

## H3 North Halawa Valley Viaducts: Five-Year Monitoring Program

**Principal Investigator:**

Professor Ian Robertson

**Project Sponsor:**

Paul Santo

**Need:**

To understand the effects of creep and shrinkage of concrete using Hawaiian aggregates on the long-term performance of a major prestressed concrete bridge structure.

**Objective:**

To continue monitoring of the extensive instrumentation installed in the H3 NHVV in 1994 for a second 5-year period.

**Duration:**

May 17, 2000 – December 31, 2004

**Cost:**

\$150,000

**Update:**

- Monitoring of all instrumentation continued through 2004
- Creep and shrinkage strains in the bridge concrete were significantly greater than predicted by current models.
- Improved creep and shrinkage prediction techniques were developed for use in future bridge projects in Hawaii.
- Based on these improved models, the maximum vertical deflection predicted after 100 years is 4 inches on the longest 360 foot span (equiv. to  $L/1000$ ).
- A draft of the final report has been submitted to HDOT for review