

**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): 4/2/2017

F. ANTICIPATED COMPLETION DATE: 2/28/2017

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: 10/1/2016 – 12/31/2016

I. ACCOMPLISHMENTS THIS PERIOD:

In this past quarter, the research team finalized two spreadsheets with recommendations for (1) plant certification; (2) sampling and testing as part of QA inspection. These spreadsheets are instrumental in adoption of common acceptance standards for precast and prestressed concrete elements for all six New England DOTs. The spreadsheets were emailed to the project technical committee in early November and a conference call between researchers and the technical committee was held on November 18th 2016. During the conference call researchers presented their recommendations and the technical committee provided their feedback. Minutes of the conference call are attached with this report. On basis of the technical committee feedback researchers revised the recommendations. Revised recommendations are also attached with this report.

During the conference call there was discussion of setting up a Share Point site by Vermont Agency of Transportation (VAOT). The Share Point site will be used to share QA data between the states. Since the call, VAOT has obtained necessary approvals for setting of the Share Point data sharing site. MassDOT and ConnDOT staff has already obtained necessary login information to access this site. Once other states also obtain the login information from VAOT, another conference call will be organized to go over the Share Point site as well as to further discuss pilot projects during 2017 construction season where sharing of QA resources will be tried by different states.

The final report for the project was prepared during the previous quarter. The report is currently being revised to incorporate recommendations made by technical committee during the November conference call.

J. PROBLEMS ENCOUNTERED (If any):

K. TECHNOLOGY TRANSFER ACTIVITIES:

A Share Point site has been setup by VAOT as first step in realizing the implementation of the research conducted through this study. As a next step, a series of pilot project will be conducted by various New England agencies to use the unified QA processes developed herein and to share inspection resources.

L. STATUS BY TASK:

Task 1: State of the Practice Review: Task completed in previous quarter no progress to report.

Task 2: Development of Common Acceptance Standards for PCE/PSE: Common acceptance standards in form of spreadsheet tables have been presented to the technical committee. Technical committee provided feedback on them and researchers revised as per the feedback.

Task 3: Reporting and Technical Committee Meetings: This quarterly report will serve as the next submission. Final report is in last stages of edit and will be submitted during the first half of the next quarter.

M. PERCENT COMPLETION OF TOTAL PROJECT: 90 %

N. ACTIVITIES PLANNED FOR NEXT QUARTER:

- Submission of the final report
- Selection of agencies and manufacturers for pilot implementation of common acceptance standards

O. FINANCIAL STATUS:

As of: 1/1/2017

Total Project Budget: \$ 100,000

Total Expenditures: \$ 70,900

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.

NETC 13-3: Minutes of the meeting (11/18/2016)

Participants: Julie Dowds (UVM/NETC), Jan Bak (RIDOT), Robert Lauzon (ConnDOT), Kevin Cummings (Maine DOT), John Grieco (MassDOT), Denis Boisvert (NH DOT), Mladen Gagulic (Vermont DOT), Jim Wild (Vermont DOT), Eshan Dave (UNH), Rasool Nemati (UNH)

Discussion Topic: Exchange of information and data from QA process

- Everyone agreed on a way to share all the information like QA/QC personnel, required specifications for construction, etc. between all the state DOTs. Suggested software like ShiftPlanning which VT DOT currently uses is recommended. Alternative could be to use SharePoint for exchange of information. If all DOTs email Mladen Gagulic names and emails of 1 or 2 people, they can be added to VT DOT ShiftPlanning system for them to preview the system.
- Sharing the results will cause the consistency in terms of requirement for all the state DOTs and producers.

Discussion Topic: Modifications and revisions to the UNH's recommendation spreadsheets

- Structural vs nonstructural terminology should be added to the spreadsheets (it is already in the report)
- Accredited laboratory terminology should be revised (change AMRL to AASHTO re:source)
- There is some concern with inspector office requirements. The problem is that the number of inspectors who will be at site at the same time is unknown. To better solve the problem the production capacity of different producers should be defined.
- Clarify as to where and when the information (contractor testing information) should be provided to the inspector.
- Get more backup information about usage of J-ring around the country to support use of this test by New England DOTs. Agencies feel that there is "resistance" from producers to conduct J-ring test during production.
- During pour sampling and testing of plastic concrete for pre-stressed and structural precast elements (air, slump/spread and cylinders) should be changed to every 100 yd³ (currently it is recommended as once every 150 yd³)
- On spreadsheet try to better distinguish agency testing and contractor testing

Discussion Topic: Recommendations for UNH to include in the curing of test specimens and elements

- Get more information about Intellicure and Surecure. Add brief discussion on these systems in the report

- Recommend that the curing of samples should be consistent to the final curing method used for the elements. Curing should be considered in the mix design method as well.
- Check if the use of maximum internal temperature of 160°F can be used instead of ambient temperature requirement. (Maine DOT uses 160°F). Also define where the internal thermometer should be put in concrete.

Discussion Topic: Mix Designs

- At present most agencies specify minimum cementitious amounts, this is often leading to PCC with very high cementitious content and in-turn causing concerns with shrinkage. One alternative might be to limit to maximum allowable cementitious amount (MassDOT). For shrinkage bar test (AASHTO T166), precision and bias is too large. Ring shrinkage test could also be adopted, with requirement of no cracking in ring shrinkage as criteria (Vermont DOT).
- Specifications should consider to define the maximum amount of cementitious material as well as defining the strength gain rate for the concrete.