TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Date: 1/31/2018

Lead Agency (FHWA or State DOT): Vermont Agency of Transportation

INSTRUCTIONS:

Transportation Pooled Fund Program Project #	**Transportation Pooled Fund Program - Report Period:**
TPF-5(222)	□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: New England Transportation Consortium (VI)

Name of Project Manager(s):	**Phone Number:**	**E-Mail**
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Lead Agency Project ID:	**Other Project ID (i.e., contract #):**	**Project Start Date:**
CA0306	NETC 06-4	9/16/13
	NETC 07-1	7/1/13
	NETC 09-2	9/1/13
	NETC 09-3	9/1/13
	NETC 10-3	9/16/13
	NETC 13-1	9/1/14
	NETC 13-2	6/1/14
	NETC 13-3	12/1/14
	NETC 14-1	3/1/15
	NETC 14-2	2/1/15
	NETC 14-4	7/06/15
	NETC 15-1	12/1/16
	NETC 15-2	1/1/2017
	NETC 15-3	8/1/16

Original Project End Date:	**Current Project End Date:**	**Number of Extensions:**
NETC 06-4 9/15/15	NCE to 9/15/16	1
NETC 07-1 3/31/16	NCE to 6/30/16	1
NETC 09-2 2/28/16	2/28/16	0
NETC 09-3 8/31/15	NCE to 12/31/15	1
NETC 10-3 9/15/15	NCE to 6/30/2016, NCE to 5/31/17	2
NETC 13-1 4/2/16	NCE to 8/31/16 (NETC), NCE to 1/14/17, Amd. to 1/31/18	2, 1 (for NETC)
NETC 13-2 5/31/16	NCE to 12/1/17	1
NETC 13-3 11/30/15	NCE to 3/31/16, 9/30/16, NCE to 4/2/17	3
NETC 14-1 4/2/16	NCE to 12/31/16 (NETC), NCE to 12/31/17	1, 1 (for NETC)
NETC 14-2 4/2/16	NCE to 4/2/17 (NETC), NCE to 5/31/17	1, 1 (for NETC)
NETC 14-4 7/05/17	NCE to 12/31/17	1
NETC 15-1 11/30/18	11/30/18	0
NETC 15-2 12/31/18	12/31/18	0
NETC 15-3 7/31/18	7/31/18	0

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
NETC 06-4 $242,909	$77,283.20	100%
NETC 07-1 $198,154	$190,421.37	100%
NETC 09-2 $80,000	$78,811.11	100%
NETC 09-3 $165,000	$149,695.39	100%
NETC 10-3 $150,158	$65,317.38	100%
NETC 13-1 $191,710	*$186,217.00*	*90%*
NETC 13-2 $249,785	*$238,455.89*	*100%*
NETC 13-3 $100,000	*$70,810.41*	*95%*
NETC 14-1 $100,000	*$85,375.34*	*40%*
NETC 14-2 $205,554	*$159,164.72*	*100%*
NETC 14-4 $200,000	*$192,690.00*	*95%*
NETC 15-1 $164,970	*$74,237.00*	*45%*
NETC 15-2 $150,000	*$105,000.00*	*25%*
NETC 15-3 $150,000	*$99,000.00*	*67%*

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter			Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
NETC 06-4	$0.0	0%	$0.0	180% (based on 24 months)
NETC 07-1	$0.0	0%	$0.0	127% (based on 33 months)
NETC 09-2	$0.0	0%	$0.0	133% (based on 30 months)
NETC 09-3	$0.0	0%	$0.0	164% (based on 28 months)
NETC 10-3	*$0.0*	*0%*	*$0.0*	*217% (based on 24 months)*
NETC 13-1	$11,620.87	6.1%	*$0.0*	*167% (based on 24 months)*
NETC 13-2	*$97,019.46*	*38.8%*	*$0.0*	*179% (based on 24 months)*
NETC 13-3	*$0.0*	*0%*	*$0.0*	*283% (based on 12 months)*
NETC 14-1	*$29,994.49*	*30.0%*	*$5,035.68*	*155% (based on 22 months)*
NETC 14-2	*$0.0*	*0%*	*$20,502.93*	*123% (based on 26 months)*
NETC 14-4	*$16,945.34*	*8.5%*	*$0.0*	*125% (based on 24 months)*
NETC 15-1	*$0.0*	*0.0%*	*$0.0*	*54% (based on 24 months)*
NETC 15-2	*$54, 176.51*	*36.1%*	*$21,194.44*	*50% (based on 24 months)*
NETC 15-3	*$28,832.79*	*19.2%*	*$41,557.59*	*71% (based on 24 months)*

Project Description:

06-4 Preventative Maintenance and Timing of Applications, Completed June 2017: http://netc.w3.uvm.edu/research/netc-research-projects/netc-06-4/

07-1 In-Place Response Mechanisms of Recycled Layers Due to Temperature and Moisture Variations, Completed October 2016: http://netc.w3.uvm.edu/research/netc-research-projects/netc-07-1/

09-2 Effective Establishment of Native Grasses on Roadsides, Completed June 2016: http://netc.w3.uvm.edu/research/netc-research-projects/netc-09-2/

09-3 Advanced Composite Materials: Prototype Development and Demonstration, Completed January 2017: http://netc.w3.uvm.edu/research/netc-research-projects/netc-09-3/

10-3 Low Temperature and Moisture Susceptibility of RAP Mixtures with Warm Mix Technology, Completed November 2017: http://netc.w3.uvm.edu/research/netc-research-projects/netc-10-3/

13-1 Development of High-Early Strength Concrete for Accelerated Bridge Construction Closure Pour Connections

13-2 HMA Mixtures Containing Recycled Asphalt Shingles (RAS): Low Temperature and Fatigue Performance of Plant-Produced Mixtures

13-3 Improved Regionalization of Quality Assurance (QA) Functions

14-1 Measuring the Effectiveness of Competency Models for Job-Specific Professional Development of Engineers & Engineering Technicians

14-2 Investigation of Northern Long Eared Bat Roosting Sites on Bridges, Completed March 2017: http://netc.w3.uvm.edu/research/netc-research-projects/netc-14-4/

14-4 Optimizing Future Work Zones in New England for Safety and Mobility

15-1 Use of Forested Habitat Adjacent to Highways by Northern Long-Eared Bats

15-2 Using the new SHRP2 Naturalistic Driving Study Safety Databases to Examine Safety Concerns for Teens and Older Drivers
15-3 Moisture Susceptibility Testing for Hot Mix Asphalt Pavements in New England

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

NETC 13-1, Task 1 (Literature search) and Task 3 (Develop mix design) have been completed. Task 4 (Test mixture) has been mostly completed. Freeze-thaw testing and panel tests are the only two activities remaining that will be conducted during the extension granted for this project. The geometry and preliminary design of the specimens for panel testing were sent to the project TAC for review and comments.

NETC 13-2, Work on utilizing lab produced mixtures was completed. Work continues on the draft final report.

NETC 13-3, The project team is in the process of preparing the final report, poster, and fact sheet.

NETC 14-1, A progress meeting was held with the TAC. Next steps were discussed and outlined. Draft competency model frameworks were discussed and outlined. Plans were made for site visits to review next steps.

NETC 14-4, Seven tasks have been identified for the study: 1) literature review; 2) development of Temporary Traffic Control Plan (TTCP) metrics; 3) development of methodology for testing and analyzing TTCPs; 4) development of new TTCPs; 5) evaluation of new TTCPs through simulation; 6) project meetings; and 7) reporting. During the 9th quarter, the team has been focusing on Tasks 3, 5, 6, and 7. The team held the 8th quarterly meeting on October 24, 2017. A draft final project report was submitted on December 31, 2017.

NETC 15-1, The project team has accomplished the following items this quarter:

- All NE states have sent NLEB data except CT and those data are expected within the month (Task 3)
- Created presence-absence maps from the accumulated data (Task 3 and 7)
- Compiled Presence/Absence data; the team will combine presence-absence data with presence-only data for analysis using novel statistical methods (Task 5 and 7)

NETC 15-2, The project team has accomplished the following items this quarter:

- Finalized the Data User License with VTTI for the SHRP2 data for the analysis, including the data security and management plan
- Updated the list of the data fields of SHRP2 NDS that was requested from VTTI and finalized the list after VTTI's feedback
- As required by the Data User License, designated a secure computer for storing and analyzing the SHPR2 data from VTTI
- Reviewed the data dictionaries for SHRP2 data tables in preparation of receiving the SHRP2 data
- Continued to develop strategies for analyzing the SHRP2 data when it arrives including the video data of crash, near-crash, and baseline events

NETC 15-3, The majority of the work performed this quarter was focused on production of laboratory specimens and conducting laboratory tests. As the end of this quarter, all of the specimen production and fabrication (which includes indirect tensile strength (ITS), Hamburg wheel tracker, dynamic modulus, semi-circular bend (SCB), and disk-shaped compact tension (DCT) specimens for a total of almost 300 specimens) has been completed.

Anticipated work next quarter:

NETC 13-1, The project team will fabricate freeze-thaw specimens using concrete from trial batches to be sent to DOT lab to be tested (ASTM C666). They will also fabricate and test two panel tests in the laboratory.

NETC 13-2, Work continues on the final draft.

NETC 13-3, Work continues on the final draft.

NETC 14-1, Work continues on the final draft and is estimated to be finished during the next quarter.

NETC 14-4, The project team will revise the draft final project report based on the comments to be received. Also, the team will prepare two journal papers based on the VR and VISSIM simulation study results.

NETC 15-1, The project team will work on the following tasks:

- Add in NLEB data from CT (Task 3)
- Create statistical code for habitat models and GIS model for zone of influence (Task 5, 7, and 8)
- Model habitat requirements for NLEB (Task 5)
- Model effects of roads on NLEB presence (Task 8)

NETC 15-2, The following activities are planned for the next quarter:

- Two additional meetings for next quarter will be scheduled
- Acquire requested data from the SHRP2 database
- Conduct additional data mining and data reduction to the acquired data
- Perform initial data analyses on the naturalistic study data to address study objectives in Task 2

NETC 15-3, The following activities are planned for the next quarter:

- Complete the remaining laboratory testing
- Continue conducting data analysis on laboratory results to assess changes in mechanical characteristics of mixtures due to laboratory moisture conditioning. Begin comparative evaluation of mixtures in terms of test results
- Conduct pavement life evaluations using both PavementME and IlliTC to determine potential loss of life due to moisture damage
- Develop preliminary recommendations for the lab procedure to be used by New England DOTs for screening of moisture susceptible asphalt mixtures.

Significant Results:

None as of this reporting period.

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).

NETC 13-1, As of the end of this reporting period, no comments were received on the dimensions proposed for the panel tests. The research team will therefore proceed with fabrication using the proposed dimensions to avoid any further delays on the project. A no cost extension was requested to 5/31/18 to allow completion of the remaining tasks of this project.

NETC 13-2, A project progress meeting was held on July 7, 2017 via a conference call to update the committee on the status of the project. Only the TAC member from CTDOT and the NETC representative participated in the meeting. In the meeting, the project PI requested that the mixtures for this study shift from plant-produced mixtures to lab-produced mixtures. The basis for the request is due to the fact that no contractors have produced the mixtures needed for the study, even the one contractor who had previously committed to produce mixtures at the start of this project. The project PI has consistently continued efforts to find a contractor willing to produce mixtures for this study throughout the duration of the project, with no success. In the end, lab-produced mixtures were utilized in the project.

NETC 13-3, None during the current period.

NETC 14-1, Project funding has expired. Work on the project has ceased with the exception of final report preparation.

NETC 14-4, None during the current period.

NETC 15-1, None during the current period.

NETC 15-2, The delivery of the SHRP2 data from VTTI has taken longer than initially anticipated when the study began. Our contract with VTTI, finalized in November, indicates that we will receive the full dataset of the SHRP2 NDS data we requested before the end of January 2018. TAC voting for a PI change to Mike Knodler is underway along with a budget reallocation as the SHRP2 data was found to be much less expensive than initially estimated. Work is also changing from using an undergraduate student to a graduate student, as more robust assistance will be needed with former PI Siby Samuel no longer involved in the project.

NETC 15-3, No significant problems encountered during the current period.

Potential Implementation:

The seven of the 13 research projects listed above are still in the research phase. Implementations of the results of projects 9-3 and 13-3 are being actively worked on. Project 14-1 is expected to be implemented as well. One research team (NETC 13-3) is in the process of drafting final reports and the technical advisory committees and researchers are considering options for pilot implementation projects. Seven research projects (NETC 06-4, 07-1, 09-2, 09 -3, 10-3, 13-3, and 14-2) have or are completing their final reports and are continuing the technical transfer process. During these processes, the technical advisory committees and researchers will continue to work to identify strategies for implementing the results of this research.