

# NAGAI LAB.

## [Infrastructure Technology and Management]

International Center for Urban Safety Engineering

<http://www.nagai.iis.u-tokyo.ac.jp>

Civil  
Engineering  
Department

Infrastructure Management for Developed Society

### Anchorage Performance of RC

As Japanese seismic design code is becoming more strict, larger amount of reinforcement must be placed in Reinforced Concrete (RC) structures at the joint part.



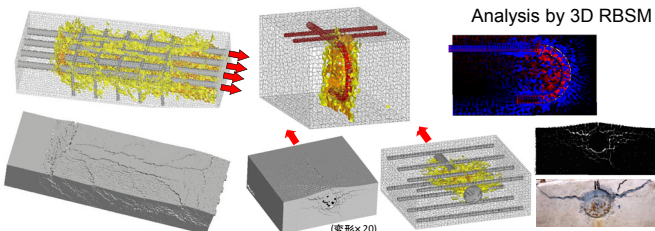
#### Problems

Increase the fabrication time

Poor concrete compaction may occur.

Stress condition in complex reinforcement arrangement

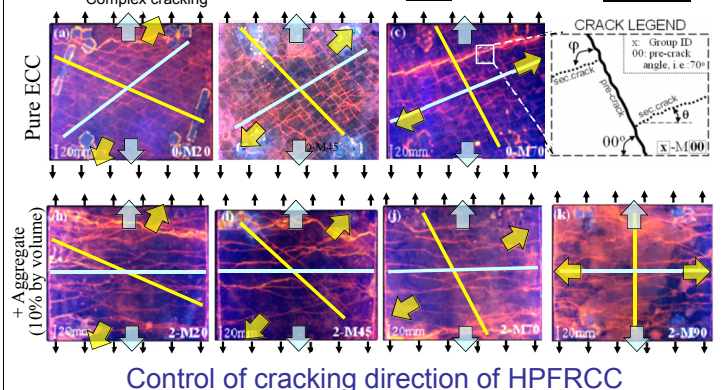
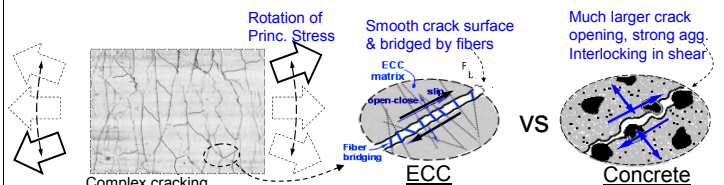
➡ Numerical simulation can clarify  
We aim to propose the rational design code



Analysis by 3D RBSM

### Mechanics of Fiber Reinforced Concrete under Principal Stress Rotation

Robust material against the principal stress rotation is developed by focusing the shear performance.

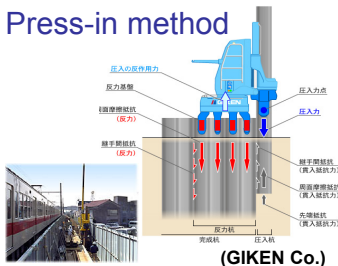


Control of cracking direction of HPFRCC

### Effective Press-in Driving Method

Press-in method is a revolutionary technique in pile installation technology developed by GIKEN Co. This research is a collaborative work with GIKEN to develop the effective driving method through the experiment and numerical simulation.

#### Press-in method



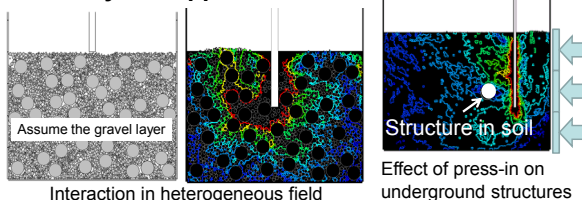
(GIKEN Co.)

#### Measurement of soil deformation by inclination sensor



Measure the soil deformation during the press-in excitation.

#### Analytical approach

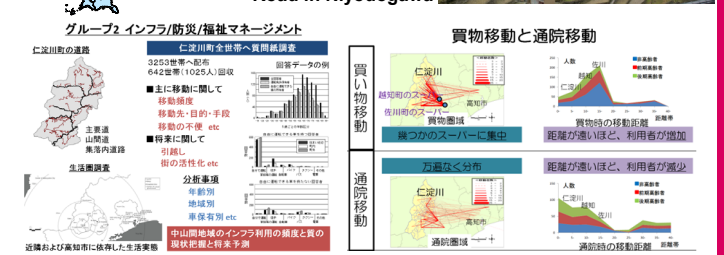
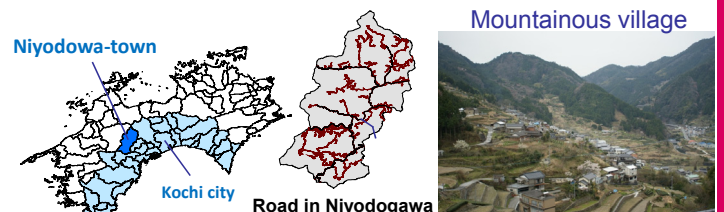


Interaction in heterogeneous field

Effect of press-in on underground structures

### Infrastructure Management for Aging Society

Japan is now facing a rapid aging problems. To maintain the society and infrastructure in the rural area, this study investigates the maintenance system of infrastructure, transportation system, social network etc. in Kochi Prefecture, Japan.



Movement of residents in daily life