

Seismic Instrumentation of the Kealakaha Stream Bridge

Principal Investigator:

Professor Ian Robertson

Project Sponsor:

Paul Santo

Need:

Determine response of a major bridge to seismic events.

Objective:

Minimize assumptions about the design of bridges, new and retrofit, to reduce construction costs. Determine soil-structure interaction for soil conditions in Hawaii. Determine soil damping performance. Determine performance of structures made with Hawaii concrete. Evaluate performance of fiber optic strain sensors.

Duration:

June 1, 2001 – June 1, 2006

Cost:

\$691,564

Update:

- The seismic instrumentation system has been developed and validated in the UH structures laboratory. It will consist of multiple accelerometers, fiber optic strain gages and displacement transducers.
- Significant advances have occurred in fiber optic sensor technology since initiation of this project. Selection of the final fiber optic strain gages will be made once construction begins.
- Analytical models have been created to study the dynamic response of the bridge structure and determine the ideal sensor locations.
- Because of delays in bridge construction, no instrumentation has been installed to date.
- Value engineering has changed the structural system significantly, including the use of base isolation at piers and abutments.
- A request for revisions to work plan and budget, and extension of the project, are under review by HDOT.