

MEMORANDUM

TO: DCHC MPO Technical Committee
FROM: Doug Plachcinski, AICP, CFM, Executive Director
DATE: July 26, 2023
RE: **PROPOSED US 15-501 STUDY V3 SCOPE**

I. BACKGROUND

The Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) completed a detailed study of the US 15-501 corridor from Ephesus Church Road in Chapel Hill to University Drive in Durham in 2021. The project team analyzed existing conditions, proposed recommendations, and created a final report and conceptual design. However, the MPO Board determined the study's recommended improvements did not meet the Board's adopted Goals and Objectives and declined to adopt the study. The MPO Board updated the Metropolitan Transportation Plan project description for the corridor from a freeway conversion to a boulevard conversion and modernization in 2022.

The DCHC MPO wants a CONSULTANT to collaborate with stakeholders to create a multimodal corridor solution that supports the MPO's adopted Metropolitan Transportation Plan' goals and objectives. We anticipate a recommended corridor alternative that provides access for all users, decreases energy consumption and emissions, improves safety, increases operational efficiency, and respects the natural and built environments.

The study process:

- A. Problem articulation and study limits including consensus desired outcomes. The MPO will furnish position letters from member communities and other existing public comment records to the CONSULTANT. The CONSULTANT will convene the stakeholders and fashion a multimodal purpose and need statement guiding the entire project.
- B. Existing conditions analysis
 - 1. Current and planned land uses
 - 2. State and local ordinances
- C. Travel patterns and behaviors
 - 1. ADT, VHT, VMT and hourly
 - 2. Historic trends
 - 3. Origin/Destination, select link analysis.
- D. Local Priorities
 - 1. Access/Speed Management
 - 2. Environmental Justice
 - 3. Environmental Impact
 - 4. Climate Impact Based on VMT data and emissions data (provided by DCHCMPO)

E. Modes

1. Public transportation
2. Nonmotorized travel
3. Freight
4. Rail
5. Highway

F. Future conditions

1. Land use/development potential
2. Travel patterns/behaviors
3. Economic Development
4. Residential Growth
5. Housing Trends/Impacts on Commuting

G. Public Engagement/Equity Engagement/Environmental Justice

H. Alternatives Evaluation (including potential for bike and ped facilities; impacts on land use, environment, ripple effects on other commute routes) ROW evaluation based on removal of structures (windshield survey/aerial mapping/ Google Maps)

1. Boulevard Conversion
2. Context sensitive design
3. Capacity expansion (ultimate)

I. Strategies

1. Short-term vs. long-term
2. Recommended Cross-Sections
3. Implementation
4. Action Plan

II. PERFORMANCE PERIOD.

The CONSULTANT must complete the scope of work twelve (12) months after they receive notice to proceed.

III. DESIRED SCOPE ELEMENTS

The project will contain the following major components:

A. Coordinate with a Core Technical Team

DCHCMPO will administer and manage the consultant contract. The CONSULTANT will regularly coordinate technical issues with a Core Technical Team (CTT). The CTT will consist of one (1) staff member each from Durham County, City of Durham, Orange County, Town of Chapel Hill, DCHC MPO, GoTriangle, GoDurham, Chapel Hill Transit, and NCDOT Divisions 5 and 7. The CTT will convene monthly throughout the study process.

B. Conduct an Existing and Expected Future Conditions Analysis of the Corridor

The CONSULTANT will prepare the following products. The elements and products prepared in this section will support the development of later tasks presented below in this scope.

1. Prepare Existing and Future Expected Conditions Inventory

This CONSULTANT will document existing and expected future conditions along the corridor to achieve a thorough understanding of the issues (past, present, and future) that have had or will have impacts on the corridor. Future expected conditions represent the baseline future for the corridor (2050 or 2055) for when future identified, evaluated, and prioritized strategies occur. The CONSULTANT will collect and analyze the following information:

- a. Demographic information (historic and projected future population trends, factors affecting growth).
- b. Existing and projected future land use patterns (based on how they currently exist).
- c. Community land use policies and ordinances, particularly as they pertain to transportation improvements and access management.
- d. An inventory of access points along the Corridor, both existing and future proposed.
- e. An inventory of the existing road profile as related to topography and slope.
- f. Significant cultural and historic sites, prime farmland areas, water supply watersheds, wildlife habitats, and other natural features along the corridor
- g. Highway and transit networks, traffic capacity data, and other characteristics for US 15-501 and roads that connect to or significantly impact the corridor (provided by the CTT from sources such as the Travel Demand Model, Streetlight Data)
- h. Overview of local and regional transit service (by consulting with transit operators) and survey their users for transit opportunities.
- i. Overview of improvement projects (CTP, MTP, and TIP) within the study area.
- j. Inventory of other transportation facilities, modes, or plans (such as bicycle, pedestrian, greenway, bike paths) on or adjacent to US 15-501.
- k. Overall vision for the potential boulevard conversion of US 15-501 along area of study, building upon the 2050 MTIP planning process.
- l. Review recent plans and studies relative to the project, including:
 - i. FY 2023-2032 Statewide Transportation Improvement Program (STIP)
 - ii. Local Comprehensive Transportation Plans, Land Use Plans, and Ordinances
 - iii. Most-recent DCHC MPO Comprehensive Transportation Plans and Metropolitan Transportation Plan.
 - iv. DCHC MPO Mobility Report Card
 - v. Current greenway/pedestrian projects underway that interact with the corridor.
 - vi. Traffic Impact Analyses for any recent developments
 - vii. Approved development plans along the corridor
 - viii. Other locally adopted plans

- m. The CTT will also provide the CONSULTANT with any additional input data that is readily available to support the conditions inventory like traffic counts, speed, transit, and traffic accident data analysis. The CONSULTANT should use the data to inform their analyses.

C. Compile Previous Corridor Strategy/Project Recommendations

The CONSULTANT must use the inventory results document relevant US 15-501 corridor study strategy/project recommendations. Recommendations in these studies/plans should, to the extent possible, inform US 15-501 recommendations development. The client will provide summary documentation of the relevant recommendations in the plans to better focus this scope element. In this element, the CONSULTANT will audit of the strategy/project recommendations including those contained in the most recent MPO Comprehensive Transportation Plan, Metropolitan Transportation Plan, and any locally adopted transportation and land use plans for viability in the US 15-501 with respect to mobility and inter-jurisdictional connectivity. The CONSULTANT must prepare a list of the previous plan strategies/projects relevant to move forward into US 15-501 corridor evaluations and finalize this list upon approval by the client.

The CONSULTANT must prepare a best practice review of similar regional contexts and NCDOT procedures in developing and evaluating connectivity, mobility, and equity measures used to support corridor development programs. This will include reviewing applicable connectivity policy best practices appropriate for study area implementation. The CONSULTANT must also conduct a best practice review of mobility and equity policies and performance analysis appropriate for implementation in the study area.

D. Prepare Existing and Expected Future Transportation Network Deficiencies/Needs

Based on the existing and expected future conditions inventory prepared earlier in this Task, the CONSULTANT must identify transportation system deficiencies and needs based on an analysis of existing and future anticipated capacity deficiencies along the corridor using the most recent Travel Demand Model, traffic, multimodal connectivity, and safety conditions in the corridor.

CONSULTANT will create a sub-area model for the US 15-501 project region and utilize the results to estimate trips produced through the project area. The CONSULTANT will use the latest Triangle Regional Model. The sub-area model will incorporate the US 15-501 corridor along with important parallel routes and adjacent Traffic Analysis Zones (TAZs). The CONSULTANT will propose this region and the CTT will approve it. The CONSULTANT will adjust all associated model files to reflect the project area. The CONSULTANT will specifically evaluate a scenario that includes an integrated management approach that applies intelligent transportation principles to preserve and enhance operation capacity on both US 15-501 and I-40. The CONSULTANT will run the model for the base year, future year no-build, and up to three (3) future year build options for a total of five (5) scenarios. The CONSULTANT will run the model and process the data to supplement analysis results.

The CONSULTANT must then identify the strategy/project recommendations prepared in previous studies/plans (see Previous Corridor Strategy/Project Recommendations element above) that address the corridor needs and identify additional strategies/projects that address the defined needs. The CONSULTANT must use this needs analysis to identify and develop recommendations for immediate, mid- term and long-term solutions to those deficiencies for evaluation.

Traffic Analysis Assumptions include:

1. DCHC will provide access to Streetlight data to the CONSULTANT, along with other applicable plans and studies.
2. Volume development will rely upon the provided data from the CTT, NCDOT AADTs, and travel demand

model results. CONSULTANT will summarize base and future year projections for capacity analysis processes. CONSULTANT will straight line interpolate volumes to identify mid-term solutions to corridor deficiencies.

3. CONSULTANT will evaluate CAP-X for up to six (6) key intersections along the corridor as defined by the CTT. Up to 15 intersection alternatives (approximately 2-3 per location) for these six (6) intersections will be analyzed based upon the CAP-X results.
4. CONSULTANT will perform Synchro analysis at these key intersections. Analysis will further assess up to 15 total alternatives (up to three (3) intersection alternatives per location) based upon the resulting highest-ranking improvement scenarios from the CAP-X analysis.

E. Summary of review of plans and policies for equity goals and objectives.

1. Existing and Future Expected Conditions and Needs Analysis – Tech Memo
2. List of Projects/Strategies to be Packaged as Alternative for Later Analysis
3. Best Practice Review of Connectivity, Mobility, and Equity

F. Public Engagement/EJ

1. In addition to regular meetings with the CTT, the CONSULTANT will design and administer a robust public engagement strategy for this study. The strategy should include, at a minimum, meetings or workshops targeting local officials, business and property owners, and the public. We anticipate public interest in the corridor through the lens of commuters, the corridor primarily functions for commuter mobility. Consequently, public engagement should strive to reach these users in addition to users/stakeholders located directly adjacent to the corridor.
2. The CONSULTANT will hold meetings or workshops to inform decision-makers, their constituents, and corridor travelers. The CONSULTANT should emphasize performance standards and alternatives to achieve them. Communication and collaboration with the public and stakeholder groups early and often will be key to a successful outcome. The CONSULTANT will participate in presentations to appropriate partners. The CONSULTANT will recommend engagement opportunities with all constituents and most intentionally [communities that are historically marginalized and overburdened by pollution](#).
3. CONSULTANT and CTT will finalize copy, graphics, key questions, and goals of public involvement for public-facing content related to US 15-501 Corridor Study Project outreach. The Consultant will create all resources in collaboration with equity-driven and culturally responsive practitioners highlight historically marginalized audiences in the process. The CONSULTANT will translate materials into Spanish.
4. CONSULTANT will present information at community stakeholder meetings to share information related to the US 15-501 Corridor Study. The CONSULTANT will leverage existing community events to position public input needs for this project within those events. Online workshops help inform the project and record public input.
5. The CONSULTANT will promote workshops to local neighborhoods and businesses alongside the US 15-501 Corridor, past engagement ambassadors, and the broader regional community. The CONSULTANT will collect data and summarize public input in a report informing the development plans for the corridor. The CONSULTANT will collect demographic information at every public input opportunity conducted and summarize the data in a report as well. Once reviewed and authorized by CTT, the CONSULTANT will share the summary report with engagement participants for transparency and community accountability.
6. Deliverables:

- a. Public Involvement Plan
- b. Graphics and copy for print and digital outreach materials for various public involvement formats.
- c. Up to two (2) in-person or online data collection tools.
- d. Public input opportunity Demographic information collection forms.
- e. Up to three (3) online workshops for public input
- f. Up to three (3) organic community events leveraged for public input.
- g. Summary report of public input and demographic data of participants

G. Develop Performance Standards, Conduct Alternatives Analysis, and Implement Strategies

Based on input from the transportation network analysis and alternatives, the public engagement, and the CONSULTANT's and CTT's research, the CONSULTANT will develop a performance evaluation approach and set of performance standards for the corridor that result in an alternatives analysis for achieving those performance levels. The consultant should recommend implementation steps for each strategy. The performance standards are benchmarks measure development requests and transportation improvements. The strategies will consist of a variety of techniques with suggestions for implementation along the various segments of the corridor. Strategies should include segmentation of corridor improvements appropriate for biennial NCDOT Strategic Prioritization Office of Transportation (SPOT) prioritization and consideration of inclusion in Statewide Transportation Improvement Plan (STIP) updates.

1. Develop Performance Evaluation Framework

The CONSULTANT must develop a performance evaluation framework designed to evaluate the alternatives. The CONSULTANT will determine the appropriate performance metrics for testing transportation alternatives. The CONSULTANT should structure measures using the MPO's Metropolitan Transportation Plan (MTP's) goals and objectives. The MTP is the performance framework foundation with measures addressing each goal related to regional mobility, connectivity, equity, safety, environmental, and others as appropriate to identify the strategies/projects (alternatives) that best meet the region's performance standards. Tools, models, and data used in this analysis will include a GIS-level assessment of human and environmental goals/impacts associated with the alternatives. Travel demand model outputs, traffic and turning movement counts and analysis, and crash data that are already available for the corridor to calculate performance. The CONSULTANT will identify and supply a list of relevant data.

In the process, the CONSULTANT must develop the mobility-based performance standards for the corridor for consideration of inclusion into the SPOT process for the recommended alternative, equity, and other measures and the CONSULTANT also will refine the list of equity-related performance standards.

2. Conduct Alternatives Analysis

The CONSULTANT will use the strategies/projects that best meet the network deficiencies/needs to create the alternatives for analysis. The CONSULTANT will apply the performance framework developed above and identify alternatives that best perform and meet the network's needs (up to three (3) alternatives). Alternatives will focus on converting the US 15-501 corridor into a multimodal boulevard and regional entrance. The CONSULTANT should analyze how a boulevard conversion limits traffic volume, existing and future transit connection, and nonmotorized pathways improve or limited by a boulevard conversion.

Within each corridor alternative defined and evaluated, there will be multiple sub-corridor alternatives

based on the variable context that will result in segment-specific treatments. Recommendations should focus on congestion mitigation, multimodal integration, and safety, including the provision of safe bicycle/pedestrian/freight/transit crossings, and access to the facility along the study corridor and within the study area. The preferred alternative should mitigate unsafe conditions at intersections along the corridor.

The CONSULTANT will develop a matrix summary comparing the performance results of each alternative, including human and environmental impacts of each alternative analyzed. This summary will include a high-level equity assessment, based on performance metrics developed in coordination with the CTT and the public to show how each alternatives performance relative to addressing transportation network needs.

3. Design Implementation Strategies

Taking the results of the alternatives analysis, and the performance assessment, CONSULTANT will layer in funding, phasing for the recommended alternative for inclusion in the SPOT process.

4. Deliverables:

- a. Performance Framework Overview Technical Memorandum
- b. Alternatives Assessment Technical Memorandum
- c. Design Implementation Strategies
- d. 2 2D renderings of Boulevard Typical Section with Generic Streetscape

IV. FORMULATE IMPLEMENTATION STRATEGY AND PLAN REPORT

The CONSULTANT will assemble the final containing workshop outcomes and a suitable action plan for NCDOT, the MPO, and local partners' adoption. Included within the plan must be the recommended implementation program for the local governments to ensure the plan's long-term success. The implementation strategy should include specific local and regional policy and infrastructure implementation. The CONSULTANT should produce the final report in printable and digital formats.

V. FINAL PLAN

The CONSULTANT will assist CTT members as they present the final plan to their respective governments for adoption or endorsement. DCHC MPO staff will present the Corridor Plan to their respective Board for their formal incorporation into the Comprehensive Transportation Plan and Metropolitan Transportation Plan. Implementation plan will determine which local government and/or regional agency is responsible for pursuing individual projects identified. The MPO will request NCDOT endorse the final plan.