended connections from main alignment to neighborhoods and other destinations
- > Opinion of yearly maintenance requirement and rehabilitation / replacement schedule

PARK CENTER TO US 15/501 FEASIBILITY STUDY / NC 54 CORRIDOR UPGRADE RECOMMENDATIONS (U-5774)

Based on available GIS and LIDAR data McAdams engineers will develop a CAD model of the selected alternative from Park Center to US 15/501. Feasibility analysis will define the typical section for the bikeway, at-grade and grade separated crossing conceptual layouts, conceptual structure type recommendations, conceptual grading limits and right of way requirements. Rough impacts to jurisdictional streams and wetlands and FEMA floodway/floodplain will be calculated.

Meetings

- > Jurisdictional Meetings (4)

Deliverables:

- > Detailed recommended alignment mapping
- > Photos of field conditions
- > Escalated construction cost estimates including construction administration and construction materials testing costs
- > Preliminary horizontal and vertical alignment
- > Property impact matrix: PIN#, owner, acreage, tax value, recommended easement size
- > Interim routing options
- > Likelihood of CLOMR / LOMR on alignment within FEMA regulated stream corridor
- > Recommended transit connections
- > Location and type of amenities (lighting, rest stops, potable water and observations areas)
- > Recommended connections from main alignment to neighborhoods and other destinations
- > Opinion of yearly maintenance requirement and rehabilitation / replacement schedule

DRAFT MUNICIPAL MAINTENANCE AGREEMENT

Through the TBWG, McAdams will coordinate the development of a draft municipal maintenance agreement for the future Triangle Bikeway. Examples of different approaches to maintenance agreements will be presented with pros and cons. McAdams will document the maintenance capacity and processes of the municipalities along the corridor.

GIS DATA

McAdams will coordinate with CAMPO and the DCHC MPO early in the project to ensure that our GIS layers and fields are in the proper format. GIS data will be shared throughout the project. Final alignments will be delivered at the conclusion of the project.

TASK 9: FORMULATE RECOMMENDED IMPLEMENTATION STRATEGY + PLAN REPORT

The implementation strategy will seek to extend the connections made through the TBWG into the execution phase of the project. With effective facilitation during the planning phase this group will be a powerful tool in achieving the Triangle Bikeway vision. Specific implementation recommendations will be made for: interim routing, property / easement acquisition, developer and employer partnerships and transit connections. With regard to funding the project will be conducted and materials developed with grant seeking in mind. Final documentation will provide CAMPO and the DCHC MPO the information necessary to pursue a Federal BUILD grant, including cost / benefit analysis.

The final Triangle Bikeway Plan will document the evolution of the project and provide decision makers with the information needed to implement recommendations. The larger plan will be accompanied by a marketing quality executive summary that uses imagery, infographics and clean, clear mapping to tell the story of the project. This piece will direct readers to the complete plan, the video fly-through of the recommended corridor and the project website.

All deliverables will be reviewed by project team members for completeness and accuracy prior to delivery. Selected deliverables will also be reviewed by non-team members for comprehension, practicality, and value for quality control. Technical deliverables will be reviewed by staff with experience in the specific field. Budgetary and management deliverables, in addition to all deliverables, will be reviewed by the McAdams Project Manager, Iona Thomas, and other internal McAdams reviewers. Technical deliverables will be reviewed by staff in accordance with the McAdams QA/QC Policy.

Key elements of this phase include:

- > Final plan presentation to CAMPO staff and TBWG
- > Draft plan review and revision
- > Executive summary design coordination

Deliverables:

- > Phased Implementation Plan for Trenton Road to Park Center
- > Interim and long term recommendations for Park Center to 15/501 and NC 54
- > Detailed project data sheets
- > Data inputs necessary for NCDOT STI Prioritization
- > Final plan
- > Stand-alone executive summary

TASK 10: FINAL PLAN ENDORSEMENT + AGREEMENT

The McAdams team will support final plan adoption with materials and staff to effectively tell the Triangle Bikeway story. In addition to MPO adoption, adoption at the municipal level may also strengthen support and commitment for the project.

Meetings / Presentations

- > NCDOT
- > CAMPO/DCHC Ex
- > MPO Presentations
 - o TCC Presentation (2)
 - o Board Presentation (2)

MEETING SUMMARY

Meeting	Audience	Number
Formal Staff Kick-off	CAMPO Staff	1
Bi-Weekly PM Coordination Calls	CAMPO Staff	40
Updates to Joint MPO Board	Joint MPO Boards	2
Project Updates to MPOs	CAMPO / DCHCMPO	2
Coordination and facility of half-day stakeholder kick-off workshop	Triangle Bikeway Working Group	1
Key Stakeholder Meetings	Key Stakeholders	5
Bi-Monthly Triangle Bikeway Working Group (TBWG) Meetings	Triangle Bikeway Working Group	9
Full Corridor Analysis Meetings	Public	2
Trenton Road to Park Center Functional Design	Public	2
Park Center to US 15/501 Feasibility	Public	2
Pop-up Meetings	Public	8
Jurisdictional Meetings	Jurisdictions within Corridor	9
Draft and Final Plan Presentations to MPOs	CAMPO / DCHCMPO	4
Total		87

SCHEDULE

See attached

FEE

See attached

EXCLUSIONS

The following services are not included in this Scope of Services:

- > Additional meetings not described in this scope.
- > Additional video simulations not described in this scope.
- > Preparation of construction drawings suitable for bidding.
- > Preparation of site surveys.
- > Flood studies or “100+1” studies to submit to regulatory agencies.
- > Preparation of Rezoning or Zoning Amendment documents for subject properties.
- > Off-site utility extensions specific design.
- > Off-site roadway improvements specific design.
- > Permit application fees.
- > Legal advertisements for construction contracts.
- > Court appearances for litigation, or preparation for same.
- > Assistance with acquisition of right-of-way or off-site easements; preparation of exhibits for same.
- > Revised directives from CAMPO after project process has begun.

- > Any other services not specifically described in the scope of work.