

# Y. NAKANO LAB.

## [Safer Buildings against Earthquakes and Tsunamis]

Department of Fundamental Engineering

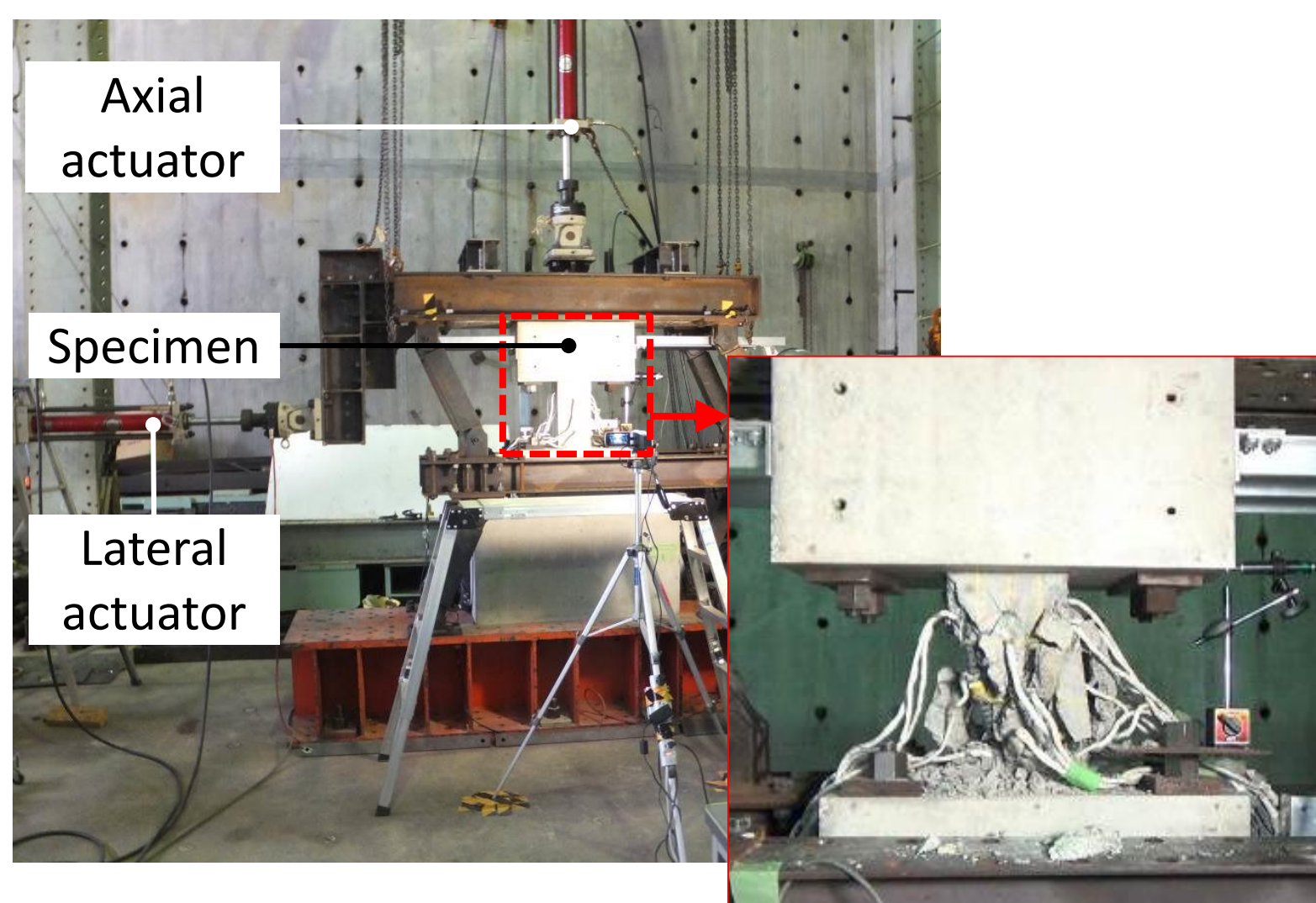
Earthquake Engineering & Structural Dynamics

Department of Architecture

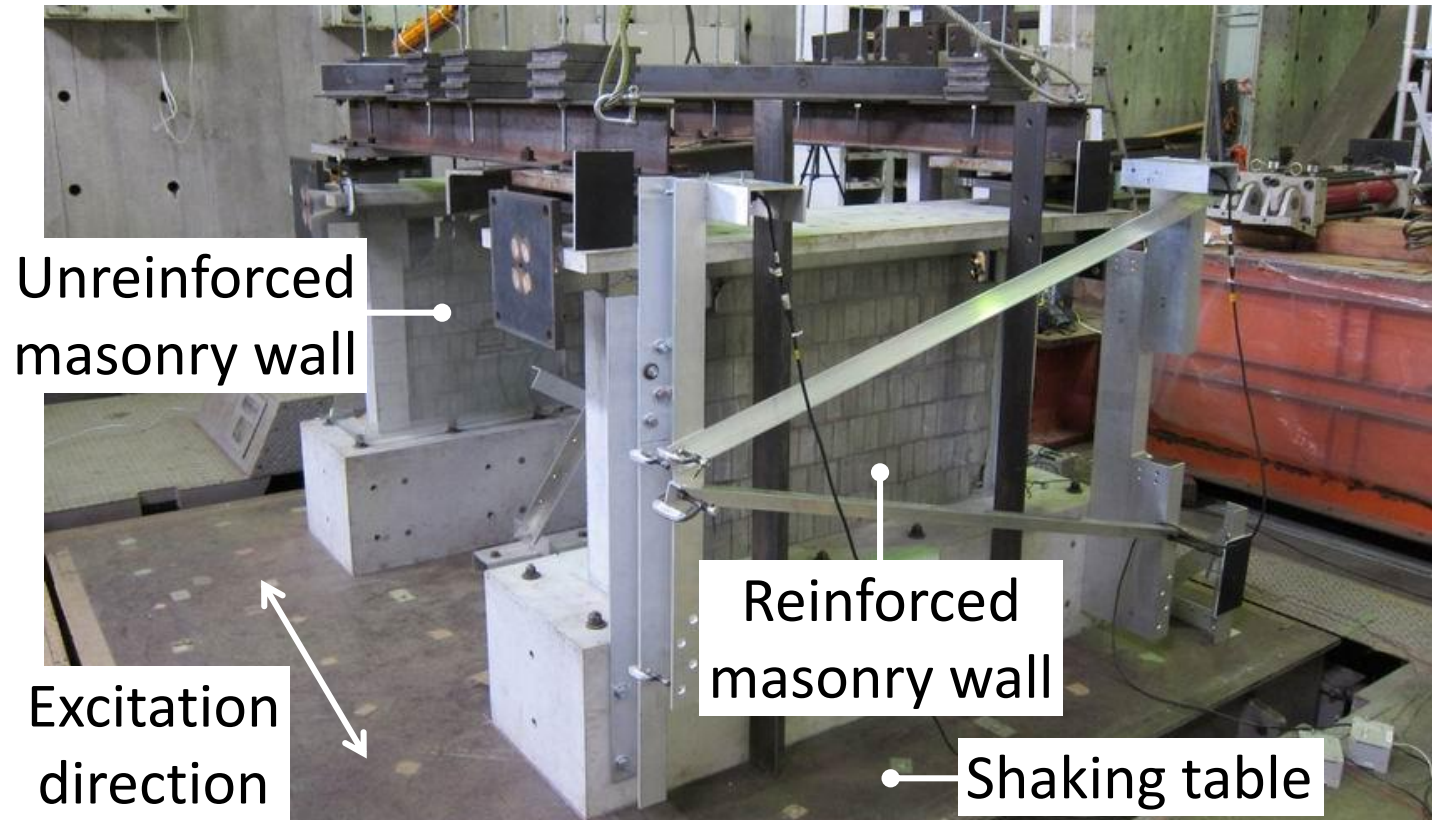
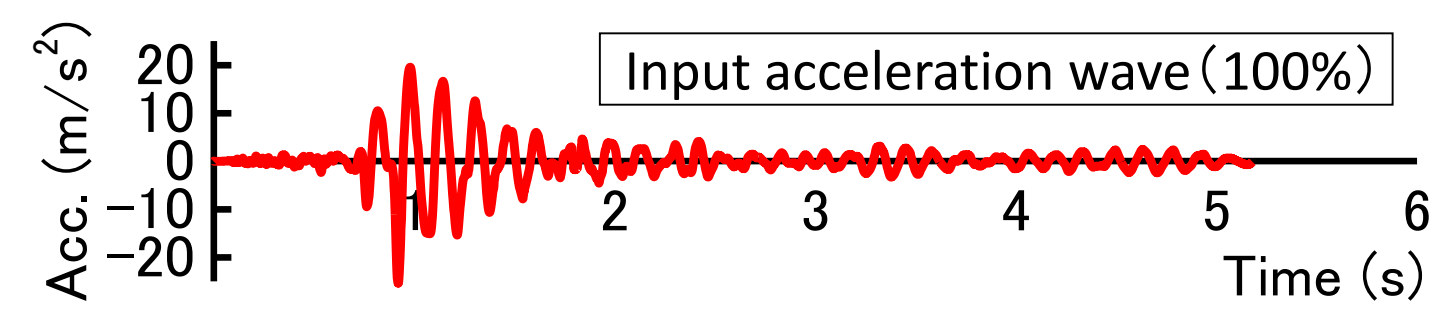
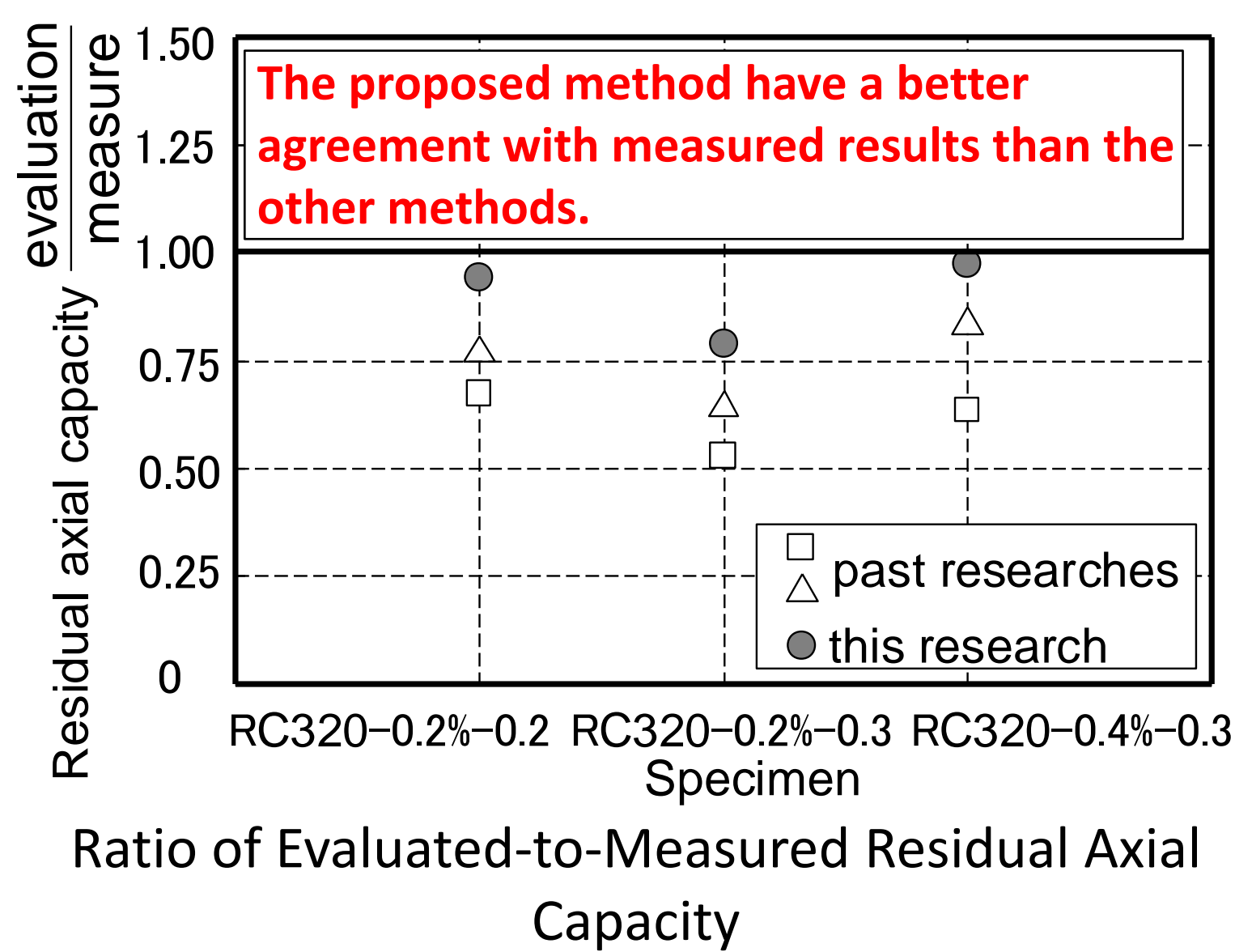
<http://sismo.iis.u-tokyo.ac.jp/>

# Seismic Performance Evaluation of Reinforced Concrete Building Structures

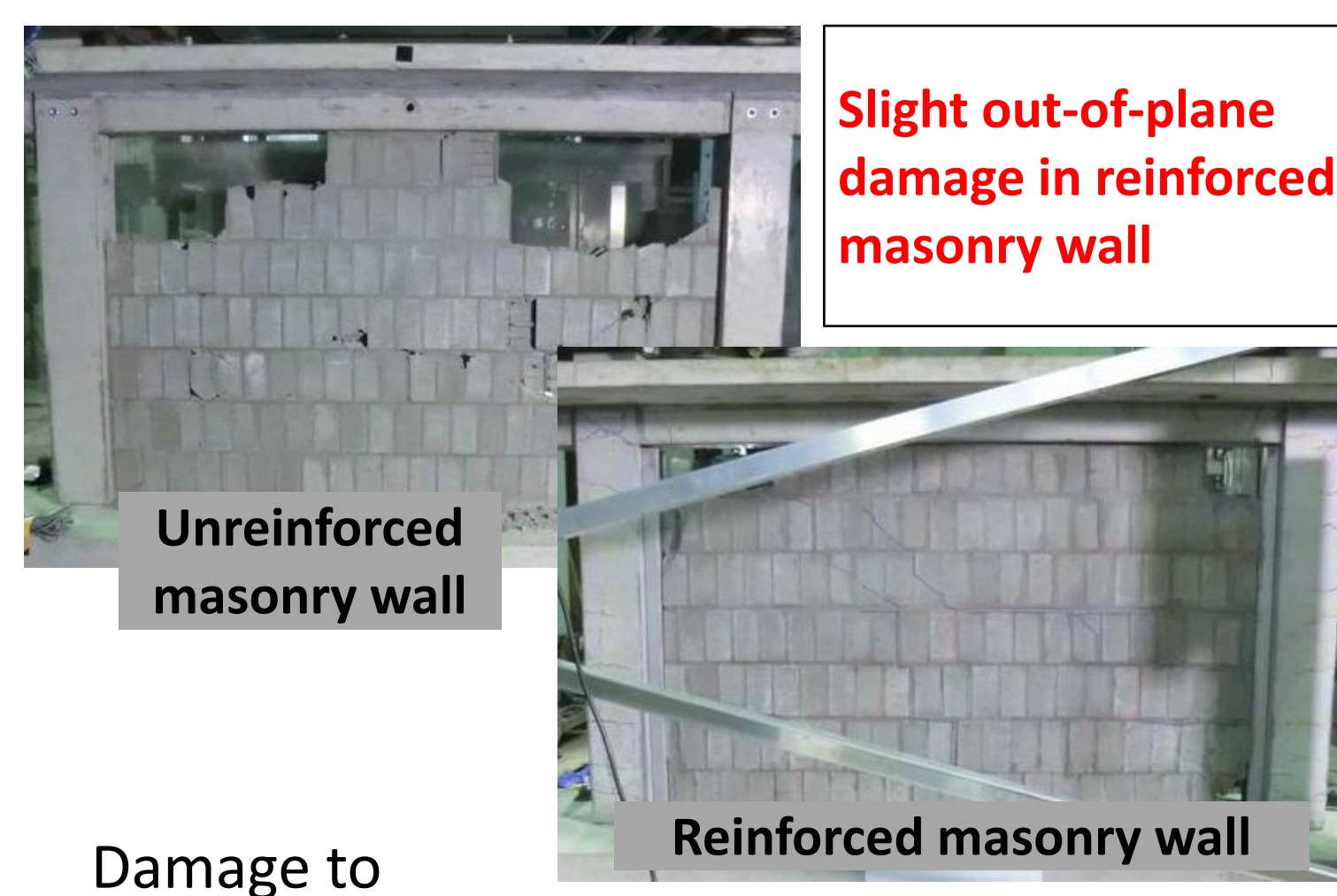
- MEMBERS: Evaluation of Residual Axial Capacity of Shear Damaged RC Columns
- SUB-ASSEMBLAGE: Out-of-plane Behavior Evaluation of Masonry Wall Infilled RC Frames
- OVERALL STRUCTURE: Response Evaluation Method of Buildings due to Waterborne Debris Impact Load
- INTERNATIONAL COOPERATION: Project for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



Test Setup & Specimen after Axial Failure



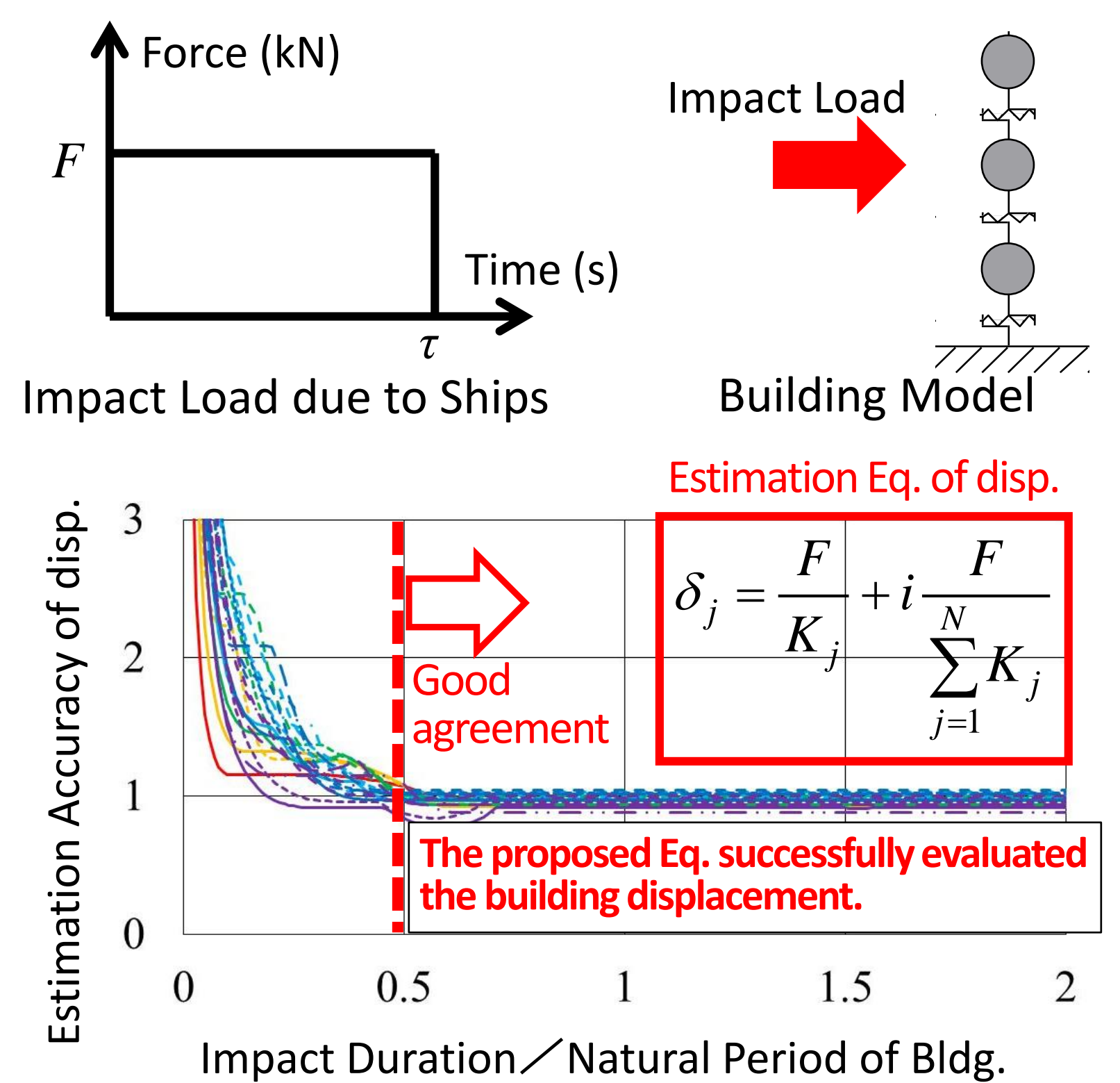
Test Setup & Input Acceleration Wave



Damage to Masonry Wall with/without Reinforcement



Kamaishi (2011)  
Stranded Ship after 2011 Tsunami



**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

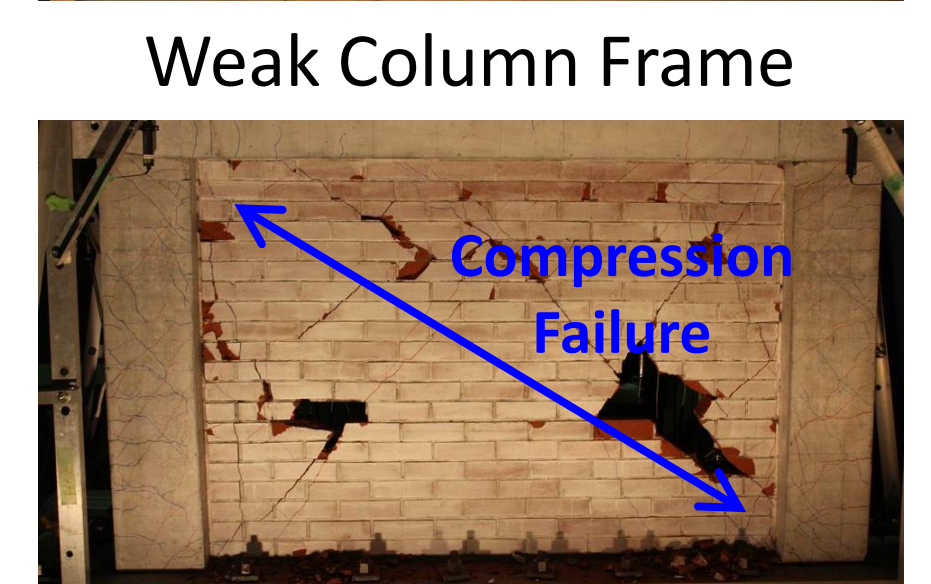
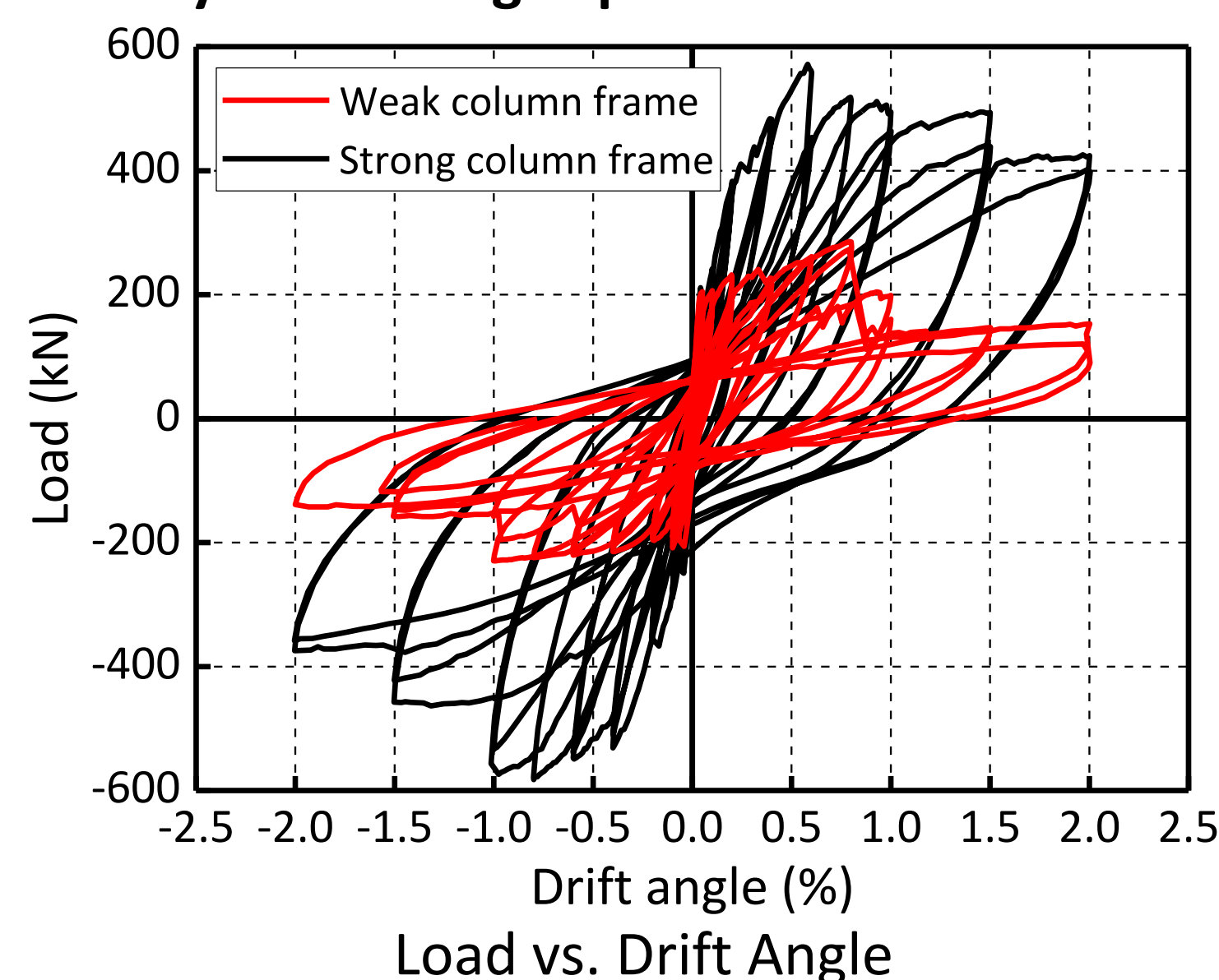
**Joint Research Group**

**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.

**[Static Cyclic Loading Experiments of RC Frames with masonry wall @ Tohoku Univ.]**



Final Damage

Due to the surrounding column capacities, the failure mode of the wall and seismic capacity of the overall frame were quite different.

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

