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Behavior of Integral Abutment Bridges: Field Data and Computer Modeling

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16. Abstract

This project investigated the seasonal behavior of integral abutment bridges through field monitoring and finite element modeling (FEM). The Orange-Wendell Bridge was used as a case study for the project. The structure was instrumented with 85 gages measuring bridge movements and forces (temperature gages, joint meters, tilt meters, strain gages, earth pressure cells, thermistors and four inclinometer casings for manual readings). Instruments were monitored by the University of Massachusetts at Amherst from January 2002 through December 2004. Both 2-D and 3-D FEM of the bridge were developed using GTSTRUDL and calibrated to the field data. Parametric FEM was performed to evaluate the influence of soil properties and construction practices on bridge behavior.

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