

KIYOTA LAB.

[Challenge of Geo-disaster Mitigation]

Department of Fundamental Engineering

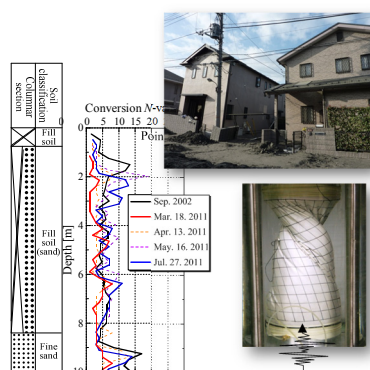
<http://shake.iis.u-tokyo.ac.jp/GDM>

Geo-disaster Mitigation Engineering

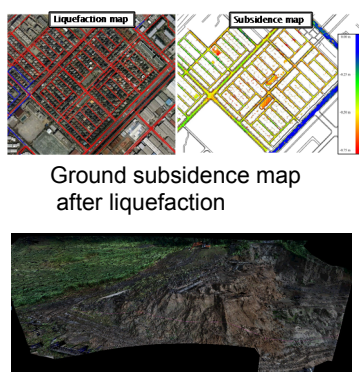
Department of Civil Engineering

Earthquake-induced Geo-disaster

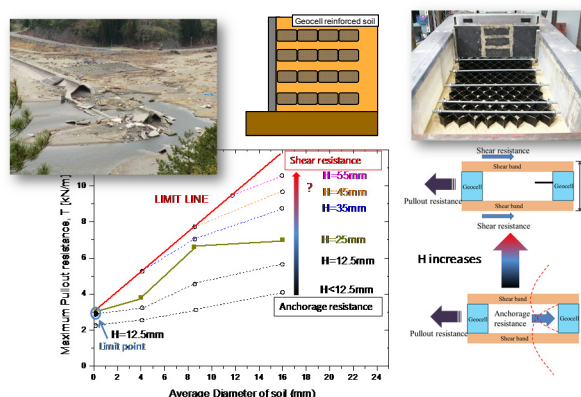
Earthquake-induced damage to infrastructures is closely related to the geotechnical and geological factors. The 2011 off the Pacific coast of Tohoku Earthquake caused massive tsunami, and a large number of coastal levees which were constructed of geomaterials was destroyed. High ratio of occurrence of liquefaction was found in Kanto region, especially, in Tokyo bay area and downstream basin of Tone River which would be linked to the soft subsurface ground and reclamation site. Meanwhile, a large number of landslides was caused by the earthquake over a large extent of area in the eastern Japan. KIYOTA laboratory is working for mitigation measure of the above geo-disasters based on field survey, in-situ and laboratory tests and simulation.



Field investigation and laboratory test on liquefaction problem



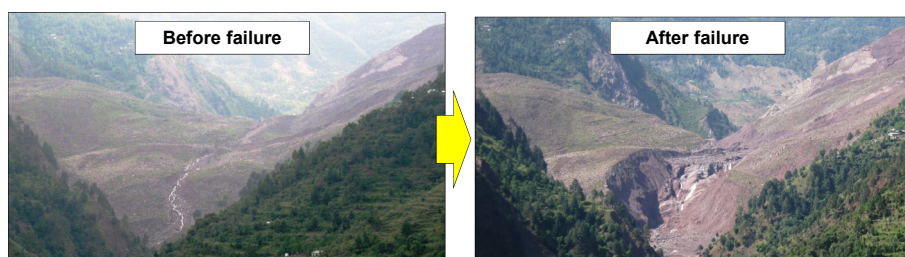
Ground subsidence map after liquefaction
Breached dam body was LiDAR surveyed for its entire 3D image



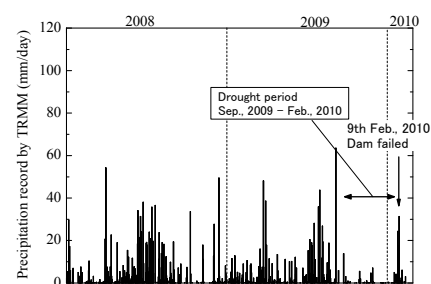
Pull-out resistance of geosynthetic reinforcement material which link to aseismic capacity of soil embankment (model test of Geo-call)

Drought, Rainfall and Landslide

The occurrence of extreme weather events such as heavy rainfalls and severe droughts will undeniably result in a higher incidence of natural disasters such as landslides. Assessing the effects of wetting and drying cycles is of prime importance in the failure of slopes or embankments composed of slakable geomaterials.



Landslide dam that was formed by the 2005 Kashmir EQ failed by moderate rain in 2010



Record drought before the dam failure