research development & technology transfer
HAWAII DEPARTMENT OF TRANSPORTATION

State of Hawaii Department of Transportation Highways Division
Materials Testing & Research Branch • 2530 Likelike Highway • Honolulu, Hawaii 96819-2928

Instrumentation and Monitoring of Sand Plugging and Bridge Scour at Selected Streams in Hawaii

Principal Investigator:
Professor Michelle Teng

Co-Principal Investigator:
Professor Edmond Cheng.

Project Sponsor:
Curtis Matsuda

Need:
Standard scour design equations have not been fully validated by field data in Hawaii. Sometimes they appear to be too conservative for Hawaii conditions. Culverts along the coastline get plugged by sand which requires a large maintenance expenditure.

Objective:
Calibrate the coefficients in the scour design equations for Hawaii. Develop better design and maintenance guidelines for coastal highway culverts to reduce manual labor costs to keep the culverts clear.

Duration:
May 15, 2000 – December 31, 2006

Cost:
$436,189

Update:
- Broken pumping system has been repaired in the UH hydraulics lab and experiments on culvert models have resumed
- Separate funding provided for UH undergraduate intern to assist in project
- Samples from sand blockage of plugged culverts in the field taken and measured for moisture content, particle size distribution and compaction ratio
- Performed hydrological analysis of selected Oahu watersheds for more accurate prediction of flood discharge in windward watersheds
- Currently developing methodology to predict if a plugged culvert can self-clean during a flood and potential mitigating measures