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

Enhanced Hydraulics Design for Highway Bridges and Culverts

Principal Investigator:
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Co-Principal Investigator:
Professor Edmond Cheng

Project Sponsor:
Curtis Matsuda

Need:
This project is a continuation of the previous project and therefore has the same technical background and need as before: in the previous project two bridges were instrumented. In the present project three more will have sensors installed so that sufficient field data on scour depth can be collected. Engineering solutions for mitigating sand plugging of coastal culverts were developed and tested in lab experiments in the previous project but have not been tested on actual culverts in the field.

Objective:
Develop improved 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. Test of engineering solutions on actual culverts in the field.

Duration:
November 9, 2006 – November 8, 2008

Cost:
$253,532

Update:
- Conducted field survey of scour critical bridges on Oahu for sensor installation.
- Performed literature search on current scour sensor technology and are in discussions with three vendors for purchase of the scour sensors for installation.
- Conducted field survey of sand plugged coastal culverts under different tidal and rainfall conditions. Communicated with local residents about their experience with flooding due to plugged culverts in one windward location.