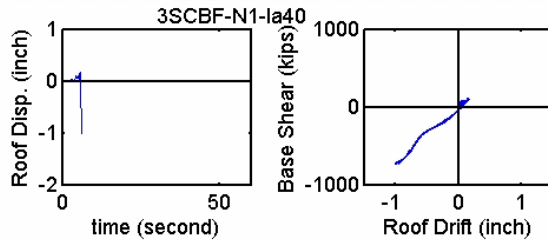
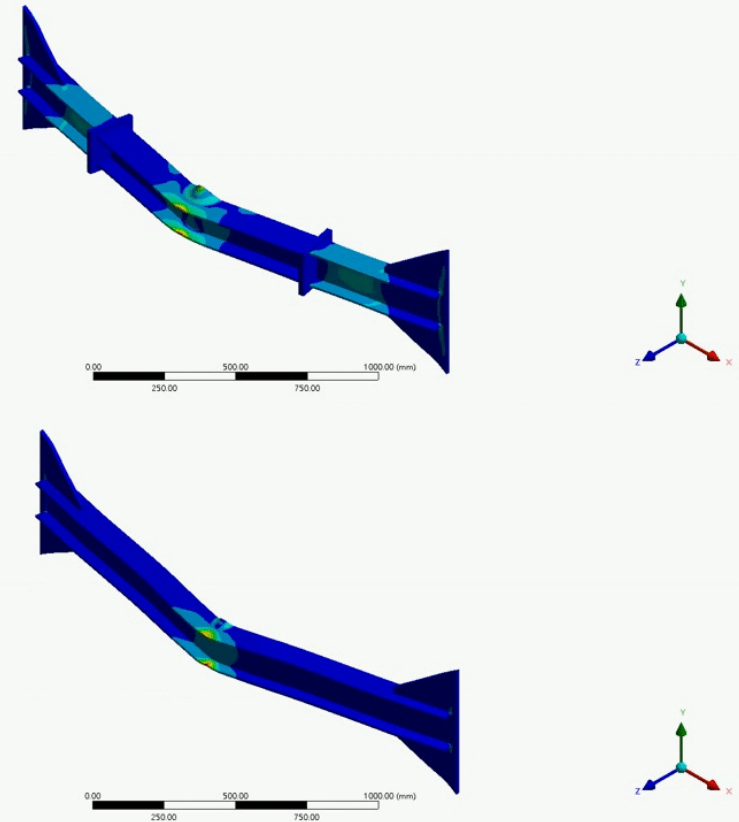
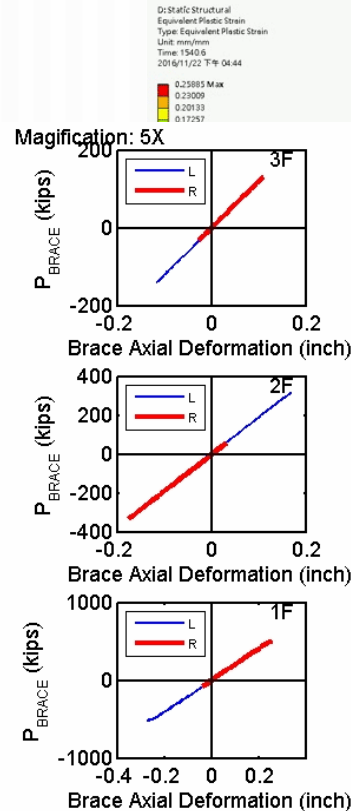
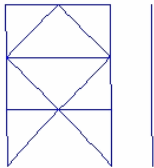


Possible research topics employing the facilities of NCREE Tainan Laboratory



Steel Concentrically Braced Frame



Chui-Hsin Chen

Assistant Professor, National Chiao Tung University

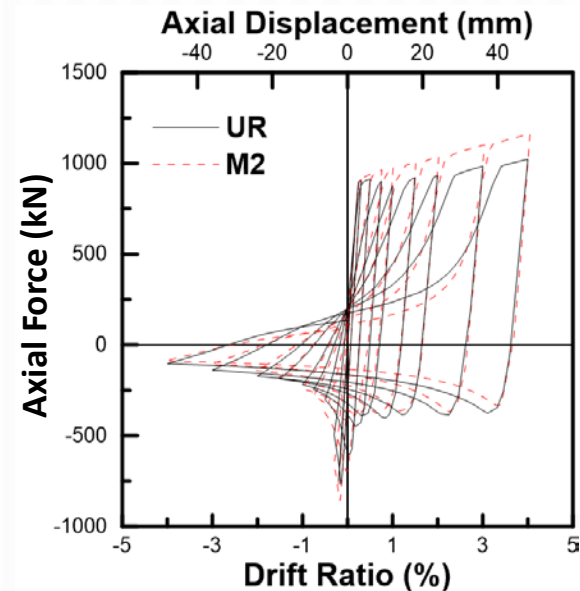
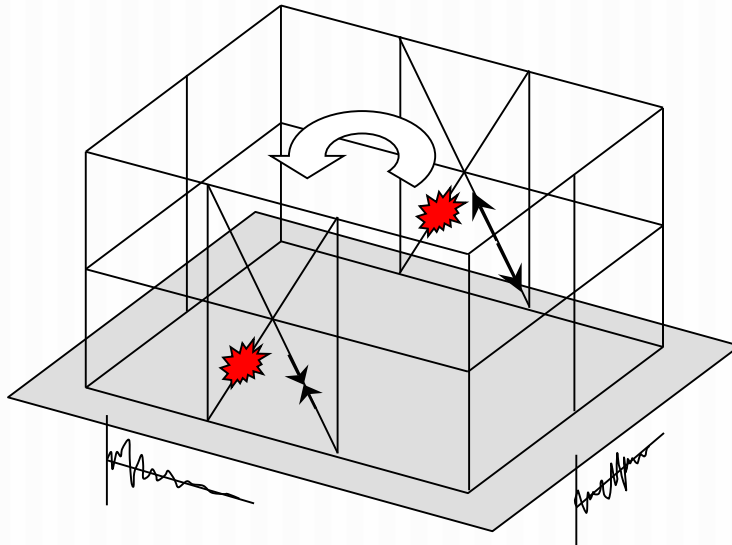
NCREE Tainan Laboratory Grand Opening Forum

Aug. 8-10, 2017, Tainan, Taiwan

Torsional behavior of buildings

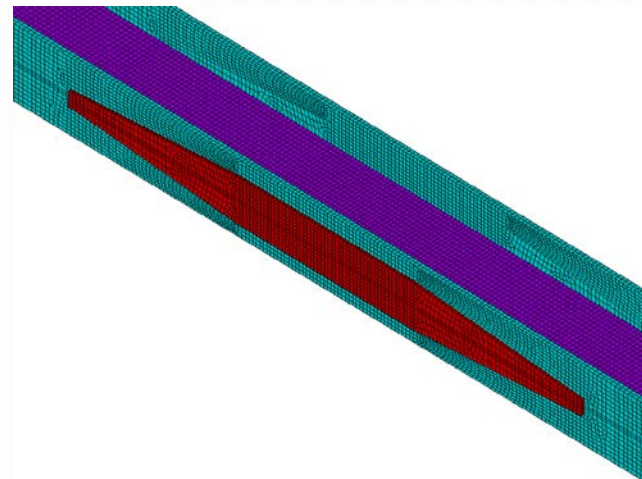
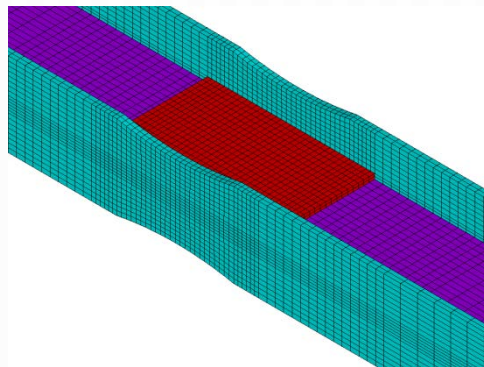
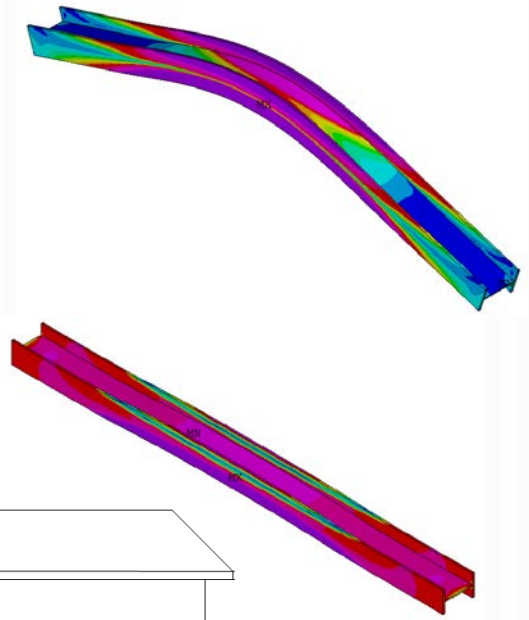
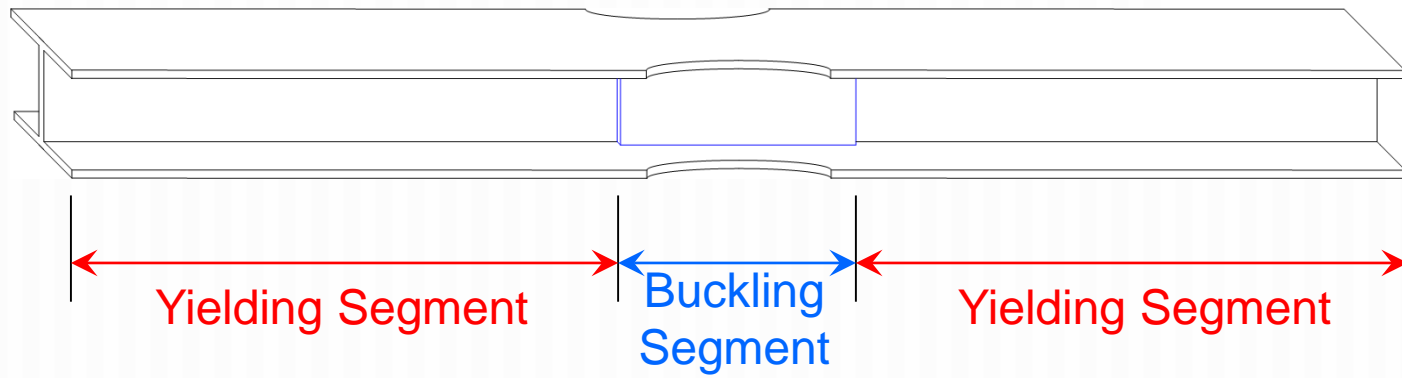
■ 3-D related failure modes

- ❖ Near-field movement may induce asymmetric damage to the structure followed by severe torsional behavior.

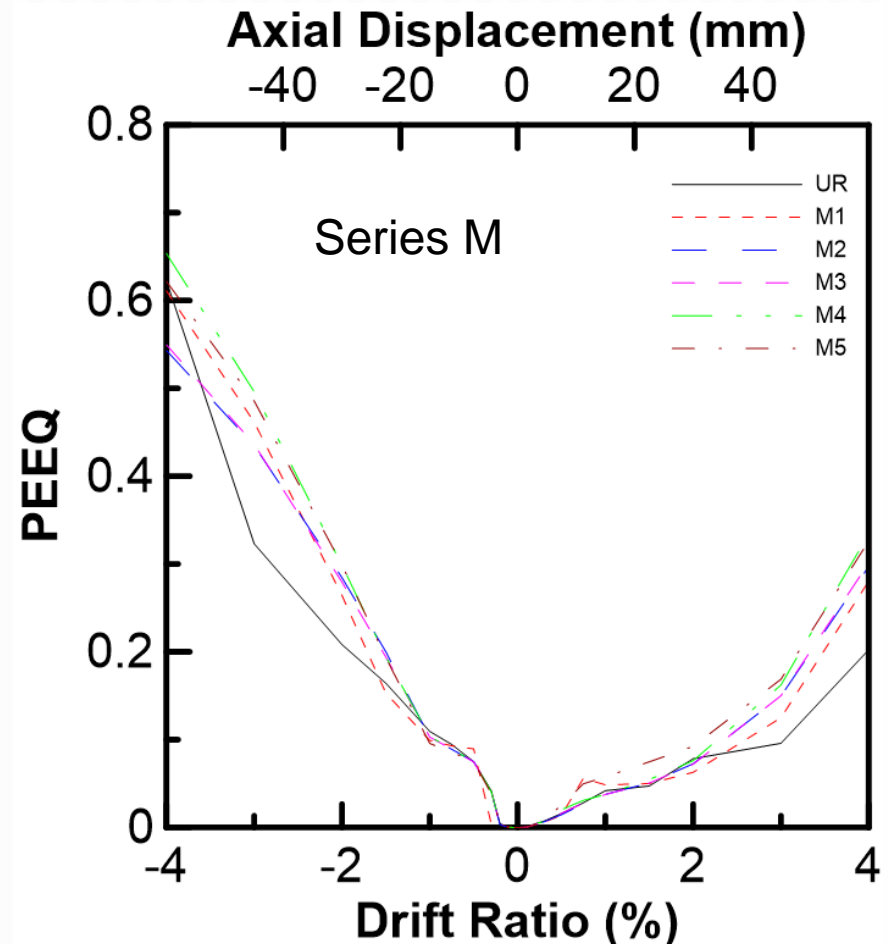
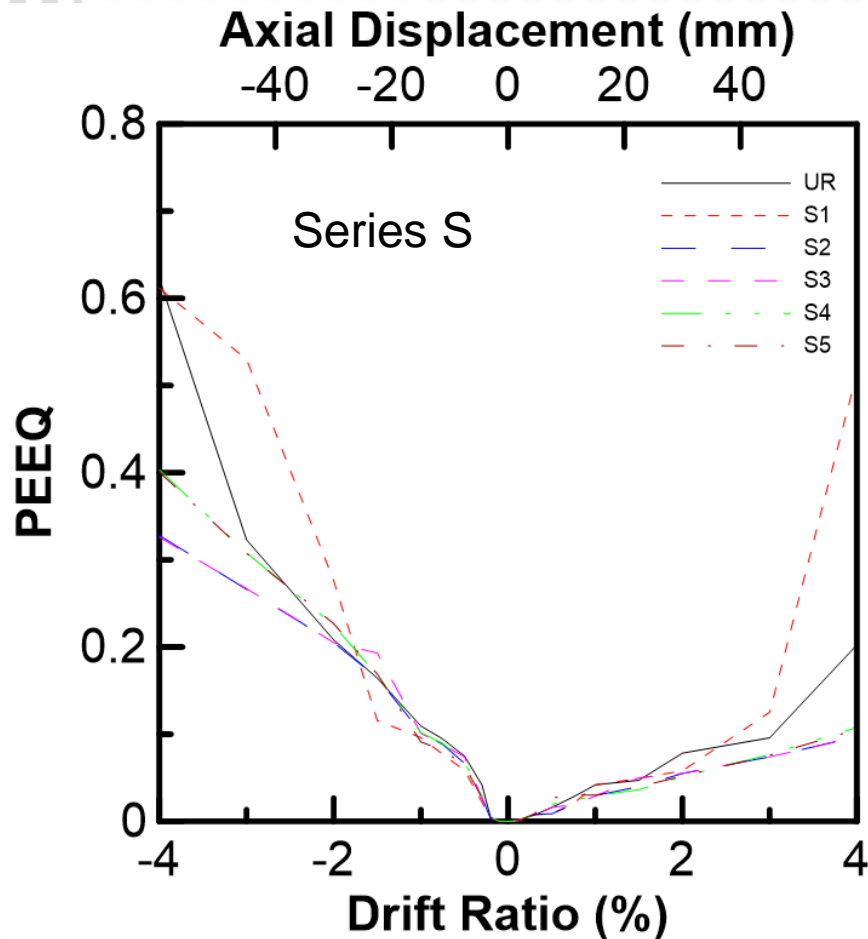
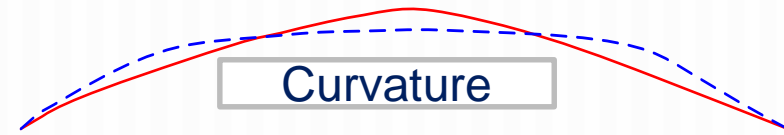
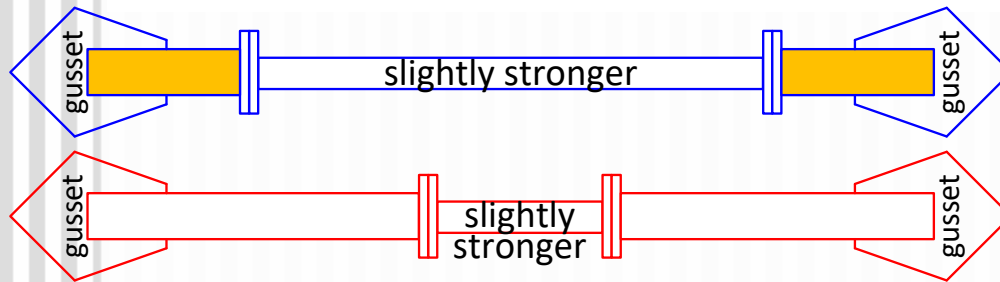


Concept of Braces with Section Reinforcement

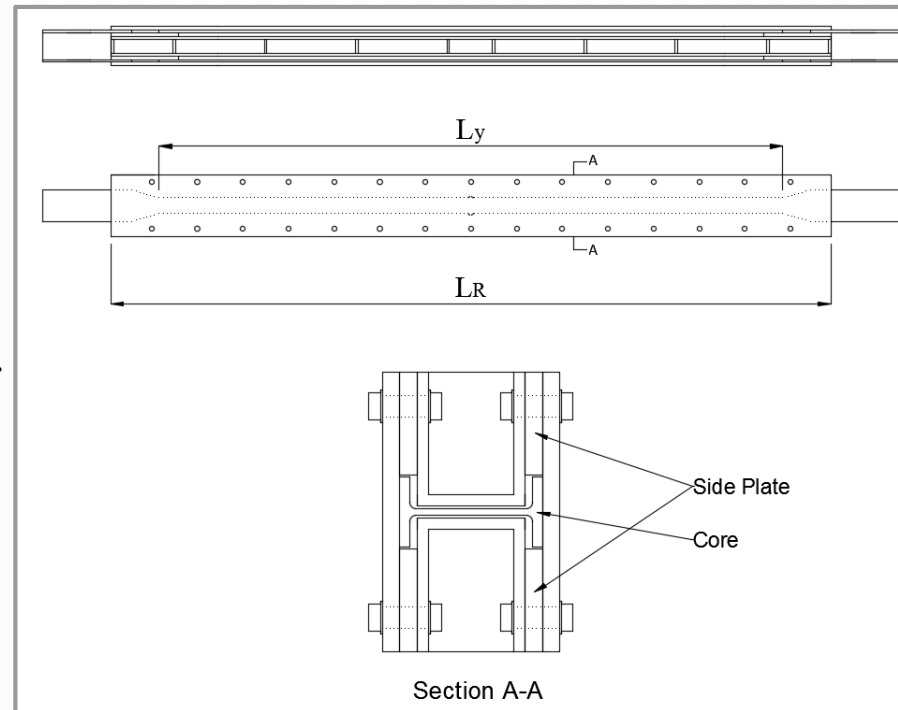
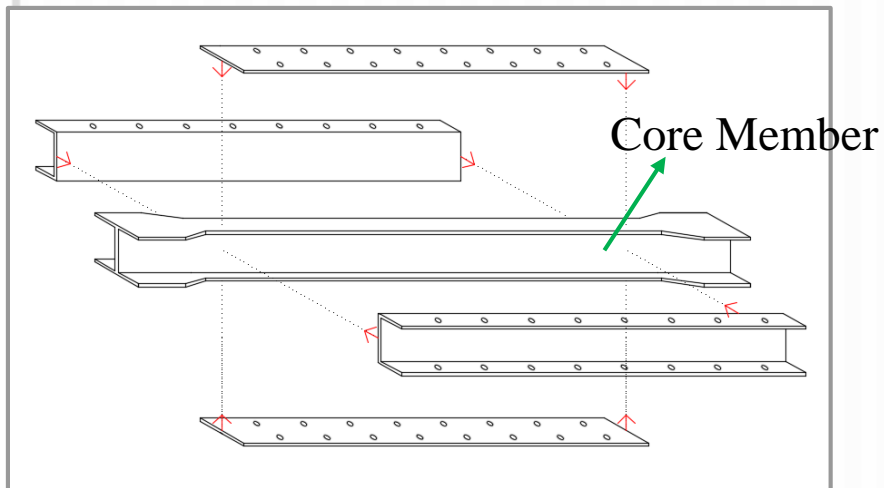
- Use steel plate to reinforce brace in the middle



Steel Braces with Spliced Mid-Segment



Steel Braces with Insertion of Buckling Restrained Segment

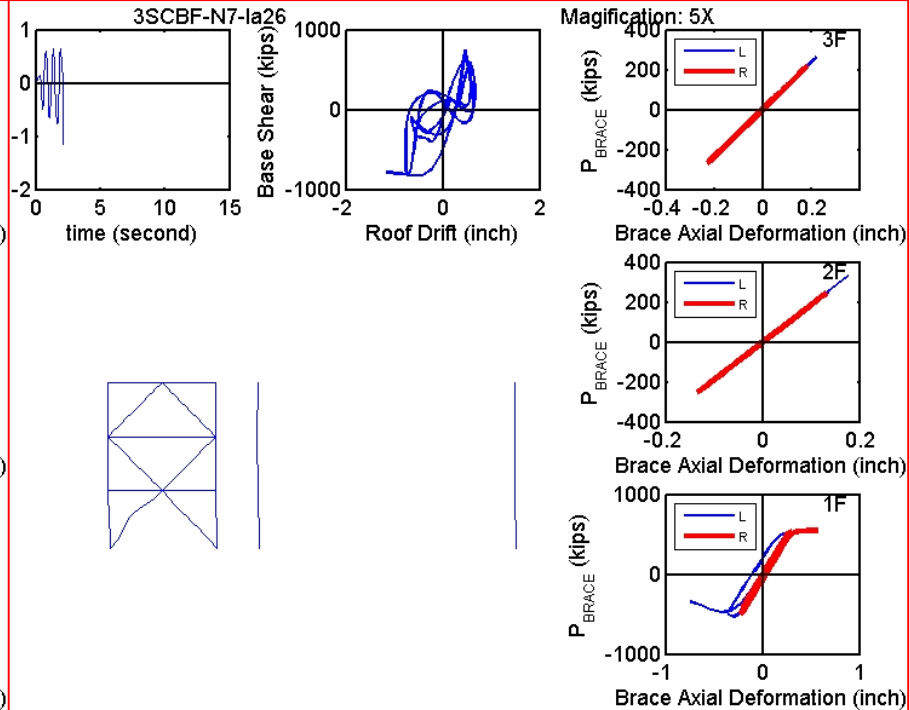
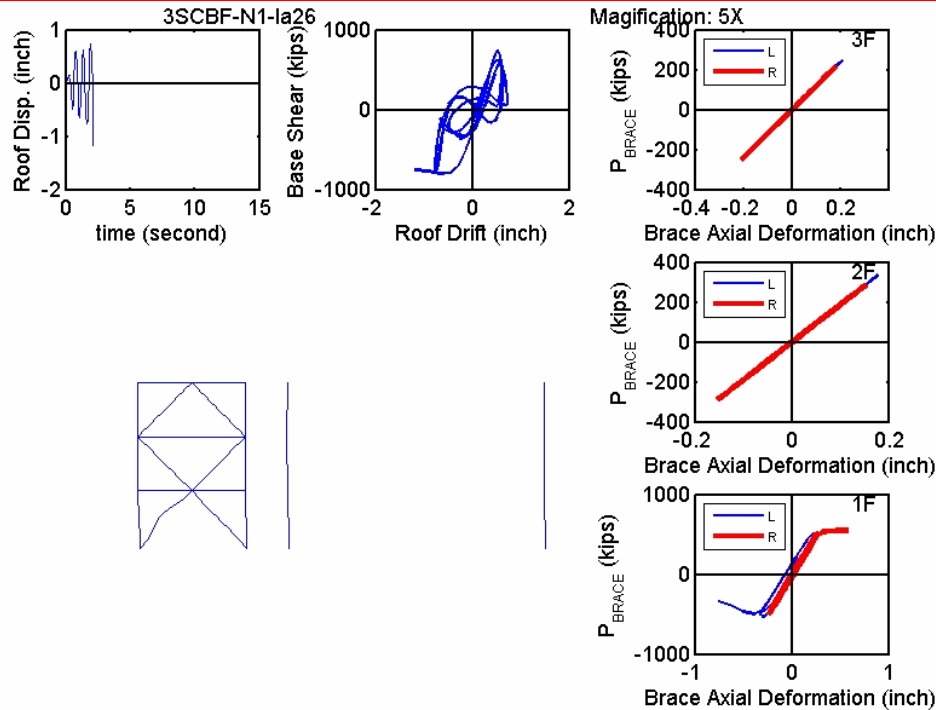


Concept of Strongback System

Nonlinear Dynamic Analysis

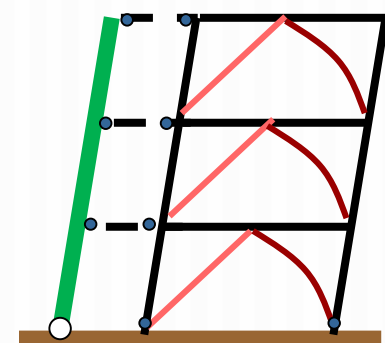
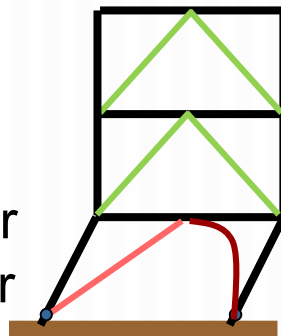
$\alpha=0.0024$ and $\beta=0.027$

$\alpha=0.0168$ and $\beta=0.188$

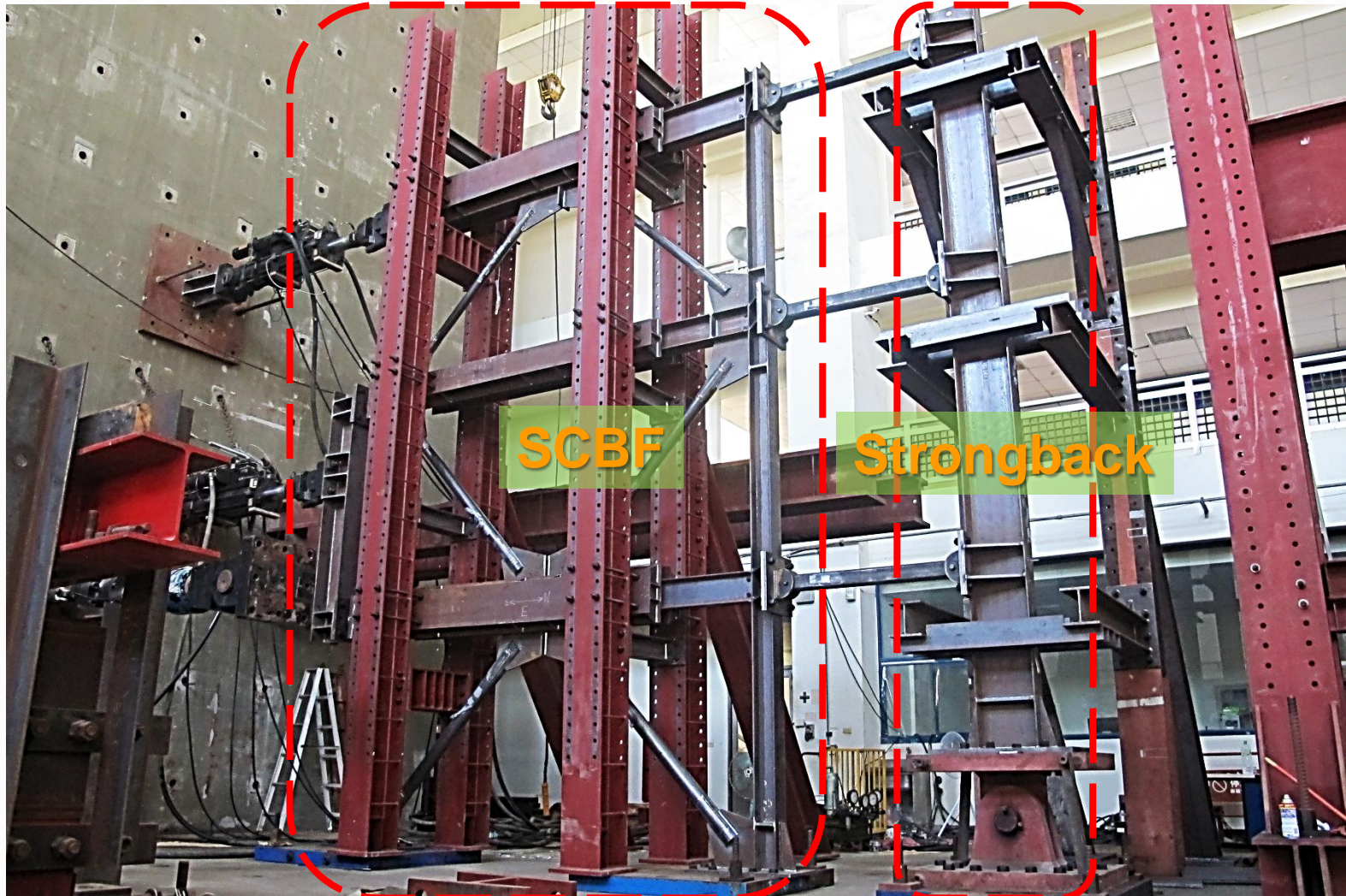


❖ α : Stiffness Factor

❖ β : Strength Factor

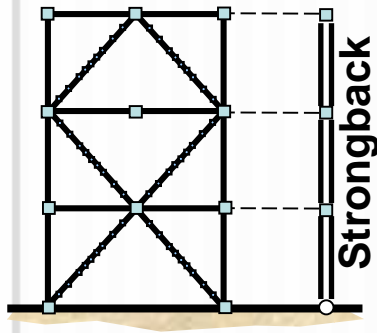


Test setup of strongback system

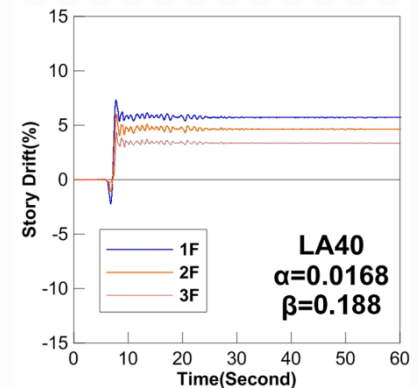
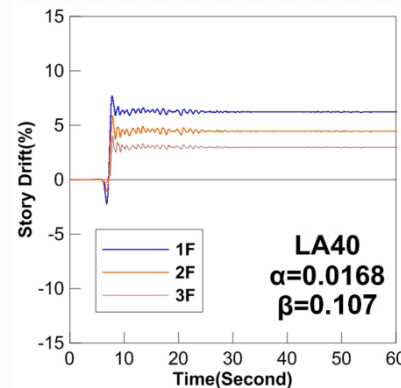
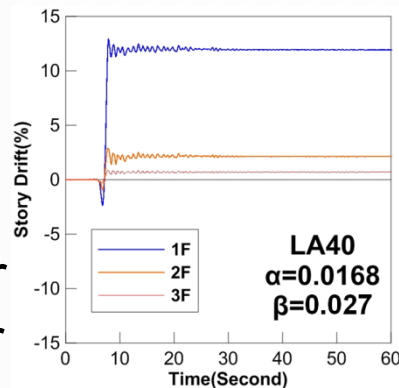
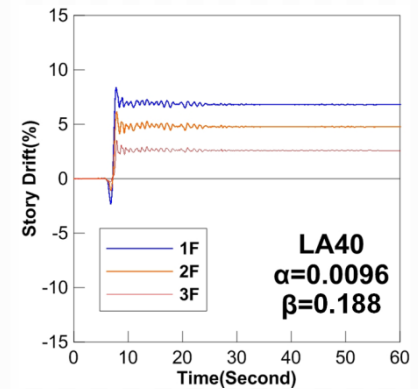
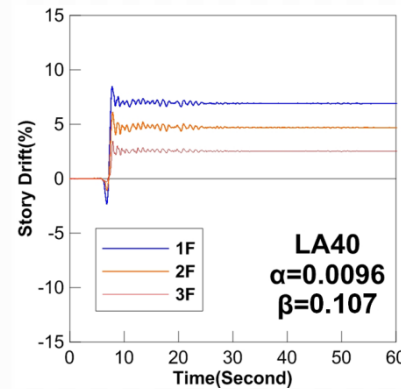
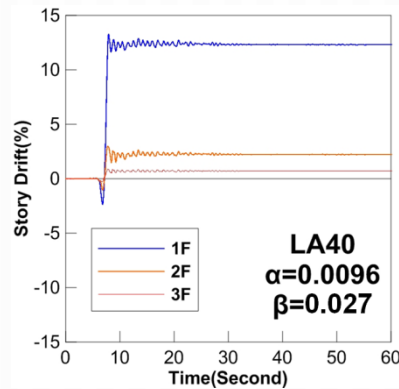
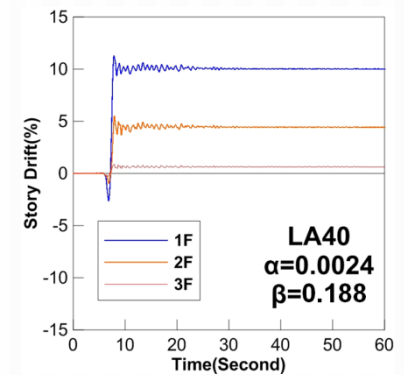
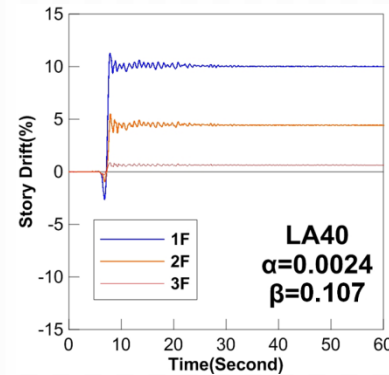
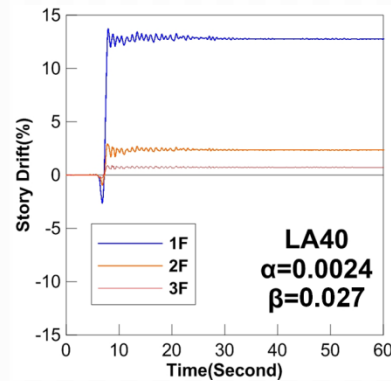


- Structural Lab at National Chiao Tung University

Story Drift History Increasing Strength of Strongback



Increasing
Stiffness of
Strongback



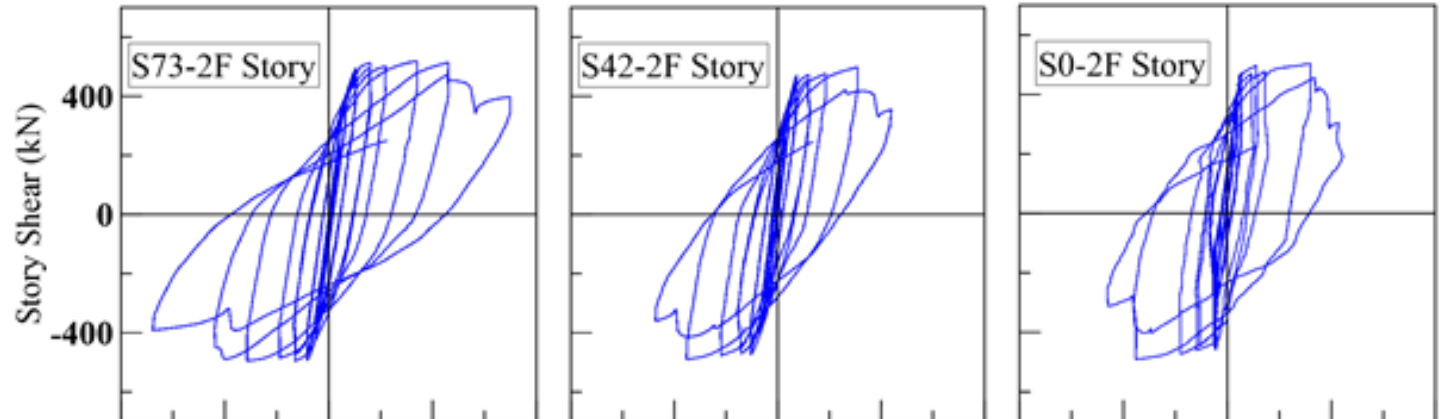
⌘ α : Stiffness Factor
⌘ β : Strength Factor

SCBF with Strongback: Experimental Results

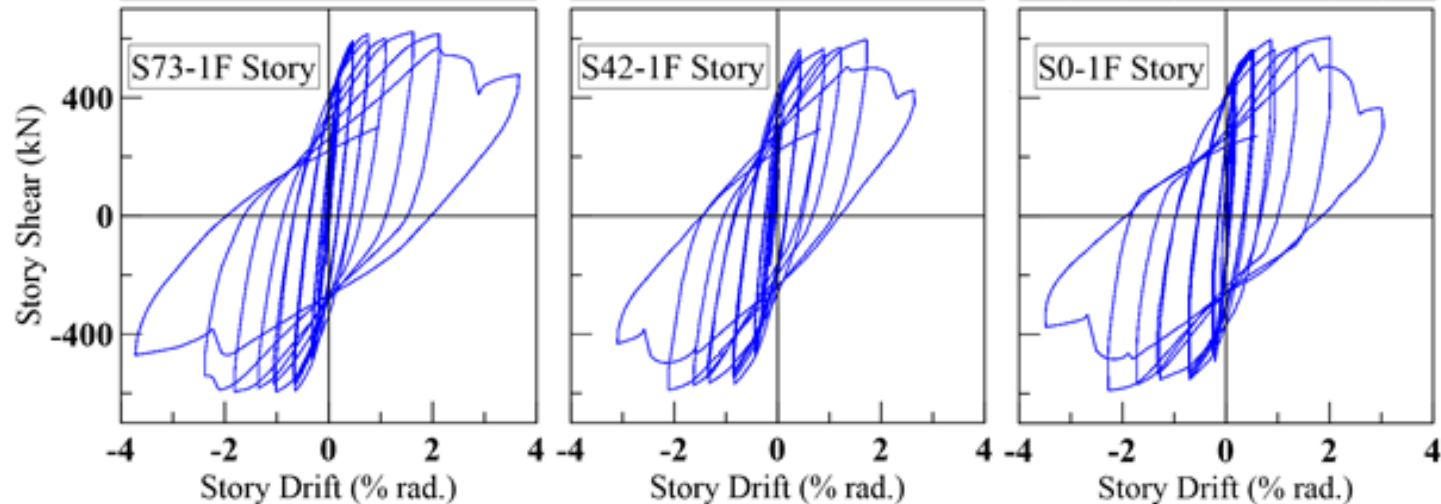
3F →



2F →



1F →



Thank You !