

Geosystems Seminar Series

Dynamic Characterization of Drilled Shaft Foundations on the Doremus Avenue Bridge

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Monday, June 1st, 2:30 pm, SEB 122

Abstract: The Doremus Avenue Bridge located in Newark, NJ, is New Jersey's first bridge designed according to LRFD specifications. It has been selected for instrumentation, testing and monitoring during construction and under traffic conditions for the purpose of evaluation of LRFD specifications. Part of the research project includes the instrumentation, testing and monitoring of the bridge substructure.

Dynamic properties of the drilled shaft foundations supporting the Doremus Avenue Bridge were determined by forced vibration testing. The main objectives of the substructure testing were: (1) site evaluation with respect to dynamic soil properties, and (2) shaft evaluation for the purpose of definition of their dynamic stiffness. The site characterization entailed crosshole testing for the purpose of evaluation of the shear modulus profile. The drilled shaft impedance evaluation was done through forced excitation using an electromagnetic shaker. The responses of the tested shaft, as well as the response of adjacent shafts, were measured for the purpose of evaluation of the shaft interaction. To gain a better insight into shaft dynamics, one of the shafts was instrumented with five triaxial geophones distributed along the full length of the shaft.

The scope and results of the site characterization, shaft impedance and shaft interaction evaluation will be presented and discussed.