

**NEW ENGLAND TRANSPORTATION CONSORTIUM  
QUARTERLY PROJECT PROGRESS REPORT**

**A. PROJECT NUMBER AND TITLE: NETC 13-3**

**B. PRINCIPAL INVESTIGATOR(s) & UNIVERSITY(s): Eshan V. Dave, University of New Hampshire**

**C. WEB SITE ADDRESS (If one exists):**

**D. START DATE (Per NETC Agreement): 3/27/2015**

**E. END DATE (Per NETC Agreement): 3/31/2016**

**F. ANTICIPATED COMPLETION DATE: 9/30/2016**

**G. PROJECT OBJECTIVES:**

- (1) Review of current QA process used by New England DOTs for precast and prestressed concrete elements (PCE/PSE).
- (2) Review of QA specifications for PCE/PSE.
- (3) On the basis of the review and through working with the technical review committee of the project, develop common acceptance standards for PCE/PSE to be used by NETC constituents.
- (4) Develop a cost-sharing mechanism to accompany the common acceptance standards.
- (5) Identify agencies and contractors to conduct pilot implementation of the common acceptance standards.
- (6) Develop a list of additional materials and services for which common acceptance standards might be beneficial and feasible.

**H. REPORT PERIOD: 10/2/2015 – 12/31/2015**

**I. ACCOMPLISHMENTS THIS PERIOD:**

The past quarter activities for the researchers started with completion of the DOT QA personnel interviews as well as visits to PCE/PSE fabricators in New England. The data collected through literature review, review of specifications and QA manuals, interview of New England agency engineers and QA inspectors, and interview of PCE/PSE fabricators was compiled and analyzed. The analysis focused on evaluating the similarities and differences between the current agency practices.

A highlight of findings from review of QA processes for PCE/PSE of the New England DOTs are as follows:

- Large number of PCE/PSE fabricators supply elements to multiple New England states
- For PSE, producer qualification requirements are comparable between different New England states. For PCE there are some differences, some states allow PCI plant certification also for PCE whereas, others prefer NPCA certification.
- There is a full spectrum of QA inspector types in New England in terms of agency employee versus consultant QA inspector usage. On basis of the current consultant inspection contracts, the range of cost per hour per inspector is found to be from \$50 to \$100. The lower range does not include travel reimbursement which is paid separately.
- The pre-pour inspection processes amongst the states were found to be comparable.

- The plastic testing was similar amongst the states as they all require the necessary tests to ensure the quality of the mix. However, the frequencies of these tests were found to vary significantly amongst the state agencies. It was found that the frequency of testing ranged from testing per sub-lot (typically defined as one element) to a consistency based sampling frequency.
- The majority of the states require inspectors to be present for the destressing of prestressed elements.
- The requirements between states are not similar in the number of compressive strength cylinders that were required to be cast and tested. Also, all states conduct 28 day strength testing, but some require additional testing, such as 56 day strength measurements by Massachusetts. Furthermore, only two states currently have requirements in place to determine durability of concrete in terms of permeability through rapid chloride ion permeation (Maine) or surface resistivity testing (New Hampshire).
- The post-pour inspection processes were found to be also very similar amongst the states.
- All agencies allow accelerated curing of precast elements. Majority of agencies do not specify controls associated with curing conditions, internal temperature etc. (Maine being only exception).
- A few currently utilized practices as well as some that are currently under implementation at various DOTs could really aid in implementation of the unified QA process between New England DOTs. For example, use of RFID (Radio Frequency Identity) tag with cloud based data-storage system that is being evaluated by MassDOT could serve as a vehicle for management of information and the use of “Shift Planning” system used by VTrans can make it streamlined to keep database of eligible inspection personnel in the region, their availability as well as tracking of their work hours.

**J. PROBLEMS ENCOUNTERED (If any):**

The project is currently behind schedule. The project fell behind due to longer than anticipated time it took for researchers to coordinate visits to various DOTs for QA review and interviews. A no-cost extension (NCE) is being prepared by the researchers for requesting extension of the project by duration of six months. The NCE request will be submitted to NETC in next 2 weeks.

**K. TECHNOLOGY TRANSFER ACTIVITIES:**

A presentation summarizing the activities of this project was made by Mr. John Grieco from Massachusetts Department of Transportation at the North East State Material Engineers Association (NESMEA) conference in Burlington Vermont. Dr. Dave helped prepare the presentation. A panel discussion at NESMEA was held on the topic and provided valuable discussions regarding the project.

**L. STATUS BY TASK:**

**Task 1: State of the Practice Review:** Deliverable for this task in form of a draft report was delivered on 12/23/2015.

**Task 2: Development of Common Acceptance Standards for PCE/PSE:** On basis of Task-1 activities preliminary recommendations for common acceptance standards have been developed. These recommendations will be presented to the project technical panel at the next meeting.

**Task 3: Reporting and Technical Committee Meetings:** This quarterly report will serve as the next submission. Task-1 report was also prepared and submitted during the past quarter.

**M. PERCENT COMPLETION OF TOTAL PROJECT: 55 %**

**N. ACTIVITIES PLANNED FOR NEXT QUARTER:**

- Meeting with project technical committee in late January – early February time frame
- Continued development of draft common acceptance standards
- Selection of agencies and manufacturers for pilot implementation of common acceptance standards

**O. FINANCIAL STATUS:**

**As of:** 1/1/2016

**Total Project Budget: \$ 100,000**

**Total Expenditures: \$ 29,000**

**Note: This report should not require more than 2-3 pages & should be e-mailed to the NETC Coordinator so as to arrive no later than three (3) working days after the end of each calendar quarter.**