

Geotechnical Engineering for Hazard Mitigation

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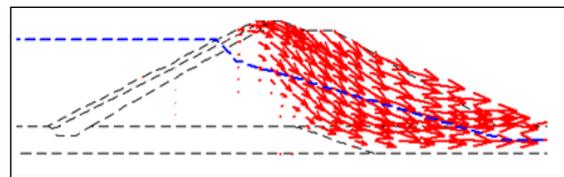
Program in Architecture, Civil and Environmental Engineering.



Geotechnical survey and numerical analysis on various geotechnical problems has been studied. I have an interest in seismic stability of pond embankment during earthquake, stability assessment of wastes landfill by geophysical survey, and health detection survey of Japanese traditional castle's stone wall, etc. which are very important geotechnical problems recently.

1. Seismic Stability of Irrigation Pond Embankment during Earthquake

Many irrigation ponds of about 14,000 are distributed in Kagawa Pref. which is mild and a little rain climate. When a pond embankment is burst during an earthquake, large damage is occurred on the downstream. Numerical study on seismic stability of pond embankment which assumed Nankai-trough earthquake is carried out



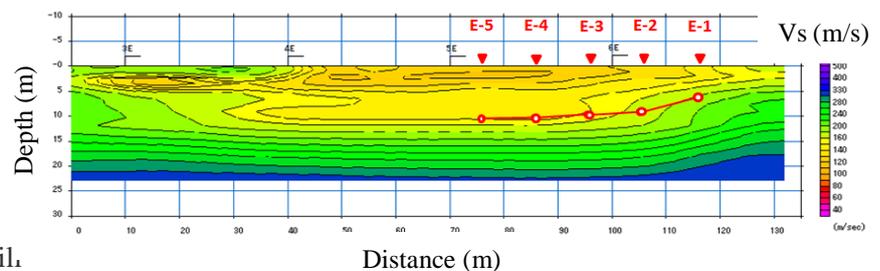
Deformation vector under seismic stress

2. Waste Properties of Landfill using Geophysical Survey

It is necessary to clear waste property in order to utilize and to estimate a stability under natural disaster of landfill site. So I'm working on research for high safety landfill.



Surface wave prospecting at landfill.



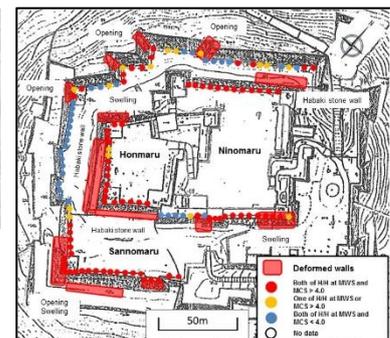
Analysis of waste layer by S-wave velocity and predominant frequency

3. Development of Health Monitoring Method for Japanese Castle's Stone Wall

Deformation of Japanese traditional castle's stone wall is increasing by aging after Edo period, it's necessary to find a dangerous part of stone wall. Because a stone wall is a very important cultural asset, a non-destructive survey must be used. The health monitoring survey method to detect a danger point has been developed using geophysical exploration measurements (microtremors and surface wave investigation, etc.).



Microtremor survey with my students at Marugame castle



Location of deformed wall and the distribution of the thresholded value of H/H ratio by microtremor