

# Y. NAKANO LAB.

## Safer Buildings against Earthquakes and Tsunamis



Department of Fundamental Engineering

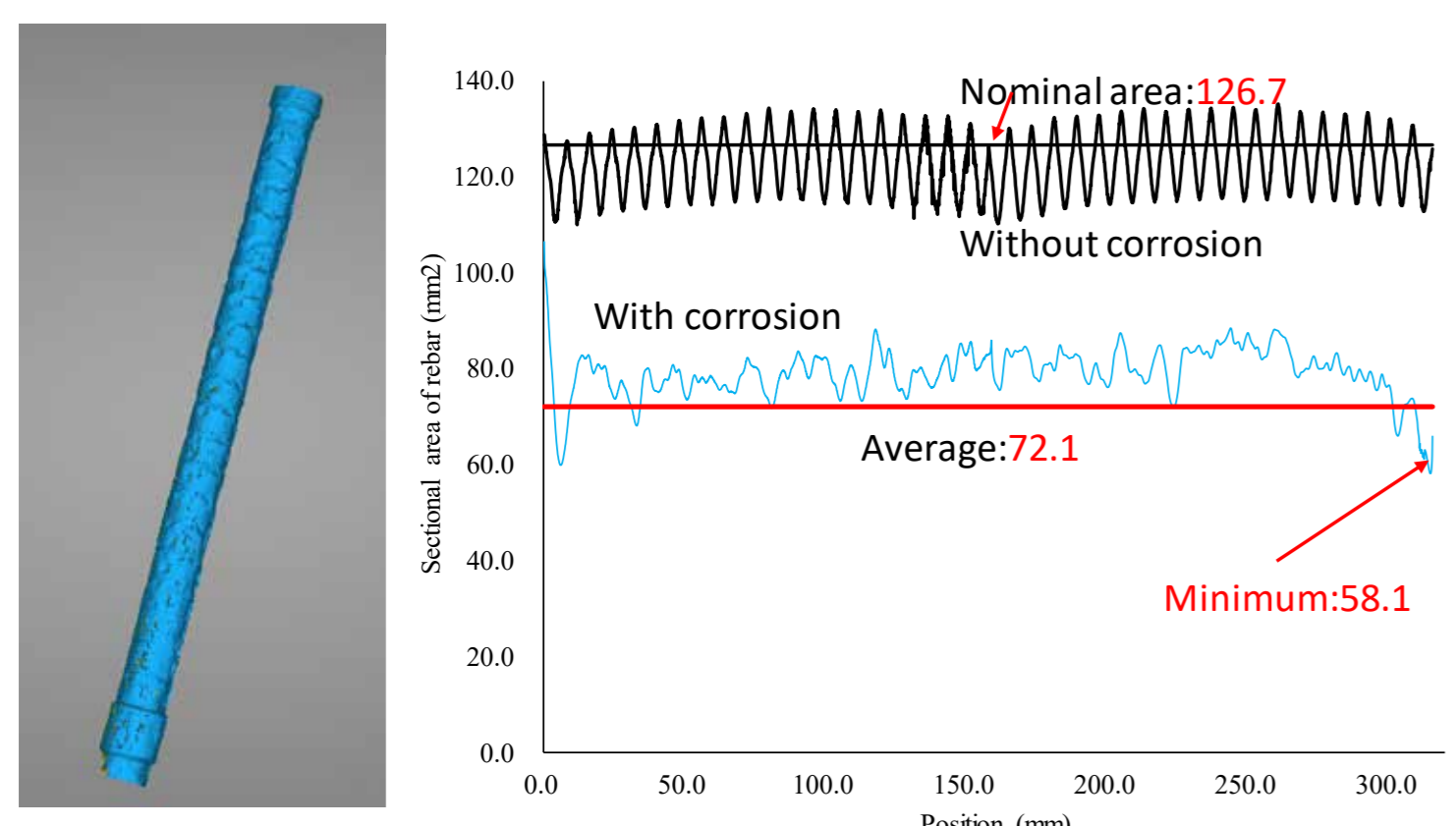
Earthquake Engineering & Structural Dynamics

Department of Architecture, Graduate School of Engineering

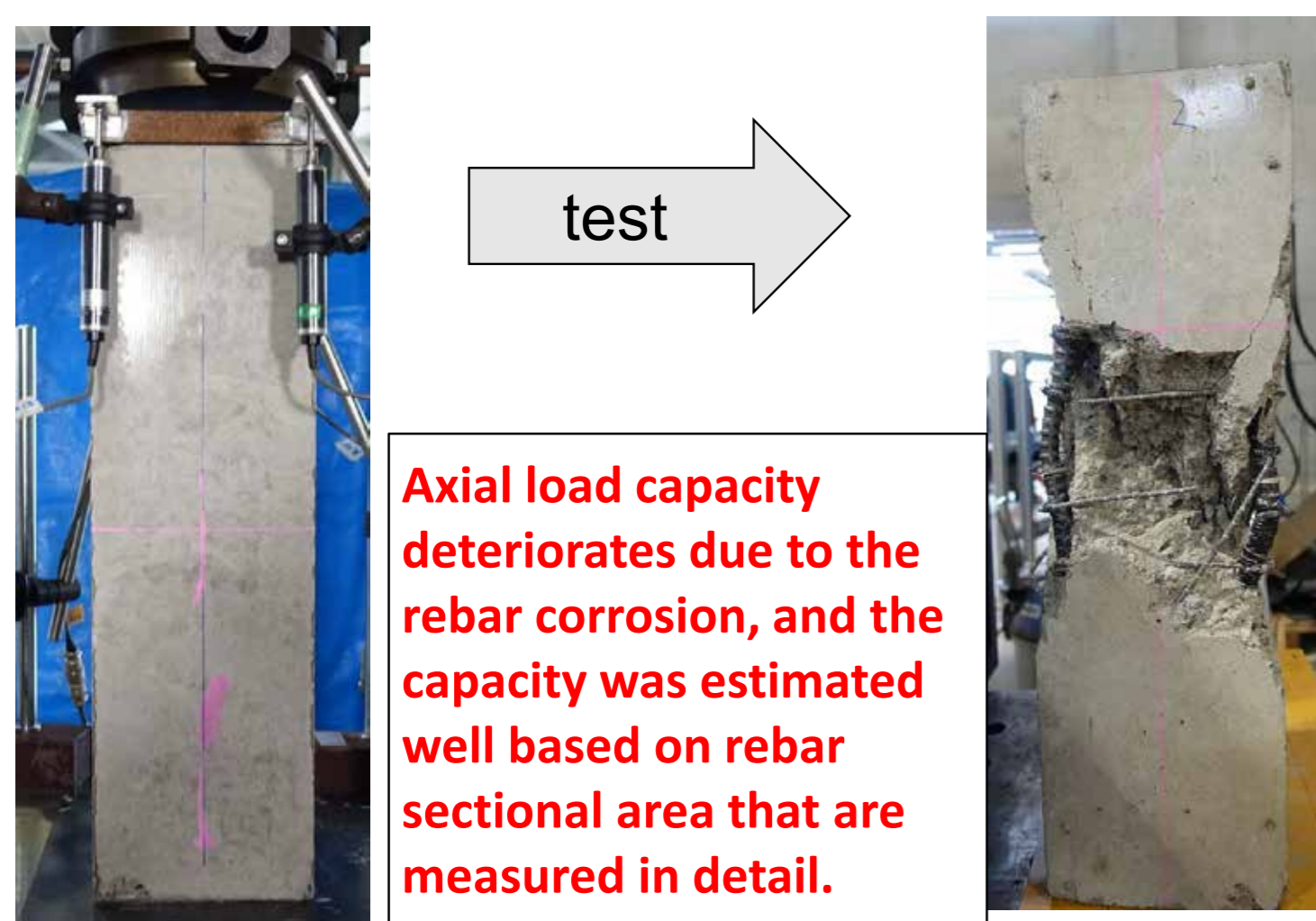
<http://sismo.iis.u-tokyo.ac.jp/>

# Seismic Performance Evaluation of Reinforced Concrete Building Structures

- **MEMBERS:** Evaluation of Axial Load Carrying Capacity of Deteriorated RC Columns
- **SUB-ASSEMBLAGE:** Simulation of In-plane Behavior of Masonry Wall Infilled RC Frames
- **OVERALL STRUCTURE:** Response Evaluation Method of Buildings due to Waterborne Debris Impact Load
- **INTERNATIONAL COOPERATION:** Project for Technical Development to Upgrade Structural Integrity of Buildings in Densely Populated Urban Areas and its Strategic Implementation towards Resilient Cities

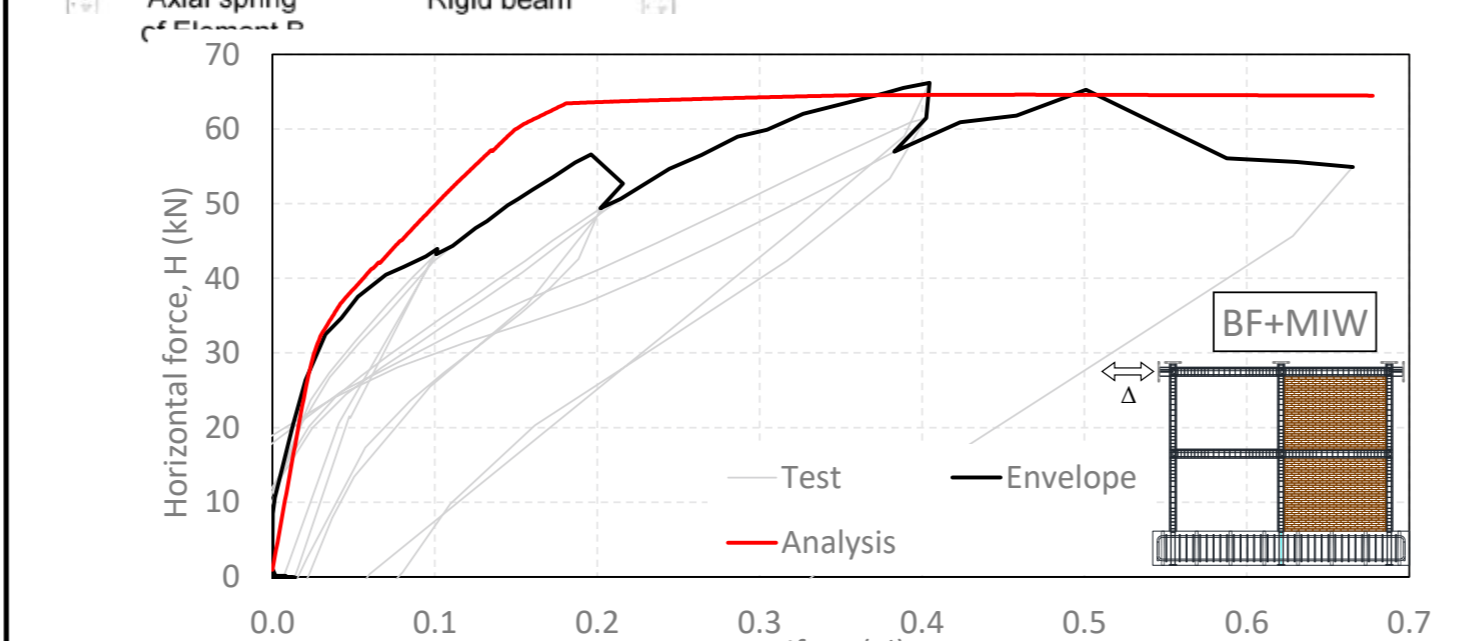
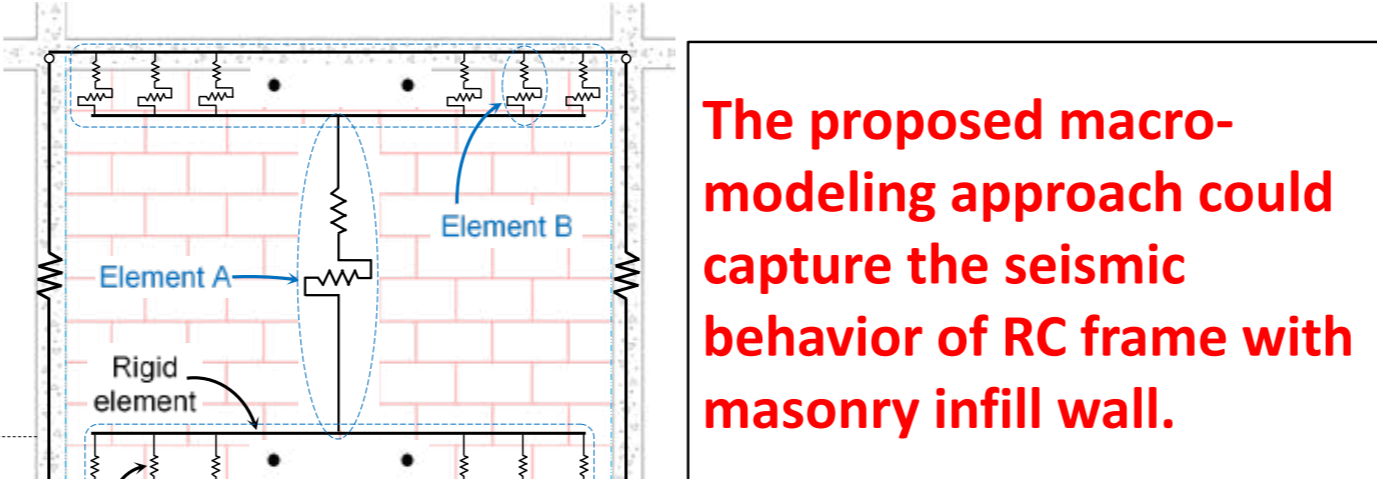
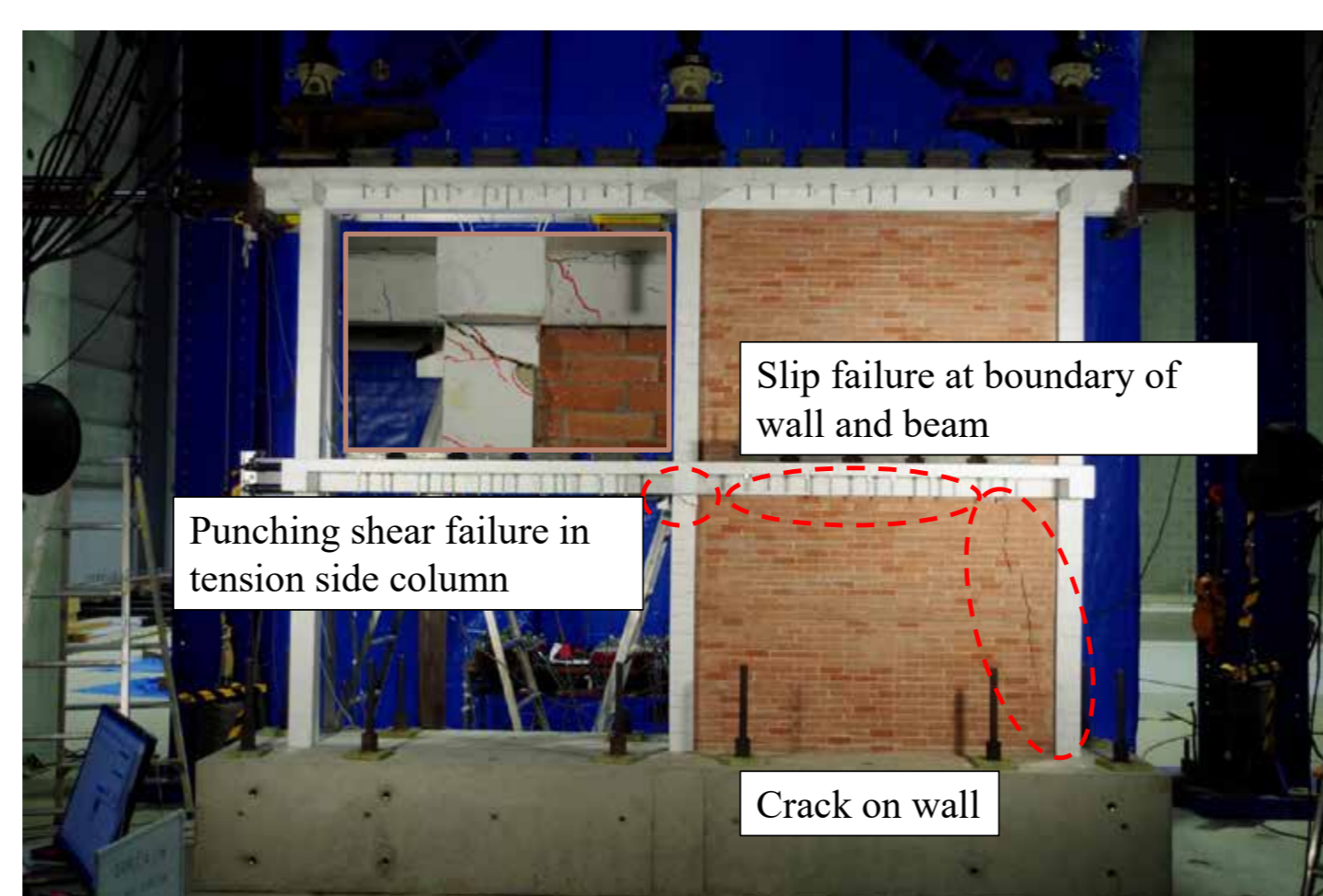


3D Data of a Corroded Rebar and Distribution of Sectional Area

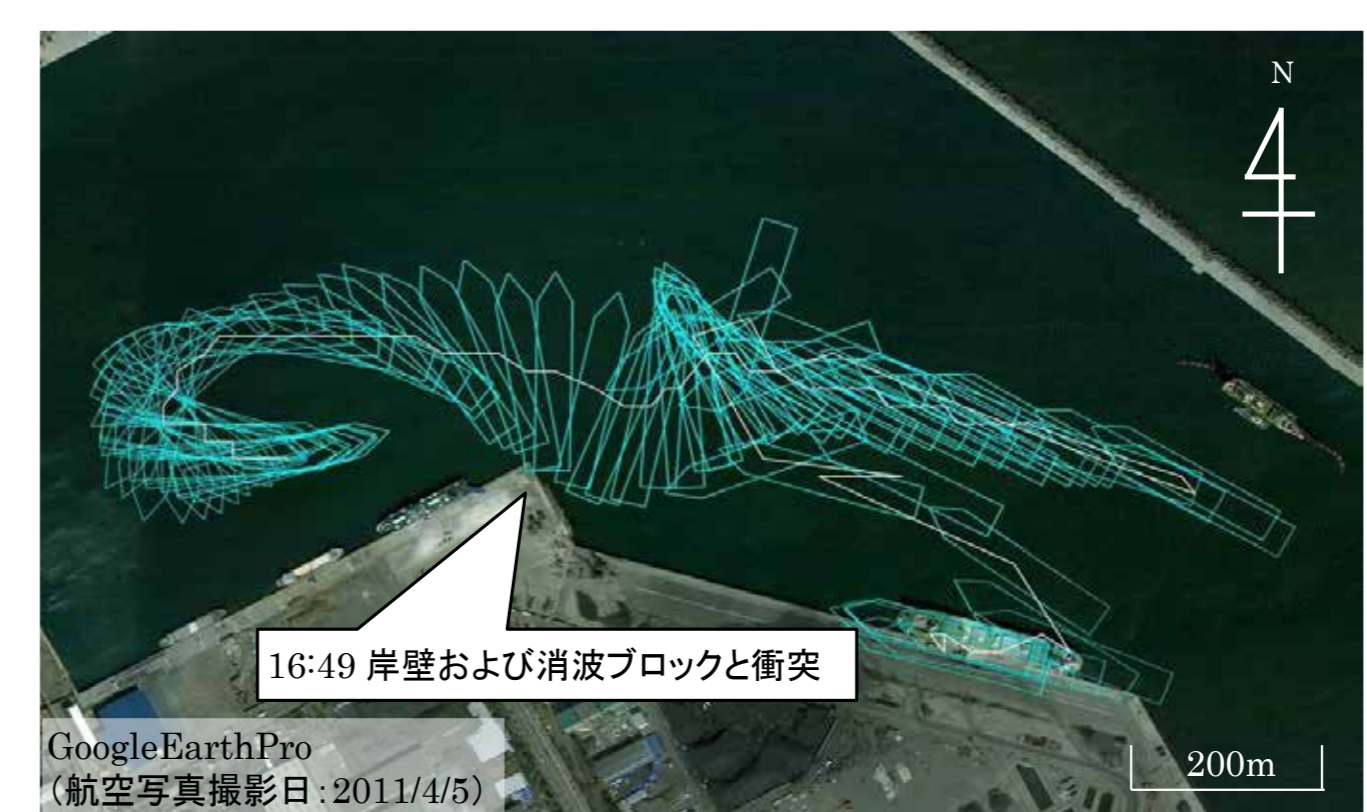


**Axial load capacity deteriorates due to the rebar corrosion, and the capacity was estimated well based on rebar sectional area that are measured in detail.**

Axial Load Capacity Evaluation by Compressive Test



Concept of the Modeling and Results of Simulation



Ship's drifting behavior at Hachinohe bay in 2011

**Drifting ships may cause severe damage of reinforced concrete buildings due to their collision**



Collision Test and Collapse of Reinforced Concrete Frame

### Science and Technology Research Partnership for Sustainable Development (SATREPS)

Project for Technical Development to Upgrade Structural Integrity of Buildings in Densely Populated Urban Areas and its Strategic Implementation towards Resilient Cities

#### Joint Research Group

##### Japan

- IIS, The Univ. of Tokyo
- Tohoku Univ.
- Osaka Univ. etc.



##### Bangladeshi Representative

- Housing and Building Research Institute
- Public Works Depart.
- Univ. of Asia Pacific etc.

**Technologies for enhancing structural resilience of buildings in Dhaka and their effective implementation schemes are proposed.**

### Publication of guidelines and dissemination seminars



### Testing on RC column@BUET

