

# ATTACHMENT A – SCOPE OF SERVICES

**AGREEMENT FOR PROFESSIONAL SERVICES  
BETWEEN  
VANASSE HANGEN BRUSTLIN, INC.  
AND THE  
EXECUTIVE OFFICE OF TRANSPORTATION AND PUBLIC WORKS / MASSACHUSETTS HIGHWAY  
DEPARTMENT  
OFFICE OF TRANSPORTATION PLANNING**

**I-95 SOUTH CORRIDOR TRANSPORTATION STUDY:  
VHB CONTRACT NO. 0051080**

**JANUARY 2008**

The agreed upon work plan between Vanasse Hangen Brustlin, Inc. (VHB) and the Executive Office of Transportation and Public Works (EOTPW) / Massachusetts Highway Department (MassHighway), through the Office of Transportation Planning (Planning), is comprised of Attachment A (Scope of Services) and Attachment B (Fee Breakdown). Attachment A includes a project description, details of the services to be performed, and the timing of services. Attachment B provides a detailed fee breakdown. Other attachments provide supportive contract documentation such as the general terms and conditions.

## **PROJECT DESCRIPTION**

The purpose of this project is to conduct a study that will evaluate and address transportation issues in the I-95 South corridor and the Route 1 corridor through the south central portion of the Boston Metropolitan Planning Organization and the northern part of the Southeastern Massachusetts Metropolitan Planning Organization region, beginning in the Town of Canton and ending in the City of Attleboro. A full range of alternatives, including interchange, highway, and non-highway improvements as well as multimodal options, will be developed and analyzed as the study progresses. A recommended plan of future scheduled transportation improvements (short-term and long-term), based on the alternatives analysis, will be the end product of this project with preliminary cost estimates.

The Office of Transportation Planning (Planning), together with the VHB team, will conduct all activities in coordination with an established *Working Group*. This Working Group will consist of Planning, Metropolitan Area Planning Council (MAPC), Southeastern Regional Planning & Economic Development District (SRPEDD), and I-95 South Corridor Partnership (I-95 Scope) staff to help guide the study.

A larger *Study Advisory Group*, to be formed as part of the public participation process, will consist of Planning, the Executive Office of Transportation, MassHighway Districts 4 and 5, the Rhode Island Department of Transportation, Boston Metropolitan Planning Organization, Southeastern Massachusetts Metropolitan Planning Organization, Massachusetts Bay Transportation Authority, Greater Attleboro Taunton Transit Authority, federal and state agencies, legislators, local elected officials, community members, and interested organizations such as the I-95 Corridor Coalition. Assistance from MassHighway Divisions (Highway Design, Environmental, Traffic Operations, Right-of-Way Bureau, District 4 & 5, etc.), as well as from the I-95 South Corridor Partnership staff will be utilized as availability and resources permit. This study is expected to take 18 months once a contract has been executed.

The VHB team will be directed by Planning in coordination with the Working Group, and VHB's progress will be monitored by the Planning Project Manager. The Project Manager (and/or other EOTPW staff as designated) will serve as the primary interface between VHB and the Working Group and Study Advisory Group. All major tasks conducted by VHB for Planning will be done in consultation with the Working Group and Study Advisory Group.

VHB will perform specific tasks as outlined below, with a summary report and presentation materials (in PowerPoint software) as products for each major task. Each task will be accomplished in coordination with a public involvement plan.

## **Task 1 – Study Area, Goals and Objectives, Evaluation Criteria, and Public Participation**

The purpose of this task is to develop the framework necessary to conduct the study. VHB, in consultation with Planning, the Working Group and the Study Advisory Group, will finalize the study area, develop goals and objectives, evaluation criteria, and a public participation plan. Evaluation criteria will be determined based on the defined goals and objectives.

### A. Study Area

There are two separate study areas for this study the I-95 study area and the Route 1 study area; each will be subject to different levels of analysis. The boundary of the I-95 Study Area will be defined as I-95 from the Canton town line in the north, to I-95 in Attleboro at the Rhode Island / Massachusetts State Line to the south along with I-495 from the Norton / Mansfield town line in the south to the Wrentham / Franklin town line in the north. Special consideration should be shown to include the linkages between I-95 and the MBTA Attleboro/ Providence commuter rail line due to the heavy influence these corridors have on each other. The I-95 Study Area boundary will be finalized in the beginning stages of the study with input from the Working Group and the Study Advisory Group. The Study Area should be defined to incorporate both local and regional impacts of any improvement. The study area will include, but not be limited to, the following key interchanges listed below. If it is determined during the course of the study that additional interchanges other than those listed below will be included, VHB and Planning will coordinate to determine the level of effort necessary to address the additional interchanges.

- I-95 Exit 1: Route 1 in the City of Attleboro
- I-95 Exit 2: Route 1A in the City of Attleboro
- I-95 Exit 3: Route 123 in the City of Attleboro
- I-95 Exit 4: Interstate 295 in City of Attleboro
- I-95 Exit 5: Toner Blvd. in the Town of North Attleborough
- I-95 Exit 6: Interstate 495 in the Town of Foxborough
- I-95 Exit 7: Route 140 in the Town of Foxborough
- I-95 Exit 8: Mechanics Street / South Main Street in the Town of Sharon
- I-95 Exit 9: Route 1 in the Town of Sharon
- I-95 Exit 10: Coney / Norwood Street in the Town of Walpole
- I-95 Exit 11: Neponset Street in the Town of Norwood
- I-95 Exit 12: Route 128 in the Town of Canton
- The Dedham Street on-ramp located between Exit 11 & Exit 12
  
- I-495 Exit 11: Route 140 South in Town of Mansfield
- I-495 Exit 12: Route 140 North in Town of Mansfield
- I-495 Exit 13: Interstate 95 in Town of Foxboro
- I-495 Exit 14: Route 1 in Town of Plainville
- I-495 Exit 15: Route 1A in Town of Wrentham
  
- Examine the feasibility of a new interchange in City of Attleboro south of Route 123 – Interchange 3 and North of Route 1A – Interchange 2

The Route 1 study area will be defined as Route 1 and the VFW Parkway from the Route 109/VFW Parkway intersection on the Boston city line in the north to the Rhode Island/ Massachusetts State Line in the south. The study area will also include, but not be limited to, the following key intersections listed below. If it is determined during the course of the study that additional intersections other than those

listed below will be included, VHB and Planning will coordinate to determine the level of effort necessary to address the additional intersections.

- VFW Parkway & Route 109 in the City of Boston
- VFW Parkway & Washington Street in the Town of Dedham
- Providence Highway & Eastern Avenue in the Town of Dedham
- Providence Highway & Elm Street in the Town of Dedham
- Route 1 & Everett Street/ University Avenue in the Town of Norwood
- Route 1 & Neponset/Nahatan Street in the Town of Norwood
- Route 1 & Dean Street in the Town of Norwood
- Route 1 & Morse Street in the Town of Norwood
- Route 1 & Sumner Street in the Town of Norwood
- Route 1 & Union Street in the Town of Norwood
- Route 1 & Coney Street in the Town of Walpole
- Route 1 & Route 27 in the Town of Walpole
- Route 1 & Old Post Road in the Town of Sharon
- Route 1 & Pine Street in the Town of Walpole
- Route 1 & North Street/ Water Street in the Town of Foxborough
- Route 1 & Patriot Place in the Town of Foxborough
- Route 1 & Pine Street in the Town of Foxborough
- Route 1 & East Street/ Main Street in the Town of Foxborough
- Route 1 & Thurston Street in the Town of Wrentham
- Route 1 & Madison Street in the Town of Wrentham
- Route 1 & Route 152/ Taunton Street in the Town of Plainville
- Route 1 & Route 106 in the Town of Plainville
- Route 1 & Route 1A/ Elmwood Street in the Town of North Attleborough
- Route 1 & Fisher Street in the Town of North Attleborough
- Route 1 & Landry Avenue/ Orne Street in the Town of North Attleborough
- Route 1 & Elm Street in the Town of North Attleborough
- Route 1 & Chestnut Street in the Town of North Attleborough
- Route 1 & Draper Avenue in the Town of North Attleborough
- Route 1 & Allen Avenue in the Town of North Attleborough
- Route 1 & Cumberland Avenue in the Town of North Attleborough
- Route 1 & May Street in the City of Attleboro
- Route 1 & Route 1A in the City of Attleboro
- Route 1 & Route 123 in the City of Attleboro
- Route 1 & Brown Street in the City of Attleboro
- Route 1 & Mendon Road in the City of Attleboro
- Route 1 & Bacon Street in the City of Attleboro

The future year conditions for each interchange in the I-95 study area and each intersection in the Route 1 study area will be evaluated based on the same travel demand transportation model. Following completion of Task 2, VHB and the Office of Transportation Planning, with concurrence from the Study Advisory Group, will work to identify up to 10 intersections from the list above for further study in Task 3: Alternatives Development, Task 4: Alternatives Analysis and Task 5: Recommendations.

If feasible, the study area may be extended to include roadways beyond the facilities to be studied, if Planning determines that significant differences in traffic volumes on these facilities may occur among the alternatives to be studied. The final study area definitions will be decided in the beginning stages of the project, with input from the Working Group and Study Advisory Group.

Product:

- Study Area definition

## B. Goals and Objectives

Goals and objectives, which identify the purpose of the study, will be developed for this project. The goals and objectives provide a “mission statement” for addressing a particular issue or set of issues. The goals and objectives should shape the framework for the entire study.

Product:

- Goals and Objectives

## C. Evaluation Criteria

The evaluation criteria are specific considerations, or measures of effectiveness, used to assess benefits and impacts of alternatives developed during the study. The evaluation criteria will be based on the defined goals and objectives. Such criteria commonly include, but are not limited to, those that fall in the following categories: Mobility, safety, environmental effects, land use and economic development, community effects, and cost.

The evaluation criteria will be used for Task 4 (alternatives analysis) of the study. The criteria should be logically related to objectives, and wherever possible, be quantitatively measured and directly derived from either previously developed information or analysis techniques used in the study. All evaluation criteria – containing both quantifiable or more subjective, qualitative measures of effectiveness – should be used to determine the best solutions for the defined goals and objectives.

Product:

- Evaluation criteria and measurement methods

## D. Public Involvement Plan

The study's Public Involvement Plan will, at a minimum, have two components: 1) meetings with the Study Advisory Group and 2) general public informational meetings at key project milestones. Advisory Group meetings will also be scheduled at key project milestones with input from the members, and will be conducted by Planning and VHB with support from the Working Group. Following consultant selection, a Study Advisory Group meeting will be scheduled to finalize the study area, establish the goals, objectives, and evaluation criteria for the project, and to allow the task force the opportunity to comment on these elements.

Planning and VHB will conduct public informational meetings at key project milestones. Public meetings will be scheduled and publicized by Planning and VHB, including the preparation of display materials for meetings. Material presented at these meetings will include a comment period for the Advisory Group and public review.

Products:

- Public Involvement Plan

## FINAL PRODUCTS FOR TASK 1:

1. Draft report/chapter containing the following:
  - Study Area
  - Goals and Objectives

- Evaluation criteria and measurement methods
2. Public Involvement Plan

## **Task 2 – Existing Conditions and Issues Evaluation**

Existing transportation conditions will be inventoried and evaluated, as well as anticipated future year conditions. Existing and future land use and environmental constraints will be examined and documented. The transportation issues involved with major events at Gillette Stadium and the Tweeter Center as well as other issues raised by the Advisory Group may be evaluated if feasible.

### A. Existing Conditions and Data Collection

#### *I-95 Study Area*

Current year (2007) transportation conditions will be analyzed for the study area facilities. Existing data from Planning, the Boston MPO, the Southeastern Massachusetts MPO, the municipalities, and other sources will be used to the degree feasible. This includes all available traffic volume, turning movement, and accident data for the study area. All available data on transit services, availability, and ridership should be collected as well. The study area will be analyzed for traffic volumes and levels of service, safety, transit services, extent of intelligent transportation systems (ITS), and other conditions as necessary. Other transportation issues as suggested in the public involvement process may be evaluated as appropriate.

Recent traffic count data will be used to the greatest extent possible, although historical data will be used to demonstrate trends in traffic changes. If additional traffic counts (automatic traffic recorder and/or turning movements) are required to properly assess facilities to be studied, Planning (or VHB with Planning approval) will undertake these counts. VHB will incorporate data from the MassHighway Crash Record Database (developed from the Registry of Motor Vehicle crash data) into the analysis. Other crash information may be used to supplement this analysis if appropriate and feasible.

Existing land use/economic development and environmental data will be reviewed in the defined study area. Land use/economic development data collected may include, but are not limited to: land-use patterns (existing and planned parcels), zoning, right-of-way, property values, tax revenue data, car and truck access, transit access, parking, regional employment, elevation and visibility information, emergency response, and public facilities and utilities. Environmental data collected may include, but are not limited to: wetlands, aquifers, public water supplies, surface geology, protected and recreational open space, ACECs, hazardous materials sites, noise levels, air quality, wildlife habitats, and cultural, historical, and archaeological resources. The VHB team will identify all reasonable potential land use and environmental constraints that could affect the feasibility of any alternatives developed during the study.

VHB will assemble land use and environmental data from existing sources to the degree feasible. These sources may include, but are not limited to: local comprehensive planning documents, previous studies, tax revenue information, zoning regulations, and GIS data layers that are available from municipal or regional GIS sources, and MassGIS sources. Planning will provide available aerial photography files and any previously existing maps for the development or updating of base maps by VHB as necessary. The general accuracy of these data will be confirmed through site visits. Final resolution/scales of photographs and base maps will be determined jointly by Planning and the VHB team, and will be based on available data files. Recent and proposed commercial/industrial developments, residential subdivisions, and other proposed projects with significant trip generation in the study area will be identified and mapped.

Using the above collected data, a base map will then be assembled in a GIS format for use in the future tasks.

### *Route 1 Study Area*

Current year (2007) conditions in the Route 1 study area will be determined using analyses conducted as part of studies conducted by Planning, the Boston MPO, the Southeastern Massachusetts MPO, the municipalities and other sources such as traffic impact studies prepared within the last five years. The analyses that should be included are traffic volumes and levels of service, safety, transit services, extent of intelligent transportation systems (ITS), and other conditions as necessary. Other transportation issues as suggested in the public involvement process may be evaluated as appropriate.

At intersections and segments in the study area where no analysis is available, additional traffic counts and analysis may be conducted as needed. If additional traffic counts (automatic traffic recorder and/or turning movements) are required to properly assess facilities to be studied, Planning (or VHB with Planning approval) will undertake these counts. VHB will incorporate data from the MassHighway Crash Record Database (developed from the Registry of Motor Vehicle crash data) into the analysis. Other crash information may be used to supplement this analysis if appropriate and feasible.

VHB will assemble land use and environmental data from existing sources to the degree feasible. These sources may include, but are not limited to: local comprehensive planning documents, previous studies, tax revenue information, zoning regulations, and GIS data layers that are available from municipal or regional GIS sources, and MassGIS sources. Planning will provide available aerial photography files and any previously existing maps for the development or updating of base maps by VHB as necessary. The general accuracy of these data will be confirmed through site visits. Final resolution/scales of photographs and base maps will be determined jointly by Planning and the VHB team, and will be based on available data files. Recent and proposed commercial/industrial developments, residential subdivisions, and other proposed projects with significant trip generation in the study area will be identified and mapped.

Using the above collected data, a base map will then be assembled in a GIS format for use in the future tasks.

#### Products:

- Existing traffic volumes, turning movements, levels of service, and accident data
- Existing transit services for study area
- Existing environmental and land-use/economic development data

### B. Future Year Conditions

Conditions in both the I-95 and Route 1 study areas will be forecasted for the horizon year of 2030. One of the primary tools to be used for estimating future conditions is a travel demand transportation model. Model data will be utilized from Planning's Massachusetts Statewide Travel Demand Model, and to a limited extent (for transit modes), from the Boston Region model maintained by the Central Transportation Planning Staff (CTPS). Traffic will be forecasted for a "no-build" condition, which assumes that no alternatives (including any potential changes to the interchanges) are implemented. Throughout the region, only existing or planned projects that can reasonably be expected to be in place by 2030 will be included in the analysis.

VHB will coordinate with Planning, CTPS, and SRPEDD to make any needed adjustments to the Massachusetts Statewide Travel Demand Model. While Planning and other agencies will assist in this effort, VHB will perform the primary work for updating/adjusting the statewide model as needed in the I-95 South travel corridor. Planning and VHB will jointly decide on the level and amount of any additional model calibration/adjustments necessary, which will not be fully determined until Planning and VHB staff, as part of this task, undertake a more detailed examination of current, unrevised model output. Planning will supply all statewide model files needed for VHB to update network(s), trip table(s) and traffic analysis zone (TAZ) data as necessary.

Projections may be based on various scenarios in the study area, combined with forecasts from the (revised) Statewide model to incorporate regional growth trends and planned projects in the area. The Statewide model results will provide estimated regional and external traffic growth and/or volumes for input into microsimulation programs to assess the future no-build (do nothing) operational conditions of selected interchanges. VHB will forecast transit usage separately, utilizing applicable trip table information from CTPS, and/or other acceptable methods as determined jointly by Planning and VHB.

For traffic analysis, VHB will use the latest available version of the HCS software, or other analytical software as approved by Planning, implementing the procedures of the *2000 Highway Capacity Manual* (including any applicable updates). Operational analyses for freeways (and nearby intersections as necessary) may be performed using one or more established software products for these purposes. All level-of-service and other performance measures should be performed with software that incorporates the procedures of the *2000 Highway Capacity Manual* (including any applicable updates). The highway network of the travel demand model used to estimate traffic demands will include highway links that lie outside the study area as defined in Task 1.

VHB will coordinate closely to utilize regional model results as inputs to traffic simulations and transit services depicting a future no-build condition. This future no-build condition should also include current socio-economic projections (population, households, and employment), and estimates of future land use.

Products:

- Forecasted traffic levels and conditions
- Forecasted transit ridership and services
- Socio-economic projections
- Land use projections

### C. Issue Definition and Evaluation

Existing deficiencies and issues in the study area will be identified, quantified, and evaluated. As part of defining transportation issues in the study area, the following elements should be considered: current and future traffic congestion, special event congestion, safety, environmental issues, community effects, economic development, land use, transit, and other factors as appropriate. Wherever feasible, issues will be presented in graphical or map form suitable for presentation at a public informational meeting.

Product:

- Inventory and definition of issues

### D. Constraints Identification

Planning and the VHB team will identify a set of project constraints related to environmental impacts, engineering/design feasibility, business and residential effects, cost, transit services, and other factors as appropriate. Constraints for engineering feasibility will be based on appropriate MassHighway guidelines as applicable.

Product:

- Inventory of project constraints

## FINAL PRODUCT FOR TASK 2:

Completed draft chapter/section containing the following:

- Existing traffic volumes, turning movements, levels of service, and accident data
- Existing transit services for study area
- Existing environmental and land-use data
- Forecasted traffic levels and conditions
- Forecasted transit ridership and services
- Socio-economic projections
- Land use projections
- Inventory and definition of issues
- Inventory of project constraints

### **Task 3 – Alternatives Development**

#### *I-95 Study Area*

Short and long-range alternatives – both highway and non-highway related – will be developed in this step. Alternatives that promote efficient system management and operation should be included. In consultation with the Advisory Group, Planning and the VHB team will develop alternatives and refine a selection of alternatives for detailed analysis (Task 4). Where applicable, visual imaging tools (using three dimensional display techniques) may be used as part of this task if appropriate.

#### *Route 1 Study Area*

Planning and VHB will work, with concurrence from the Advisory Group, to determine the criteria for selecting up to ten intersections that are in the most need of improvement under the future conditions and include them in Task 3. Short and long-range alternatives – both highway and non-highway related – will be developed for up to ten (10) intersections in this step. Alternatives that promote efficient system management and operation should be included. In consultation with the Advisory Group, Planning and the VHB team will develop alternatives and refine a selection of alternatives for detailed analysis (Task 4).

## FINAL PRODUCT FOR TASK 3:

Draft section/chapter containing the following:

- Descriptions of short and long-range alternatives
- Maps and graphics showing alternatives

### **Task 4 – Alternatives Analysis**

The alternatives will be analyzed based on the evaluation criteria from Task 1. Any necessary mitigation related to each alternative should also be considered in the analysis.

#### A. Mobility Analysis

VHB will analyze the impacts of alternatives on mobility in the study area. Mobility as it relates to both the highway and transit systems should be considered. The highway system to be analyzed includes both the interstates/interchanges and local roads/intersections (including bicycle and pedestrian accommodations) in the study area. Transit services to analyze may include commuter rail, commuter bus, subway, local bus service, shuttle services, or any other type of existing or planned service as

appropriate. VHB will coordinate closely to utilize regional model results as part of the analysis methods for evaluating appropriate highway and transit alternatives.

Product:

- Alternatives Analysis for traffic operations and transit usage

### B. Safety Analysis

VHB will analyze the traffic safety impacts in the study area for each alternative to the degree feasible, including examining the impacts on vehicular, bicycle and pedestrian movements in the study area.

Products:

- Alternatives analysis for traffic safety

### C. Environmental Effects Analysis

VHB will analyze the environmental impacts for each alternative to the degree feasible, including examining: wetlands, aquifers, public water supplies, surface geology, protected and recreational open space, ACECs, hazardous materials sites, air quality, noise, wildlife habitats, cultural, historical and archaeological resources, and other constraints as necessary to fully analyze each alternative.

Product:

- Alternatives analysis for environmental effects

### D. Land Use and Economic Development Analysis

VHB will analyze land use, economic development and business impacts for each alternative to the degree feasible, including examining: right-of-way, property values, tax base, planned and potential zoning changes, planned developments (including 40B and TODs), parking, car and truck access to existing or planned parcels, visibility, labor force impacts, regional and local employment, and other elements as necessary to fully analyze each alternative.

Product:

- Alternatives analysis for land use and economic/business impacts

### E. Community Effects/Environmental Justice Analysis

The VHB team will analyze the community impacts for each alternative to the degree feasible, including examinations of: right-of-way, noise levels, air quality, open space, land-use patterns, property values, vehicular access, transit access, solar access, emergency response, public facilities and utilities, cultural, historic, and archeological resources, elevation and visual impact, and other constraints as necessary to fully analyze each alternative. Where applicable, the VHB team will complete conceptual level right-of-way plans for each alternative in accordance with appropriate design criteria. Plans will not include detailed design of any structural elements, but may use visual imaging software (where applicable) to portray the visual characteristics of certain alternatives that may be proposed for analysis. VHB should also analyze the possible social equity impacts of the alternatives analyzed and how they may impact or benefit the minority and disadvantaged populations that now reside in and adjacent to the study area.

Product:

- Alternatives analysis for community effects/ environmental justice

#### F. Cost Analysis

Approximate construction, operations, right-of-way, and mitigation costs (including possible noise barriers) will be estimated for each alternative. Other information (project implementation scenarios, construction schedules, etc.) will be estimated to the extent possible.

Products:

- Analysis of costs associated with each alternative

FINAL PRODUCT FOR TASK 4:

Draft report section evaluating all alternatives based on Task 1 criteria, including:

- Mobility
- Safety
- Environmental effects
- Land use and economic development
- Community effects
- Cost

#### **Task 5 – Recommendations**

Recommendations may include both short range (within five years) and long range recommendations as a result of the analysis completed in the previous tasks.

FINAL PRODUCT FOR TASK 5:

Draft report section/chapter on recommendations containing:

- Tables of short and long-range recommendations
- Recommendation narrative
- Recommendation maps, graphics, and displays

#### **Task 6 – Final Report**

A Final Report will be prepared consisting of revised versions of the report chapters developed under Tasks 2 through 5, with an introductory chapter discussing the overall project and the goals-related material developed in Task 1. The report will also include an executive summary and appendices. The VHB team will be expected to deliver fifty (50) copies of the report to Planning and others. The final report should also be made available in Adobe Acrobat format, with 5 CD-ROM copies provided to Planning. All electronic files (Word, Powerpoint, GIS Data layers, traffic analysis software, etc.) used to print the final report should also be provided to Planning on CD-ROM.

FINAL PRODUCTS FOR TASK 6:

1. Draft final report
2. PowerPoint document of recommendations

### 3. Revised final report