



METER
ENVIRONMENT

MOUNTAIN VIEW CORRIDOR PROJECT

Joseph M. Yaede, W. Spencer Guthrie, Ph.D.

5TE SENSOR PLACEMENT IN A CONCRETE BRIDGE/OVERPASS

METER 5TE [soil moisture sensors](#) were used to measure in-situ moisture content, electrical conductivity, and temperature of the concrete. Three 5TE sensors were mounted on each of four bridge decks evaluated in this study, two with internally cured concrete and two with conventional concrete.

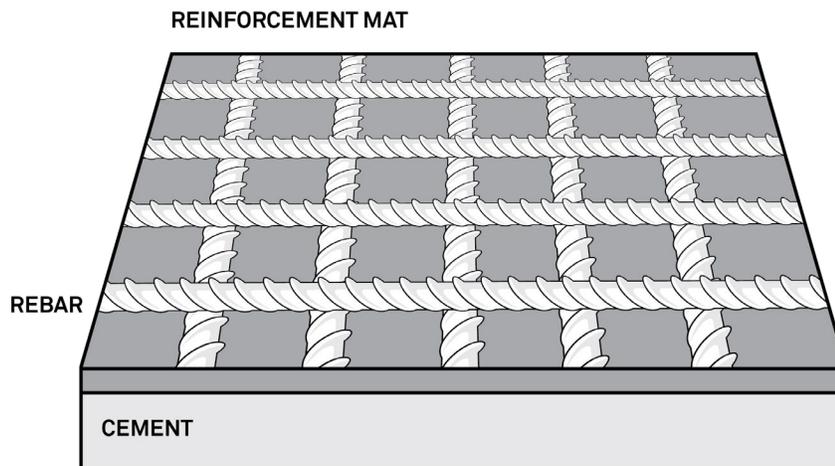


Figure 1. 5TE sensors were secured to the reinforcement mat

5TE SENSOR ATTACHMENT

The sensors were attached to the top reinforcement mat with cable ties to prevent movement during concrete placement.

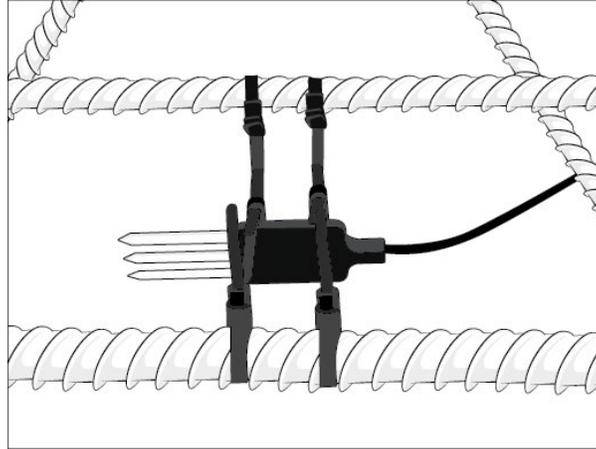


Figure 2. Closeup with attachment and cable ties

The sensor cables were secured to the reinforcing steel, routed down through the end diaphragm wall, and terminated between the bridge girders.

5TE SENSOR PROTECTION

For protection, a wooden cover wrapped with caution tape was tied to the rebar above each sensor

During concrete placement, the wooden covers remained in place for as long as possible to prevent inadvertent damage during construction.

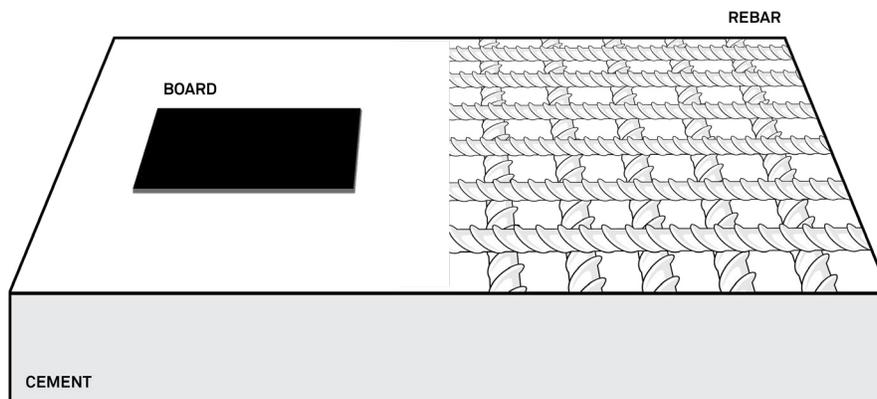


Figure 3. Wooden cover above sensor

ECT AND ECRN-100 SENSOR INSTALLATION

ECT sensors were installed to measure air temperature and relative humidity at each location. ECRN-100 sensors were installed to measure the amount of rain and snowfall experienced at each location.

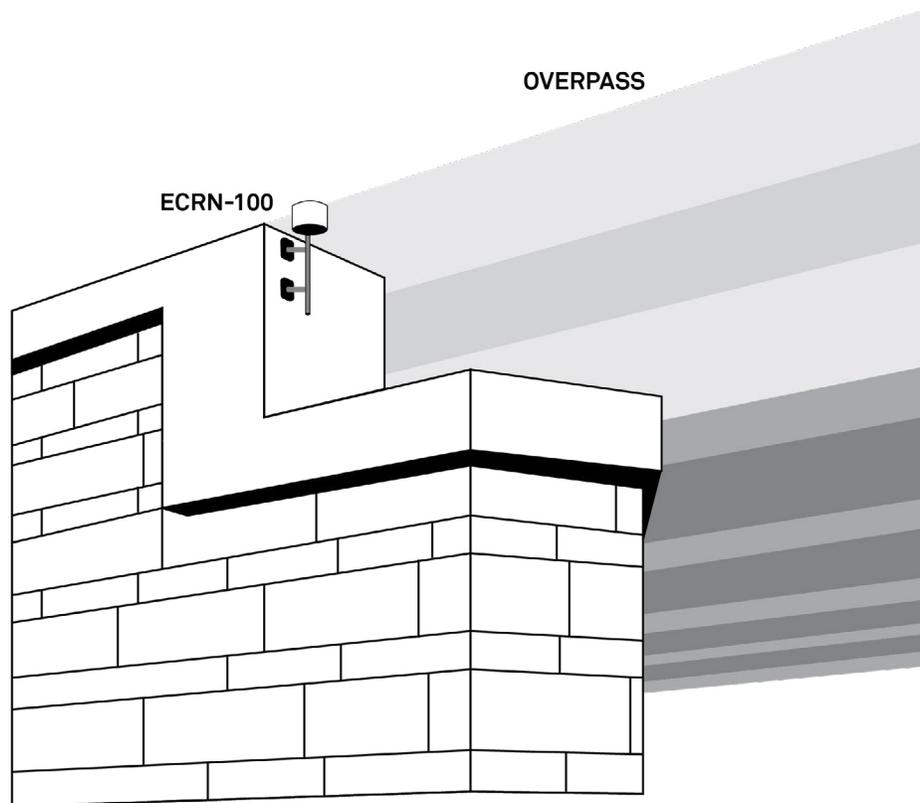


Figure 4. ECT and ECRN-100 sensor installation

EM50G DATA LOGGER USAGE

On each bridge, a METER Em50G data logger was installed on the inside face of the end diaphragm wall near the point of termination of the sensor cables.



Figure 6. METER Em50g data logger

The cellular service option was selected to facilitate continuous data collection (15-minute intervals) and remote access.

The data loggers were each mounted in a 12 in. by 18 in. box for security.

DATA ANALYSIS

The collected data were easily imported into a spreadsheet for analysis.

The collected data allowed for analysis of the deck properties during construction and after the decks were placed in service.

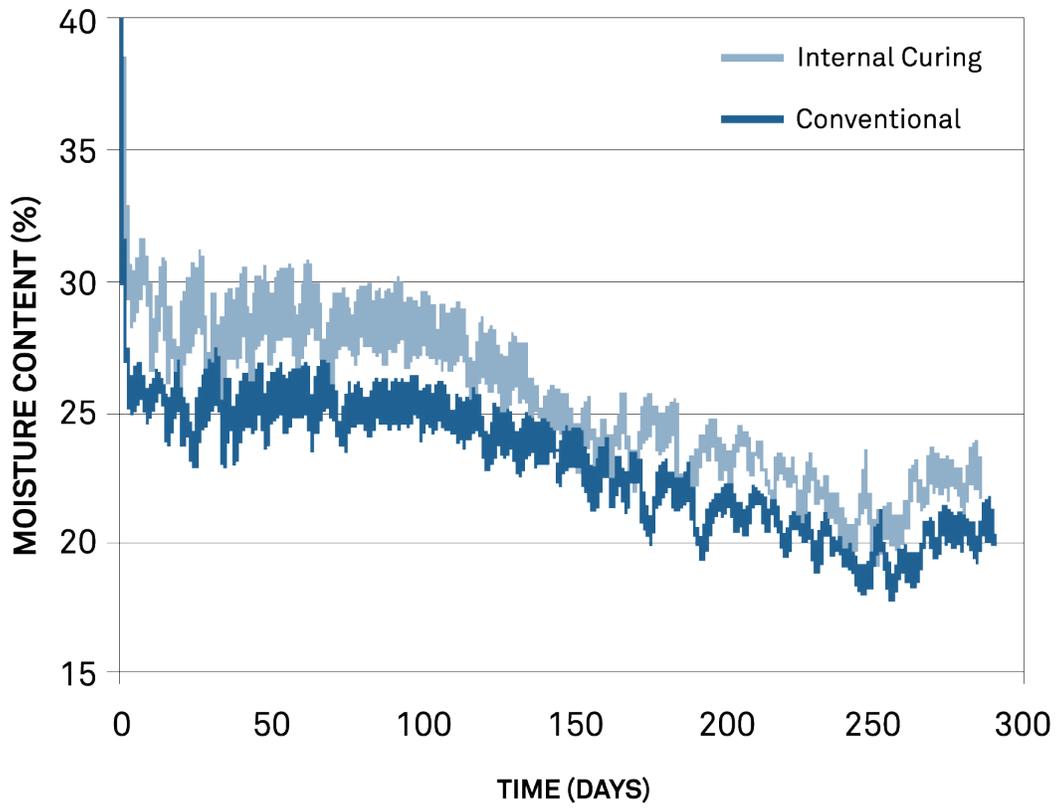


Figure 7. Moisture content over time