NC 54/I-40 CORRIDOR STUDY SCOPE OF SERVICES

TASK 1 – PROJECT INITIATION

Upon Notice to Proceed, the Consultant will begin the project by defining the public involvement program, and conducting a kickoff studio meeting with the Project Steering Committee. In addition to the kick-off meeting, the project initiation task will entail a site assessment and initial key stakeholder meetings. During the kick-off work session, the Consultant and Steering Committee will confirm the project approach, clarify the public engagement and plan review process, and confirm project deliverables and expectations.

In preparation for the kickoff studio work session, the Consultant will work with the study project manager to establish an agenda, and a clear set of expectations for our visit. As part of this task, the Consultant will perform a detailed site visit, identify all relevant data required, begin defining existing area characteristics, discuss existing plans and policies, and identify key issues and opportunities.

The Consultant will use the kickoff meeting to present a summary of our data development efforts, define additional data needs, and confirm data sources, validity and assumptions with the Steering Committee. The discussions and decisions made at the kick-off meeting will be documented in a summary memo with chart of responsibilities and contact personnel.

PUBLIC INVOLVEMENT

The Consultant will ensure that meaningful public involvement is included in the development and evaluation of scenarios, future mobility improvements and land use strategies to support corridor livability, mobility and economic vitality. The consultant shall conduct up to four public workshops or forums to solicit input, comments and feedback as well as disseminate study results, findings and proposed recommendations. As required by SAFETEA-LU, the consultant shall incorporate appropriate transportation and land-use visualization techniques using CorPlan (compatible with Community Viz), Synchro and Google Sketch-Up, among other visualization techniques, to aid with the dissemination of information to the public and policy-makers.

The consultant shall prepare materials to help explain plan concepts, alternatives, development scenarios, etc. to the public and elected officials.

The Consultant will submit a Public Involvement and Outreach Plan that outlines the strategies and tactics to reach and engage multiple target audiences in the planning process – citizens, businesses, community organizations, agency staff, and other stakeholders. It will define the components of the public involvement process, including focus group discussions, workshops and media coordination. In developing the Public Involvement and Outreach Plan, the Consultant will work with the Steering Committee to compile a list of stakeholders that will form a Plan Information Network (PIN) for use in making community contacts that will form a central element of the study outreach effort. The Consultant will use the PIN as a means of timing meeting invitations for maximum effectiveness, and also to schedule briefings at key points in the process at a regularly scheduled meeting of a particular group.

For the public involvement program to be conducted as part of subsequent tasks, the City of Durham, and/or other Steering Committee participants, will be responsible for identifying meeting and workshop locations, making room arrangements and handling public advertisements. The Consultant will develop flyers and/or press releases for distribution to the PIN and for use by the local governments.

Deliverables: Refined Data Needs Matrix, Kick-off Meeting Agenda and Summary, Public Involvement Plan

TASK 2 – CORRIDOR/SUB-AREA PROFILE

The focus of this task will be to compile a clear, concise and readable inventory and assessment of key issues, opportunities and the planning context for the study. The approach is to tell an effective story about the corridor and study area that is understandable to both technical and non-technical audiences, using maps, photos, quantitative measures and narrative to inform the development and evaluation of future scenarios for land use and transportation.

As part of this task, the Consultant shall facilitate a series of discussions with key stakeholders within the corridor to identify their problems and ideas for the study area. The Steering Committee will suggest stakeholder groups to involve, but at a minimum, this will include the University of North Carolina, business interests along the corridor, environmental and neighborhood groups. Other potential stakeholders may include public safety officials and community organizations. The Consultant will facilitate and document discussions with up to six stakeholders or stakeholder groups as an input into the Community Profile.

The Consultant shall conduct a detailed and thorough inventory and analysis of existing transportation, environmental and land-use conditions and document the results in a Community Profile. This task will be used to assess and articulate issues and problems within the study area.

Primary tasks include collecting attributes of existing facilities, obtaining the travel demand model and travel survey data, collection of traffic count data, assessment of existing and future land use, identification of environmental constraints, and traffic analysis at the intersection and corridor analysis (LOS, V/C Ratio). The outcome of this phase will be a documented baseline of preliminary existing conditions and an articulation of issues (transportation, land-use, financial, environmental, etc) in the study area. Although congestion management is not the sole focus of the study, the Consultant will perform the analysis to adhere to the congestion management guidelines developed by the North Carolina Department of Transportation (NCDOT). These guidelines will help form the evaluation measures to be used in subsequent tasks and preparation of the Master Plan Blueprint.

The Consultant will conduct a field inventory of multimodal transportation conditions to assess system connectivity and continuity, define gaps or barriers, take note of opportunities for improvements, and assess the overall quality of multimodal conditions that will take into account user comfort and convenience. At a minimum, this will address pedestrian, bicycle, transit and intermodal opportunities, and their relationship with existing and planned land development activities.

This task will include the following data inventory and information gathering:

1. Collecting or assembling 24-hour tube counts on designated locations along NC 54, I-40 and other designated location within the study area. (City, Town and NCDOT to provide 24-hour counts where available). Based on a review of recent existing count data (2008), the Consultant will collect up to 10 mid-block tube counts within the study area.

2. Collecting or assembling Turning Movement Counts (TMC) for AM and PM peak hours at signalized intersections and designated major driveways within the study area (City and NCDOT to provide TMC where available). Based on a review of existing count data, the Consultant will collect up to four (4) TMCs within the study area.

3. Assembling of signal timing plans (City and Town signal timing plans).

4. Obtaining or assembling historic traffic counts from 1998-2009 and analyze traffic growth and trends for 10 years.

5. Assembling crash data and crash history from the NCDOT database for 1998-2009 along major facilities in the study area, including identification of crash patterns and trends as well as any existing or potential safety deficiencies. The analysis will

consider crash locations and type of crashes as part of a planning-level evaluation of trends, conditions and potential operational improvements.

6. Documenting any existing or proposed multi-modal transportation facilities within the study area (i.e. transit services, fixed guideway, HOV/HOT, bicycle and pedestrian, greenways, etc.)

7. Detailing and mapping existing right of way (ROW), as available from existing sources, including any dedication/reservations. Original right-of-way surveys will not be performed.

8. Documenting any studies or reports that pertain to this project and applying any relevant recommendations/findings as necessary to this study (LRTP, Thoroughfare Plan, NC 54 Land use study, Land-use small area plans, HOV study, US 15-1501 Corridor Study, Duke-UNC Fixed Guideway Study, any private development traffic impact studies, Leigh Village access studies, SW Durham Collector Street Plan, Farrington/Stagecoach Corridor Study, etc.)

9. Documenting and mapping existing and proposed land-use and development plans including roadway improvements within the study area.

10. Collecting and assembling environmental data by screening GIS information with verification where necessary. Environmental data to include: sensitive land uses, jurisdictional wetlands, NWI wetlands, floodplains, protected areas, Army Corps of Engineers required permitting areas, water quality, historic resources, threatened and endangered species, hazardous material sites, etc.

11. Collect and/or assemble transit, bicycle and pedestrian counts.

12. Land-use plans for Durham and Chapel Hill.

The Consultant, in concert with the Technical Team, shall quantify corridor performance standards to measure how well the transportation facilities are serving the travel demands of the corridor, for the base year (2005), intermediate term (2017, or as defined by the Steering Committee) and in the future (2035 horizon year). The Consultant will use current traffic counts to identify how traffic patterns may have changed since the base year. Using the data analysis and information above, problems articulated and goals identified, the consultant shall evaluate/update the following:

- Current land uses including approved/pending development

- Socio-economic data and forecasts within the study area, as defined in the approved official LRTP forecast
- Major activity centers served by the corridor
- Existing traffic, including commuting patterns and needs
- Traffic growth, including determining performance levels for travel demand (by mode)
- Role of transit ,fixed guideway and buses within the study area
- Role of bicycle/pedestrian and other transportation modes within the study area
- Impact of past studies (HOV/HOT, fixed guideway, Farrington/Stagecoach Corridor Study, Southwest Durham Collector Street Plan, NC54/RDU transit study, etc.
- Current and proposed infrastructure improvements, including an Existing plus Committed (E+C) network for use with the base, interim year and Trend analysis
- Freight movement needs by truck
- Existing and proposed corridor access characteristics

Deliverables: Consultant shall perform analyses of transportation, land-use and environmental existing conditions and trends. Analyses and findings shall be documented in the Community Profile, which will be Technical Memorandum 1. This memorandum shall include, at the minimum, the following sections:

- Summary of data collection, including maps, graphs and charts showing existing conditions (2008) and historic trends (1998-2008).
- Results of operational performance of facilities within the study, including but not limited to level of service (LOS) and volume-to-capacity ratio for major segments and intersections within the study area.
- Documentation of existing land-use, including proposed (or developments in pipeline), approved developments plans, building permits and Certificate of Occupancies.
- Visualization of land-use and development patterns using the Consultant's CorPlan model and Google's Sketch-Up software. CorPlan is a GIS-based scenario planning tool that is compatible with other types of land use visualization tools, such as Community Viz. The Consultant will ensure that the data inputs used and outputs developed for use in CorPlan are structured for use within the Community Viz environment, should members of the Steering Committee wish to build upon the CorPlan analysis.

- Documentation of the results of environmental issues and constraints, including preparation of GIS maps and overlays of environmental features.
- Description of the context of the corridor, for instance, how well the corridor serves the public, how do different modes serve the corridor
- How the land use fits/supports the current and proposed transportation infrastructure and how well the existing and proposed land-use patterns support economic, environment and historic considerations.

The product of this task will be the Trend scenario that presents a picture of how the study area development pattern and transportation system is expected to evolve by the year 2035. The Trend scenario will be the basis for development of land use-transportation scenarios as defined in Task 3.

The Consultant shall prepare a PowerPoint presentation suitable for diverse audience (the public, technical staff and policy makers) based on the Community Profile that presents the existing conditions and future Trend. A public workshop will be held to present the results of the Trend Scenario and obtain input on issues, opportunities and trends for guidance in development of alternative future scenarios for corridor mobility and a supportive urban form. The Consultant will facilitate the workshop and prepare necessary maps, hand-outs and comment forms, and will document and summarize input from participants. The City of Durham and/or other Steering Committee representatives will assist with workshop logistics and official public notification, as necessary.

TASK 3 – DEVELOPMENT AND EVALUATION OF SCENARIOS

The Consultant will develop and evaluate up to three feasible land use-transportation scenarios to address the short term and long range issues, problems and needs. Each scenario will entail a distinct combination of land use and transportation strategies to address corridor issues and needs as defined in the previous task and through interaction with the public. This task entails sub-area travel demand projection/forecasting using sub area focusing of existing and future land use generated in Task 2. Travel demand forecasts will be developed for the base year, 2017 and 2035. Using results from the travel demand forecasts, the consultant shall analyze future conditions, including but not limited to V/C ratio, level of service, transit ridership, bicycle and pedestrian demand.

The Consultant will conduct a study area calibration of the regional travel model by reviewing model inputs and outputs to check the reasonableness of future traffic in comparison with the traffic counts available for 2008 and those taken for this study against the 2005 base year forecast. The calibration will make appropriate model adjustments to best replicate existing traffic volumes and

enhance sensitivity for testing of the scenarios. This will entail a confirmation of the Existing plus Committed (E+C) model network.

The three scenarios will be evaluated against the Trend or "no build" scenario. The evaluation will include a fatal flaw analysis. The following broad criteria will used to evaluate the package of transportation strategies contained within each scenario designed to support the land use component:

- Mobility
- Planning-level costs (financial feasibility)
- Environmental and community impacts (including air quality/sustainability impacts)
- Constructability (technical feasibility)
- Safety improvements and future operations
- Compatibility with other projects (approved) within the study area

The Consultant will prepare conceptual future designs for each of the alternatives. This shall include schematic renderings and typical cross-sections for the key transportation concepts in each scenario. All design concepts will be consistent with the design principles and practices with the MPO LRTP, NCDOT and FHWA policies.

The consultant shall prepare planning-level cost estimates, based on average unit costs for similar projects, for the future improvement design concepts. These cost estimates should include:

- Engineering
- Permitting
- Mitigation
- Right of Way Acquisition
- Construction
- Contingency
- Capital and operating costs for transit, pedestrian-bicycle facilities

Deliverables: Evaluation of scenarios and associated analyses will be documented in a Scenario Evaluation Technical Memorandum 2 and presented to the Steering Committee and at public workshop #2 for review and comments. After comments have been successfully addressed, the Consultant will prepare a final Memorandum 2, which will identify the preferred scenario for

further refinement in the Corridor/Subarea Master Plan (Task 4). The Consultant will prepare a PowerPoint presentation suitable for diverse audience (the public, technical staff and policy makers) for the 2nd workshop. The responsibilities for the workshop will be the same as described in Task 2.

TASK 4 – DEVELOP TRANSPORTATION – LAND USE MASTER PLAN

Once a preferred scenario is approved by the Steering Committee, the Consultant shall develop recommendations for short-term and long range integrated land-use and multimodal transportation strategies, including recommendation of transportation improvements and land use policy recommendations. The consultant shall develop strategies for implementation of transportation improvements and land-use strategies, including implementation steps, institutional, financial, regulatory/legal, and political steps leading toward decision making and taking action.

The Consultant will hold a second round of stakeholder meetings at this point in the project to obtain input from key constituencies on the preferred scenario and refinements of the scenario into a Master Plan for the future development of the study area. As in Task 1, the Consultant will facilitate and document a dialogue with up to six stakeholders or groups representing key interests and perspectives.

This task will flesh out the preferred scenario with the following work elements:

LAND USE

- Recommended land use pattern, plans and controls
- Development and redevelopment plans, including recommended Transit Oriented Design and mixed-use developments and design
- Implementation strategy and phasing (near, mid and long-term)
- Design guidelines based on precedents that illustrate key principles to promote multimodal access, inter-parcel connectivity, site permeability and reduction of vehicle miles of travel

TRANSPORTATION

- Short term and long range improvements and strategies, developing solutions for critical hot spots and congestion management, consistent with NCDOT guidelines
- Access management plan and recommendations for major roadways

- Infrastructure improvements, including Park-and-Ride facilities and other transit infrastructure
- Recommended improvements for transit (fixed guideway, BRT, buses).
- Recommended improvements to accommodate freight movement
- Bicycle/pedestrian accommodation, including strategies for complete streets, filling gaps in the network, and promoting greater accessibility through facility and site design

The Consultant will conduct a final public workshop to enable participants to review the draft Master Plan and offer input and guidance on the plan elements, including project priorities, phasing and the recommended policy framework. The workshop responsibilities will be the same as those defined previously. The Consultant will use the workshop as a basis for refining the draft Master Plan and preparing the draft final report.

TASK 5 – DOCUMENTATION AND PRESENTATION OF RECOMMENDATIONS

The Consultant shall prepare a draft and final report to be submitted to the City of Durham, the lead Planning Agency for the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO). It is anticipated that the final report will be considered for adoption by the DCHC MPO, the City of Durham, Durham County and the Town of Chapel Hill.

The steering committee, the Transportation Advisory Committee (TAC) and the policy boards of Chapel Hill and Durham shall have one month to review and comment on the draft report. The Consultant shall make any necessary modifications and print the final report within one month following this review period. The Consultant will produce 20 bound copies of the final report plus an electronic version with all maps, shape files, count data and model inputs on CD or DVD for future use by the steering committee.

The Consultant shall make one presentation to the Transportation Advisory Committee for the DCHC MPO on the study final recommendations.

Deliverables:

a. A report which incorporates all the deliverables and documentation for each task, including maps, graphics, conceptual designs, renderings, visualization, visually realistic traffic modeling, etc. The report will essentially be the Blueprint for the corridor/study area that will encompass a multimodal long range vision plan that builds upon short term actions and recommendations.

b. The vision will harmonize multimodal transportation improvements (including capacity and operational improvements, system connectivity, access management and safety) with land use plans as embodied in the concepts of density, design and diversity (mix).

c. The Blueprint will address existing congestion, future mobility and accommodate future travel demand by including need highway improvements, ITS/CMS improvements, other infrastructure improvements (park-and-ride), access management strategies, public transit, bicycle and pedestrian strategies.

d. Recommended improvements should be responsive to local, regional and statewide problems and goals. Also, the Blueprint must recognize environmental concerns and the need for context-sensitive solutions.

e. Recommended land use plan and strategies, including but not limited to recommended development and redevelopment patterns, implementation strategies and land-use/design guidelines.

f. Recommended solutions to the interrelated transportation and land use issues within the study area.

g. Executive Summary (< 10 pages including maps)

TENTATIVE SCHEDULE

The Consultant shall perform the work according to an agree-upon schedule that shall not exceed 10 months from notice to proceed through completion of all work products, unless otherwise authorized by the Project Manager. The schedule is dependent on scheduling original data collection and public involvement meetings during times when schools and universities are in session. Exhibit 1 presents the proposed study schedule.

OPTIONAL TASK – SKETCH UP TRAINING

The Consultant will assist appropriate steering committee staff with one day's worth of training in the Google Sketch-up software program, which is a visualization tool for land use/urban form. Sketch-up is a free software program, but there is a Sketch-up Pro version that has additional features and more visualization power that costs $500 for a one-year license. Either version can be used to replicate study findings and recommendations, but the Pro version may be easier to use. Regardless, the Consultant will provide training in Sketch-up, which will also include CorPlan and how the two programs interface with each other and with Community Viz.

OPTIONAL SCOPE TASK 6 – DYNASIM 3D MICRO-SIMULATION MODEL

The Consultant will develop a 3D micro-simulation model for the Route 54 corridor within the study area using the Dynasim software. Dynasim is a traffic operation modeling software package developed as part of Citlabs Cube software suite. The following URL provides additional information on the software. http://www.citilabs.com/cube_dynasim.html.

The simulation will be produced using a two dimensional aerial backdrop enhanced with a three dimensional built environment produced using Google's Sketch-Up software. This combination gives a relatively realistic look of a corridor simulation with a visualization of the future year preferred scenario concept. Pedestrians, bicycles, and transit vehicles will be included in the simulation to illustrate the eventual full multimodal built environment. The simulation will be based on the PM peak hour of the day when non-auto users will be present in the largest numbers.

The simulation will be recorded to a video file (avi format) for use in public presentations. The simulation model will be validated against the Synchro / Simtraffic files as produced for the preferred scenario. While the model will not be used for the purpose of reporting the various measures of effectiveness for the corridor and intersections, the model will be useful for visualization purposes and for clearly illustrating the recommended improvements and future traffic operations in a three dimensional environment.