



BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

Richard A. Davey, MassDOT Secretary and CEO and MPO Chairman
Karl H. Quackenbush, Executive Director, MPO Staff

MEMORANDUM

DATE September 20, 2012
TO Boston Region Metropolitan Planning Organization
FROM Karl H. Quackenbush
CTPS Executive Director
RE Work Program for: I-93 North and Southeast Expressway HOV Lane
Monitoring: October 1–December 31, 2012

ACTION REQUIRED

Review and approval

PROPOSED MOTION

That the Boston Region Metropolitan Planning Organization, upon the recommendation of the Massachusetts Department of Transportation, vote to approve the work program for I-93 North and Southeast Expressway HOV Lane Monitoring: October 1–December 31, 2012, in the form of the draft dated September 20, 2012.

PROJECT IDENTIFICATION

Unified Planning Work Program Classification

Planning Studies

CTPS Project Number

23228

Client

Massachusetts Department of Transportation, Office of Transportation Planning
Project Supervisor: Bob Frey

CTPS Project Supervisors

Principal: Efi Pagitsas

Manager: Seth Asante

Funding

MassDOT SPR Contract #72982

IMPACT ON MPO WORK

The MPO staff (CTPS) has sufficient resources to complete this work in a capable and timely manner. By undertaking this work, the MPO staff will neither delay the completion nor reduce the quality of other work in the UPWP.

BACKGROUND

In 1998, the Massachusetts Department of Environmental Protection (DEP) began requiring monitoring of the Southeast Expressway and I-93 North general-purpose and high-occupancy-vehicle (HOV) lanes to determine HOV performance. The requirements are set forth in DEP regulation 310 CMR 7.37, which calls for travel time data to be collected seasonally throughout the year, including samples for each of the five weekdays. Each year since 1998, a work program has provided for the continuation of this process, describing the projected tasks, scheduling, products, and costs of HOV monitoring for an entire year, starting on October 1. However, as MassDOT and CTPS are transitioning to an alternative data collection method that has not been fully established yet, the present work program covers only the period from October 1, 2012, to December 31, 2012. It is expected that there will be a follow-up work program covering the same activities for the period January 1, 2013, to September 30, 2013.

OBJECTIVE(S)

The objectives of this work program are to perform the following monitoring and analysis for October 1, 2012, to December 31, 2012 (henceforward referred to as the fall of 2012):

- Collect travel time data on the I-93 North and Southeast Expressway HOV lane segments and their associated general-purpose lane segments.
- Collect AM period vehicle occupancy counts on the I-93 North and Southeast Expressway HOV lane segments and their associated general-purpose lane segments.
- Calculate travel times and vehicle occupancy in both the HOV and general-purpose lanes and travel time savings in the HOV lanes.
- Analyze and document the results in written and graphic formats.

WORK DESCRIPTION

The work required to accomplish the study objectives will be carried out in four tasks, as described below:

Task 1 Collect Travel Time Data

CTPS will collect sample travel time data using stopwatches and Global Positioning System (GPS) satellite receivers in rented automobiles on the I-93 North and Southeast Expressway HOV and general-purpose lanes. The collection hours are between 6:00 and 10:00 AM on I-93 North southbound and the Southeast Expressway northbound and between 3:00 and 7:00 PM on the Southeast Expressway southbound. Data will be collected in the fall of 2012 only.

Products of Task 1

Fall 2012 travel time data for the general-purpose and HOV lanes in electronic form and in handwritten field notes.

Task 2 Process and Analyze Travel Time Data

CTPS will process the travel time data, analyze it, and document results in a table and graphs. Staff will estimate the travel-time savings afforded by the HOV lanes compared to travel in the general-purpose lanes for the fall of 2012.

Products of Task 2

A table and set of graphs presenting estimates of fall 2012 travel times and HOV travel time savings for I-93 North during the AM period and for the Southeast Expressway during the AM and PM periods.

Task 3 Collect and Analyze Vehicle Occupancy Data

CTPS will collect vehicle occupancy data on both the I-93 North and Southeast Expressway HOV lanes and their associated general-purpose lanes on a typical weekday during the fall of 2012. Data will be collected throughout the four hours of AM HOV operation. Vehicle occupancies will be calculated and analyzed.

Products of Task 3

Total numbers of vehicles and their occupants, grouped by 15-minute intervals, on a typical weekday during the fall for each of the two HOV, and for the general-purpose lanes under study.

Task 4 Document Travel Time Savings and Occupancy Rates

The data collected in Task 1 and the analysis of it in Task 2 will be documented in a technical memorandum on HOV lane performance. The occupancy data collected and analyzed in Task 3 will also be reported in the memo, which will include a calculation of the total vehicles and persons and the vehicle occupancy rate for the I-93 North and Southeast Expressway HOV and general-purpose lanes.

Products of Task 4

- A memorandum documenting the performance of the HOV lanes during the fall of 2012 in terms of travel time. The memorandum will also include the results of vehicle occupancy counts.

ESTIMATED SCHEDULE

It is estimated that this project will be completed 12 weeks after the notice to proceed is received. The proposed schedule, by task, is shown in Exhibit 1.

ESTIMATED COST

The total cost of this project is estimated to be \$17,653. This includes the cost of 11.7 person-weeks of staff time, overhead at the rate of 96.58 percent, and travel. A detailed breakdown of estimated costs is presented in Exhibit 2.

KHQ/SAA/saa

Exhibit 1

ESTIMATED SCHEDULE

I-93 North and Southeast Expressway HOV Lane Monitoring: October 1-December 31, 2012

Task	Week												
	1	2	3	4	5	6	7	8	9	10	11	12	
1. Travel Time Data Collection	█												
2. Travel Time Data Processing						█							
3. Vehicle Occupancy Counts						█							
4. Study Documentation						█							A

Products/Milestones

A: Memo documenting fall 2012 travel times and vehicle occupancy

:

Exhibit 2**ESTIMATED COST****I-93 North and Southeast Expressway HOV Lane Monitoring: October 1-December 31, 2012****Direct Salary and Overhead** **\$15,978**

Task	Person-Weeks					Direct Salary	Overhead (96.58%)	Total Cost
	M-1	P-5	P-2	Temp	Total			
1. Travel Time Data Collection	0.0	0.1	0.4	5.4	5.9	\$3,136	\$3,029	\$6,166
2. Travel Time Data Processing	0.0	0.2	1.1	0.2	1.6	\$1,525	\$1,473	\$2,997
3. Vehicle Occupancy Counts	0.0	0.5	0.0	3.0	3.5	\$2,289	\$2,211	\$4,500
4. Study Documentation	0.2	0.5	0.0	0.0	0.7	\$1,178	\$1,137	\$2,315
Total	0.2	1.4	1.5	8.6	11.7	\$8,128	\$7,850	\$15,978

Other Direct Costs **\$1,675**

Travel \$1,675

TOTAL COST **\$17,653****Funding**

MassDOT SPR Contract #72982