

Principal Researcher	Koichi MAEKAWA			Number of Researchers	6	
Research Institution • Department • Title	Professor, Department of Civil Engineering, Graduate School of Engineering, University of Tokyo			Location of Institution	Tokyo	
Title of Project	Long-term performance assessment platform of interacted soil-structure system based on multi-scale analysis					
Abstract of Research Project	<p>This research project aim at developing a computational platform to predict material/structural durability, transient geo-environments and seismic safety performance of interacted soil-structure coupling of human activity scale by unifying thermodynamic states/constitutive laws of geotechnical materials of micro meter scale and those of cementitious non-organic ones with moisture and micro-skeleton pores of nano-micro meters. Through the analytical platform to cover the multi-scale structures of material, members and ground-foundation, thermodynamic states and functionality of coupled soil-structures are to be simulated in multi-scale space and time domains. From an engineering viewpoint, life-cycle of structural functions and ground environments are target to be investigated in terms of durability design and maintenance. The project includes the following sub-themes.</p> <p>1) long-term stability of cementitious CSH gels and hydrated products and erosion resistance against water, substantial thermodynamic equilibrium and transport in both micropores of concrete and voids of soil foundation, liquefaction of saturated soil and embedded reinforced concrete structural damage at earthquake, moisture micro-mechanism and underground water with respect to structural creep, ion transport and dissolution through concrete and foundation and corrosion related durability of underground structures, structural performance assessment of recycle substances.</p>					
References	<p>Modeling of Concrete Performance, E & FN Spon, 300 page, 1999</p> <p>Nonlinear Mechanics of Reinforced Concrete, Spon Press, 710 page, 2003</p>					
Term of Project	Fiscal years 2003-2007 . (5years)					
Budget Allocation (in thousand of yen)	FY2003	FY2004	FY2005	FY2006	FY2007	TOTAL
	35,900	12,300	15,300	11,700	9,700	84,900
Homepage Address	http://concrete.t.u-tokyo.ac.jp/					