TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): FHWA

INSTRUCTIONS:
Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.

Transportation Pooled Fund Program Project # *(i.e, SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX)* TPF-5(176) --Traffic Analysis and Simulation Pooled Fund Study		**Transportation Pooled Fund Program - Report Period:** ☐ Quarter 1 (January 1 – March 31) ☐ Quarter 2 (April 1 – June 30) ☐ Quarter 3 (July 1 – September 30) ☑ Quarter 4 (October 1 – December 31)
Project Title: HCM Guidelines for Alternative Intersections		
Name of Project Manager(s): Randy VanGorder	**Phone Number:** 202-493-3266	**E-Mail** Randall.VanGorder@dot.gov
Lead Agency Project ID: DTFH61-12-D-00020-T13002	**Other Project ID (i.e., contract #):**	**Project Start Date:** April 4, 2013
Original Project End Date: October 3, 2015	**Current Project End Date:** April 30, 2017	**Number of Extensions:** 2

Project schedule status:

☐ On schedule ☑ On revised schedule ☐ Ahead of schedule ☐ Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Percentage of Work Completed to Date
$810,527.00	$695,886.73	93%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
$2,851.71	$2,851.71	92%

Project Description:

Over the past decade, the Federal Highway Administration (FHWA) has conducted and developed extensive research, workshops, technical briefs, and other outreach materials about alternative intersections/interchanges. These research efforts and publications have increased interest and rapid adoption of alternative geometric designs across the United States. Of the many alternative intersection/interchange designs, stakeholders showed significant interest in these four:

- Double Crossover Diamond (DCD) interchange (or Diverging Diamond Interchange (DDI)).
- Displaced Left Turn (DLT) intersection.
- Median U-Turn (MUT) intersection.
- Restricted Crossing U-Turn (RCUT) intersection.

Most existing analysis tools supporting the adoption of alternative intersections/interchanges involve the use of complex microscopic simulations that are expensive and time consuming. The Highway Capacity Manual (HCM) and the Highway Capacity Software (HCS) are widely used analytical tools that assess the quality of service for conventional intersections and interchanges. However, they do not assess any of the alternative designs considered in this project.

To support the increased exposure and interest in these designs, FHWA is conducting activities to integrate alternative intersection/interchange guidance into the HCM and HCS. This will help expand the portfolio of design alternatives contained in the HCM and enable a side-by-side assessment of their operations in contrast to traditional designs.

Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):

This project is nearing completion. Final chapters 23 & 34 (chapters on ramp terminals and alternative intersections) have been reviewed and accepted by the HCQS subcommittee for inclusion in the 6th Edition of the Highway Capacity Manual. Further, the HCM 6th Edition has now been released to the public. Three of the computational engines (DLT, RCUT, & MUT) are complete and undergoing retesting after receiving comments and making changes after beta testing. The remaining computational engine (DDI) procedure is more complex as steps still remain to make the output report display computed results, match HCM example problem results, add support all four major-street forward directions, and add error checking plus validation. The project was extended by 6 months to allow completion of these steps by early 2017, but the engine will still need to be beta-tested and finalized.

Anticipated work next quarter:

Continued development and testing of the DDI computational engine.

Significant Results:

RCUT, MUT, and DLT computational engines were released to the public.

After several project team meetings and discussions, we identified an important data entry method that will be needed for DDI modeling. It involves lead-lag phasing in which the adjacent through and left-turn splits are forced to have identical values.

We have begun developing a real-world case study involving a DDI in Lexington, Kentucky.

Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set forth in the agreement, along with recommended solutions to those problems).

The alternative intersection and interchange chapters received extra scrutiny from the Highway Capacity Committee (HCQSC), because these chapters are considered by some to be the most important new product to be offered within the HCM 6th Edition. This extra scrutiny led to four rounds of review by the HCQSC, and four rounds of chapter editing by the research team. These four rounds of review and editing led to the initial 6-month project extension.

The DDI computational procedure is more complex than originally anticipated, and required more time for software development than anticipated. This led to the second 6-month project extension.

Potential Implementation:

The procedures and chapters produced by this project were recently published within the Highway Capacity Manual 6th Edition.