

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

A. PROJECT NUMBER AND TITLE:

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

B. PRINCIPAL INVESTIGATOR(s) & UNIVERSITY(s):

Sergio F. Breña (PI) – University of Massachusetts Amherst
Scott A. Civjan (Co-PI) – University of Massachusetts Amherst

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

D. START DATE (*Per NETC Agreement*): **September 01, 2014**

E. END DATE (*Per NETC Agreement*): **April 02, 2016; May 31, 2018 (amended)**

F. ANTICIPATED COMPLETION DATE: January 31, 2018

A request to extend the project (cost and time) was discussed with the Project Technical Advisory Committee as described in Section J. Their positive recommendation was sent to NETC for approval and the formal extension request process was initiated with NETC on June 2017. The amendment to the project contract was issued in early August 2017, and project activities restarted in September 2017.

A second request to have a no-cost extension to the project was submitted to NETC for approval on 22 January 2018 and was approved by the NETC AC and the TAC for the project on 28 February 2018. Project activities restarted after this date.

G. PROJECT OBJECTIVES:

To develop and validate concrete mixtures capable of developing high early strength without detrimentally affecting their long-term durability. The mixtures are for use in projects using accelerated bridge construction methods.

H. REPORT PERIOD: January 1, 2018 – March 31, 2018

I. ACCOMPLISHMENTS THIS PERIOD:

Task 1: Literature Search

- Task Complete.

Task 3: Develop Mix Design

- Task Complete

Task 4: Test Mixture

Most activities for this task have been completed. Freeze-thaw testing and panel tests are the only two activities missing that will be conducted during the extension granted for the project.

The geometry and preliminary design of the specimens for panel testing were sent to the Project Technical Advisory Committee for review and comments. To avoid further delays, the project team is proceeding using the dimensions proposed on a communication dated 27 September 2017.

The panel specimens are being fabricated for testing. Formwork and epoxy coated reinforcement is ready. The team expects to cast and test the panel specimens during the next reporting period. At the time that closure pours between panels are cast, the research team will also fabricate freeze-thaw specimens for shipping to a MassDOT freeze-thaw testing facility.

J. PROBLEMS ENCOUNTERED (If any):

The research team reinitiated project activities at the end of February 2018 after approval of the no-cost extension to 31 May 2018.

K. TECHNOLOGY TRANSFER ACTIVITIES:

No technology transfer activities were performed.

L. STATUS BY TASK:

Task 1: Literature Search – 100% complete

Task 2: Develop Mixture Design Specification – 100% complete

Task 3: Develop Mix Design – Trial batches – 100% complete

Task 4: Test Mixture – Laboratory specimen and test rig for panel tests is being designed. Freeze-thaw specimens will be fabricated at the same time as closure pours for panel tests (87%)

M. PERCENT COMPLETION OF TOTAL PROJECT: 92%

N. ACTIVITIES PLANNED FOR NEXT QUARTER:

- Fabricate freeze-thaw specimens using concrete from trial batches to be sent to DOT lab to be tested (ASTM C666)
- Fabricate and test two panel tests in laboratory

O. FINANCIAL STATUS:

As of: March 31, 2018

Total Project Budget: \$ 174,923; \$191,710 (Amended)

Total Expenditures: \$ 187,452

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.