

**TASK ORDER 97
ENGINEERING PROPOSAL**

****08/29/2006 ADDENDUM****

**Additional Interchange Analysis:
Washington Blvd (Rt. 27) and Columbia Pike (Rt. 244)
Arlington County**

ADDENDUM SCOPE OF WORK

Additional elements to be analyzed were identified at the meeting with VDOT and Arlington County, which was held on May 30, 2006, the Bridge Group workshop meeting held on June 12, 2006; and four scoping meetings with VDOT held on June 26, July 11, July 14 and August 4, 2006 (teleconference) in order to respond to comments appropriately for a follow-up bridge workgroup meeting. VDOT requested that VHB perform these additional tasks.

PLEASE NOTE: This addendum will replace and supersede the previously submitted addendums that were submitted to VDOT on June 5, 2006, July 7, 2006, July 14, 2006, July 21, 2006, and August 17, 2006. Therefore all hours and costs included in this addendum are above the REVISED Scope of Work that was submitted to VDOT on May 3, 2006 and approved by VDOT on May 5, 2006.

Elements for Additional Analyses:

The previous four meetings with the bridge workgroup, VDOT and Arlington County generated additional items to be considered for additional analyses and considerations. These items include the following as described:

- 1) Accident analysis from S. Rolfe St. to S. Queen St.
- 2) Conduct traffic analysis of new base alternative for AM and PM peak hour under 2031 conditions:
 - a. At S. Quinn St/Ramp G
 - i. Right-in/Right-out from S. Quinn St, with through movement from Ramp G to S. Quinn St permitted.
 - ii. No WB left-turn movement permitted
 - iii. Ramp G: L + LTR
 - iv. Under signal control in dog-leg configuration with S. Queen St.
 - b. At S. Queen St:
 - i. WB left turn bay to be provided with exclusive (protected-only) turn phase
 - ii. EB lane use: TR + R
 - iii. All movements permitted to/from S. Queen St.
 - iv. No right turns on red from S. Queen St.
 - c. At Ramp A/B:
 - i. EB left turn onto Ramp A is no longer being considered, as Ramp C is reopened
 - ii. Ramp B now under stop-control. Two-lane: L + R.
 - d. At S. Orme St/Ramp D:
 - i. Two-lane Ramp D from Washington Blvd, widens to three lanes: L + LT + R with split phasing.

- ii. Single lane S. Orme St.

Tasks that have been Performed per Previous Approved Addendums

Task 1. Additional Meetings and Follow-up Scoping Activities

VHB attended meetings and performed additional scoping activities to identify and discuss future alternatives for consideration, beyond the scope of work submitted in early May. Specifically, this includes development of materials for, preparation, and attendance of the following meetings:

- ⇒ May 30th at Arlington County to present the findings
- ⇒ June 12th Bridge Workgroup Meeting with Citizens Input
- ⇒ June 26th, with VDOT and their roadway design consultant to obtain necessary information to finalize revised scope from citizen feedback
- ⇒ July 11th, with VDOT to finalize the conceptual alternatives to be included
- ⇒ July 14th, with VDOT and TY Lin to review all concepts for geometric constraints.
- ⇒ August 4th, with VDOT via teleconference to discuss final alternative.
- ⇒ August 17th, with VDOT L&D and also VDOT TE via teleconference to discuss changes to the final alternative
- ⇒ August 25th, with VDOT TE via teleconference to discuss final scoping.

Activities for the first two meetings involved modifying handouts, including alternatives graphics, summary tables, MOE tables, among others. Twenty (20) sets of 15-page presentation handouts were produced for distribution at the first two meetings, including color graphics.

Also during this scoping process, VHB reviewed new concept alternatives and documents and meeting notes summarized by VDOT, and performed preliminary research of counts, conditions, and data needs for the Safety Study, and Sunday Analysis.

The latter two meetings involved discussions with road designers regarding improvement alternatives to carry forward and the revised concept of the two-step stop-control scenario at S. Queen St. Geometrics were discussed, as well as safety issues, and traffic considerations and lane configuration on Ramp D.

Using the information from the final two meetings, an analysis process was developed for the remaining operational analysis. The study would include a small Safety Study and the traffic analyses on the revised interchange configuration for the AM and PM peak hours using 2031 traffic. The outstanding task order amendments were reviewed and partially incorporated into this document, so as to consolidate the amendments, per the request of VDOT Location and Design.

Task 2. Safety Task

- 1) The VHB Safety Team performed a site review to observe traffic conditions and movements during a typical weekday AM peak period. The site review was used to identify any features or limitations that might be attributable to crashes. Digital photographs of the area were taken.
- 2) VHB obtained electronic and hard copy crash reports from VDOT for a three year period from January 1, 2003 through December 31, 2005. Data was collected for crashes occurring on, and in the vicinity of, Columbia Pike between the intersections of Columbia Pike and S. Rolfe Street and Columbia Pike

and S. Queen Street. Crash data was obtained from the Virginia Department of Transportation's (VDOT) Highway Traffic Records Information System (HTRIS). Since VDOT's database only contains reportable crashes, those having a property damage of \$1,000 or greater or resulting in injury or fatality.

- 3) Key information on crashes was compiled in a database, to include: severity, crash type, primary causal factor, time of day, lighting, surface conditions. Crashes were summarized on a CAD graphic of the interchange area under study.
- 4) Preliminary findings of the safety study have been summarized and documented, including summary tables. These findings will be incorporated in the summary document, as described on a subsequent task.

Tasks to be Performed

Task 3. Traffic Analyses

VHB will perform traffic analyses for the AM and PM peak hour for 2031 conditions on a single alternative. Please note that this task will require time for developing new turning movements to be used in the analyses and redevelopment of the CORSIM models to reflect the new base alternative.

Configuration to be analyzed:

- 1) S. Quinn St/Ramp G:
S. Quinn Street will be modeled as a right-out only, no left turns from S. Quinn St. will be permitted. Eastbound Columbia Pike will be permitted to turn right onto S. Quinn St, and Ramp G through movement will also be permitted. Westbound left turn will not be permitted, but this movement would be accommodated at S. Queen St. Ramp G will operate under a L + TR lane use. The signal at this intersection will operate under single controller with dog-leg signal control with S. Queen St. VHB will determine the optimal operations (single scenario).
- 2) S. Queen St:
This signal will operate under a single controller with S. Quinn St/Ramp G. A westbound left turn bay will be provided with an exclusive left turn phase (protected-only, no permitted left turns). Eastbound lane use will be analyzed all times of day as TR + R for vehicles from EB Columbia Pike west of S. Quinn St. Eastbound lane use for vehicles from Ramp G (dual lefts) will be analyzed as T + TR at the approach to S. Queen St. All movements will be permitted to/from S. Queen St, which will not allow for right turns on red from S. Queen St to either Ramp E or eastbound Columbia Pike.
- 3) Ramp A/B:
Ramp B will now be stop-controlled with lane use set as L + R. Eastbound lefts onto Ramp A will no longer be considered as Ramp C has been reopened.
- 4) At S. Orme St/Ramp D:
Ramp D will be a two-lane ramp as it departs from Washington Blvd. It will widen to three lanes with a lane configuration as L + LT + R. Signal control will be split phasing for the side streets. S. Orme St will remain as a single-lane approach

No additional alternatives or variations of the above described configuration will be included for the analysis, such as a left turn that was assumed to be prohibited to be tested as permitted turn as a second CORSIM

model alternative. An MOE table will be prepared summarizing the CORSIM outputs for this one configuration for the 2031 AM and PM peak hours as part of this task. These results will be presented in the summary document, as described on a subsequent task.

Task 4: Prepare Summary Document

VHB will prepare a brief summary document that will prepare highlights of the Safety and Traffic Analysis tasks. It is expected that it will contain a single page of text plus graphics and tables to include:

- ⇒ One graphic that has already been prepared that summarized the locations of the crashes.
- ⇒ One graphic of the new alternative configuration (unmodified version of that provided by L&D)
- ⇒ Summary tables from the Safety Study.
- ⇒ MOE results of the Traffic Analyses of the AM and PM peak hour analysis for Columbia Pike and Washington Boulevard.

The summary document will also state whether the alternative will work from a traffic operational perspective, and will also discuss briefly the safety considerations of the new alternative. A detailed write-up on the traffic operations and the existing safety problems was not assumed for this reduced scope, in order to keep within the budget requested by VDOT.

The summary document will present the results of the two tasks as part of this addendum: the Safety and Traffic Analyses tasks. It will not reexamine or rewrite the previous "Traffic Operations Study" report that was submitted in May 2006. All proposed analyses here will be based on the new configuration as described.

VHB will provide the final technical memorandum in electronic format (PDF file). Revisions were not assumed as part of this reduced scope of work.

STAFFING

Robert Brander, P.E. will serve as the Task Order Manager and will be a point-of-contact for the VDOT task order manager to discuss issues, questions, and technical progress. Ram Jagannathan, E.I.T. will serve the lead engineer for the operations analysis. Stephen Brich will be the lead safety engineer for the safety study. Michelle Smith, P.E., will serve as the Project Manager and the second point-of-contact for VDOT. Warren Hughes, P.E., will serve as the Principal-in-Charge and provide overall direction on this effort. This team will be supported by a staff of technicians for data collection and administrative staff for report preparation.