

WEBINAR

Structural Health Monitoring (SHM) of Corrosion Potential in Concrete Bridge Decks

ABSTRACT

Structural Health Monitoring (SHM) of concrete structures during and after construction, as well as over its service life, has recently become more attractive to owners and consulting engineers. With the introduction of new materials and construction methods, various types of concrete structures are being instrumented with monitoring devices to determine their performance, as well as their response to various loading conditions. Among many other objectives, this includes monitoring concrete performance at the serviceability and durability limit states. Emphasis has been placed on assessment of cracking potential, rebar debonding, and evaluation of rebar corrosion.

This webinar presents an overview of an on-going program for the SHM of concrete bridge decks in the State of New Jersey. In addition to various types of sensors to measure serviceability and other long-term deformations, three types of corrosion sensors are instrumented to monitor the corrosion activities in concrete decks; one is the silver-silver chloride electrode and the other two are multi element probe (MEP) corrosion sensors. The silver-silver chloride electrode provides the corrosive potential by measuring the induced voltage around the rebar. The MEP provides multiple readings of chloride ion content, resistivity and linear polarization resistance. Other types of MEPs were also instrumented on bridge decks during reconstruction in late 1990s to monitor the corrosion potential of the bridge decks. Various types of sensors are installed in precast panels during fabrication as well as in-situ cast concrete decks during and after construction. Moreover, a laboratory-based accelerated corrosion testing program is also performed on concrete specimens using various types of rebars including: Epoxy Coated, MMFX, Black, and Stainless steel rebars. Class A and High Performance Concrete specimens with various crack widths and depths are also included. This ongoing study is aimed at correlating laboratory-accelerated corrosion results with long-term performance of the steel in concrete bridge decks under field conditions.

Presented by:



Hani Nassif, Ph.D.

Professor, Rutgers University

RE-CAST Associate Director

Chair of ACI Committee 444 –

Structural Health Monitoring

and Instrumentation

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Time:

11 am - 12 pm CDT

**312 Butler-Carlton
Hall (Needles)**

