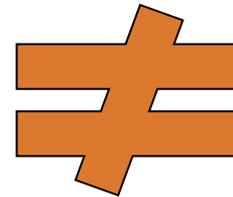
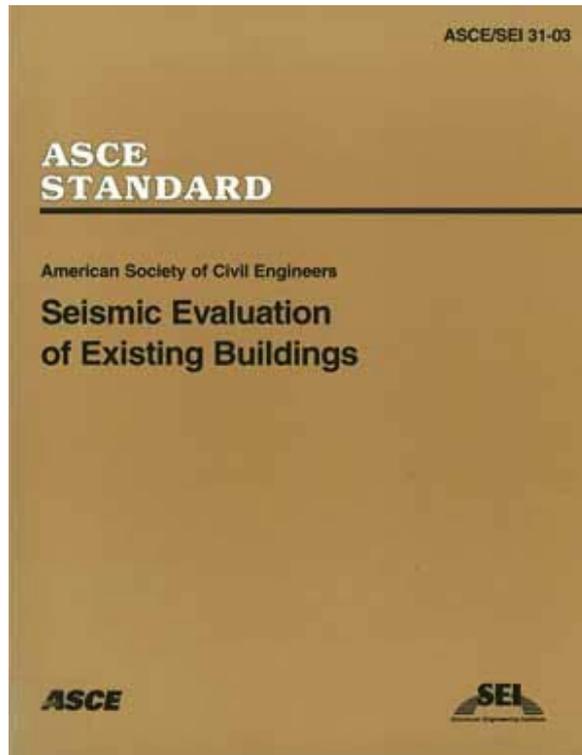


Research Needs
**ASCE 41-13: *Seismic Evaluation and
Retrofit of Existing Buildings***

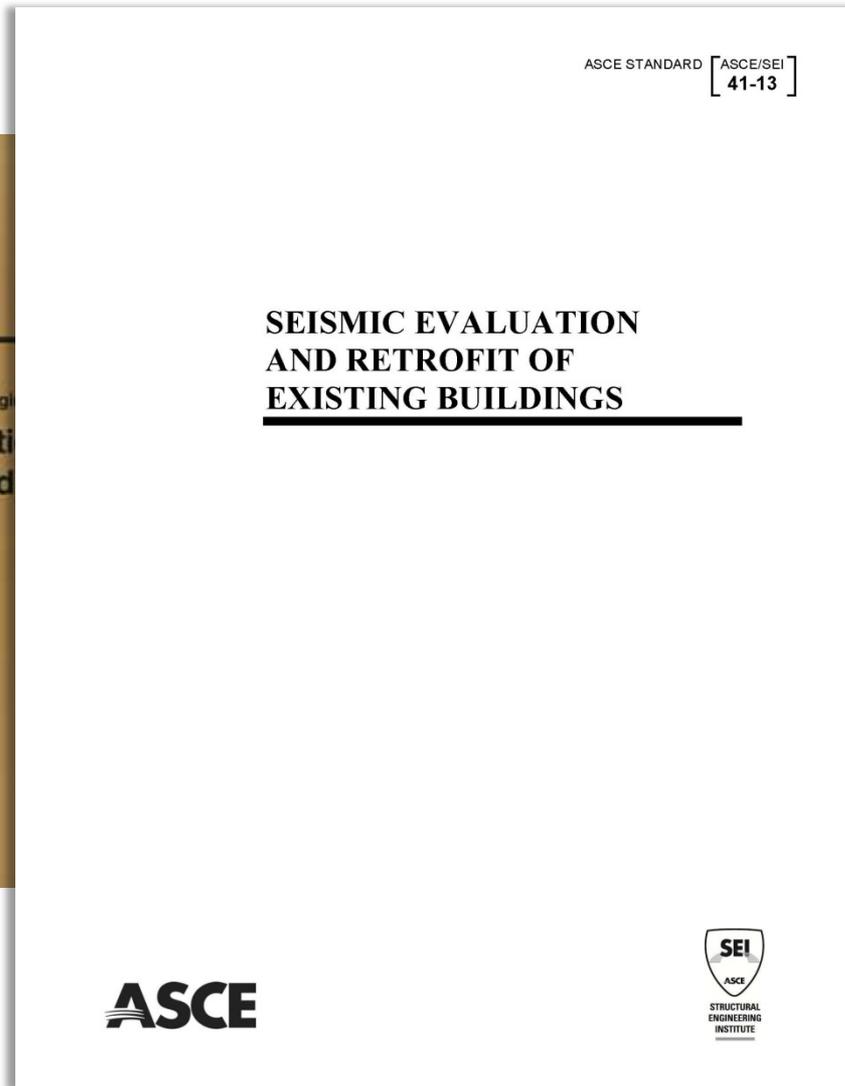
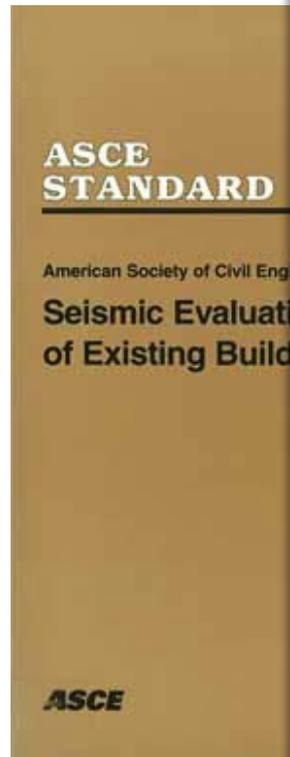
Robert Pekelnicky, SE

ASCE/SEI Seismic Rehabilitation Standards Committee

Inconsistencies



Combine ASCE 31 & ASCE 41



Benefits of ASCE 41-13

- Consistent Evaluation and Retrofit Provisions
- Explicit direction for existing buildings of different risk categories
- Explicit “New Design Code” equivalent performance objectives
- Greater consistency with ASCE 7
- Less conservative Tier 1 Life Safety provisions
- Updated technical provisions

Research Needs

Calibrate Collapse Prevention

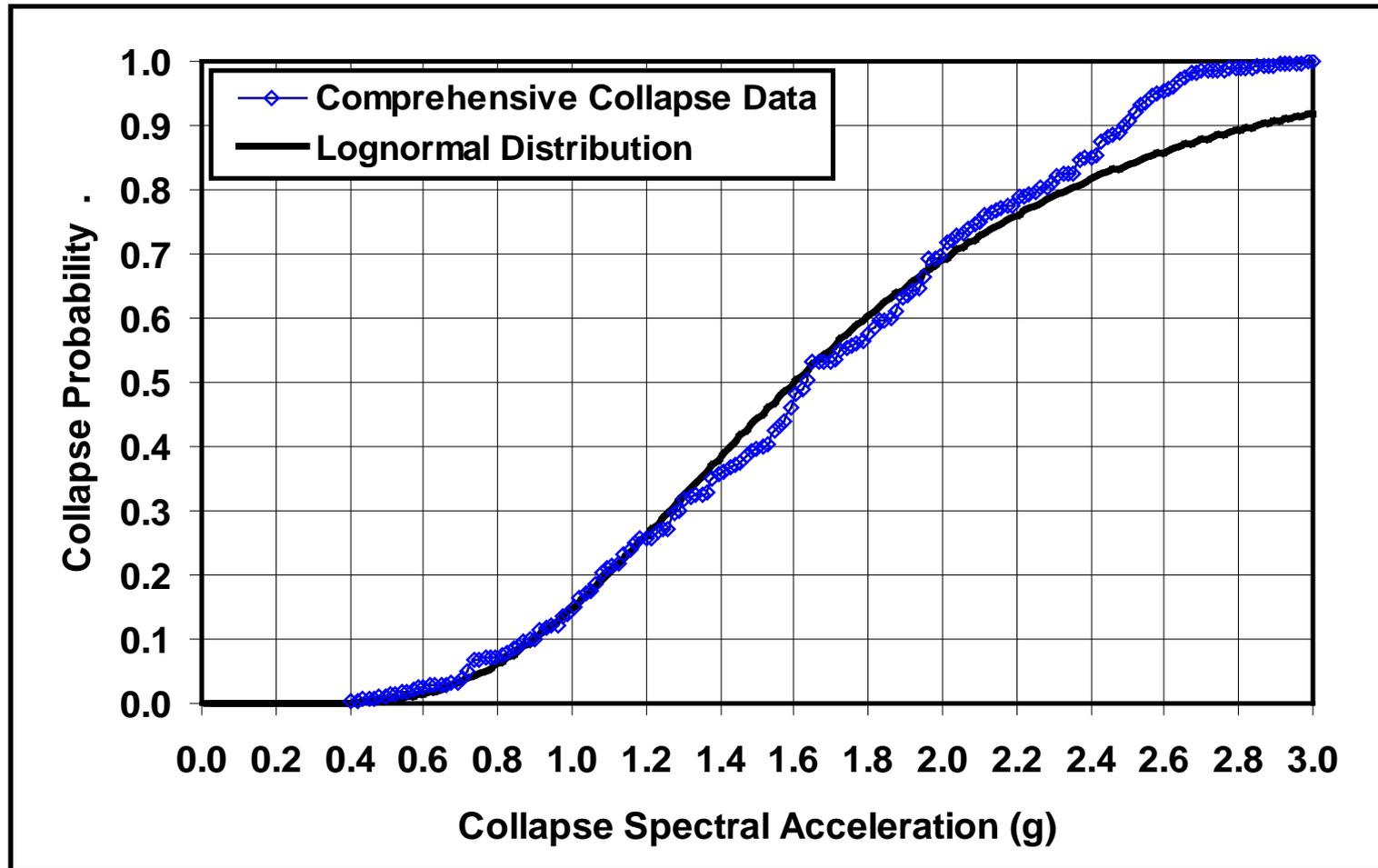


Figure courtesy
of Charlie Kircher

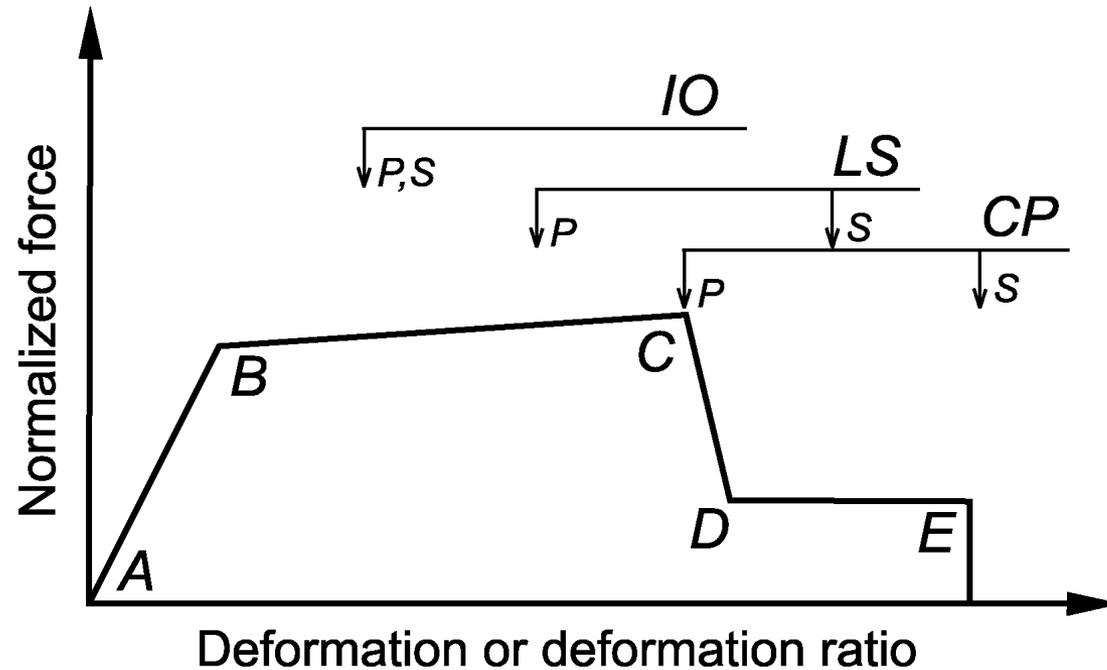
Does ASCE 41 CP provide 10%
probability of collapse?

Global Building Criteria



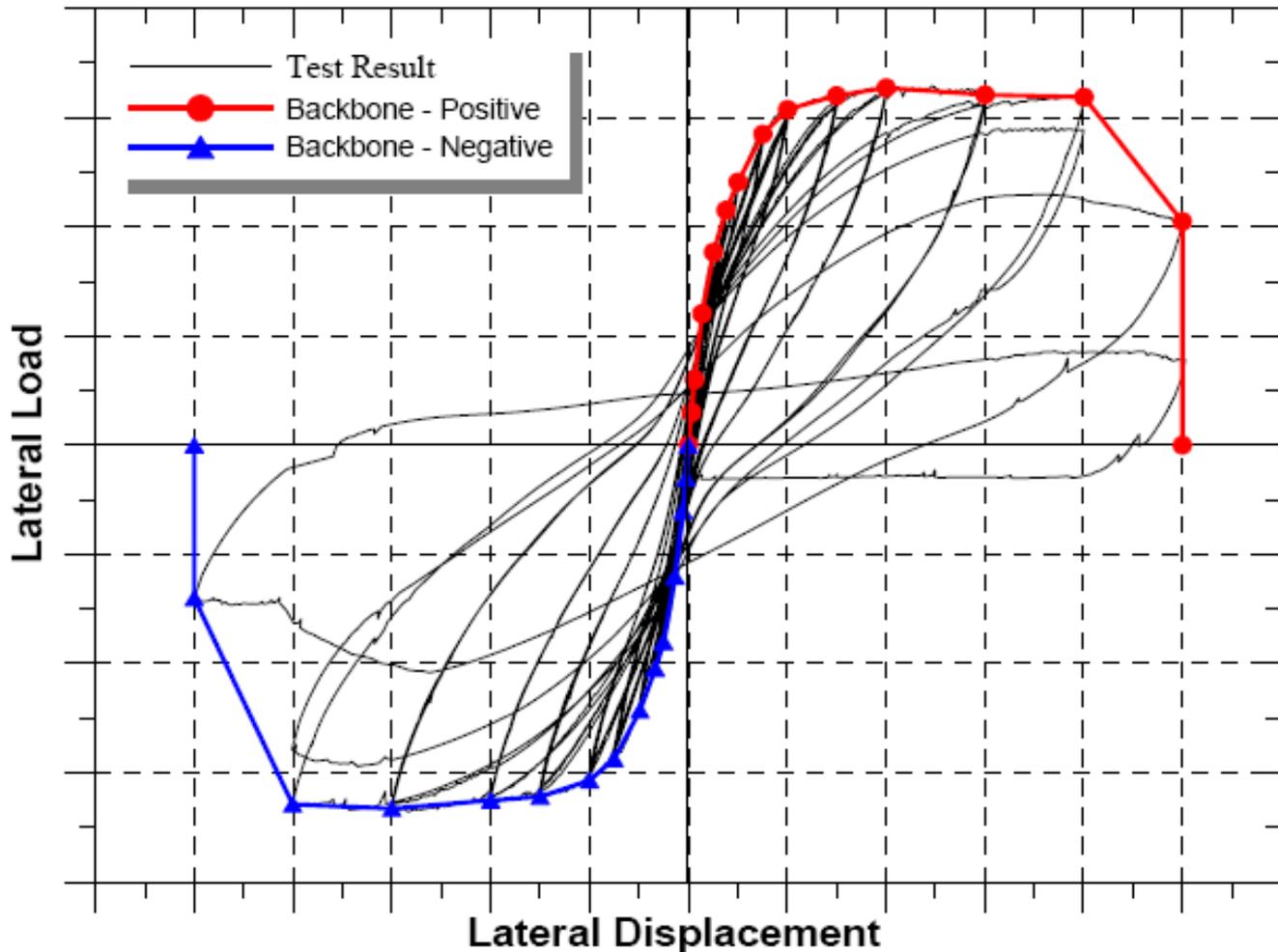
When the whole is better than the sum of its parts.

Revise Modeling Parameters



Most Parameters Unchanged in 15 years

Revise Modeling Parameters



Change to Parameters That Are Ideal
For Nonlinear Response History

Concrete Shear Wall Criteria



Many feel current criteria is too conservative

Reinforced Masonry Wall Criteria



Liquefaction Effects on Buildings



Nonstructural Design Forces



Tier 1 & Tier 2 Calibration

Plan View

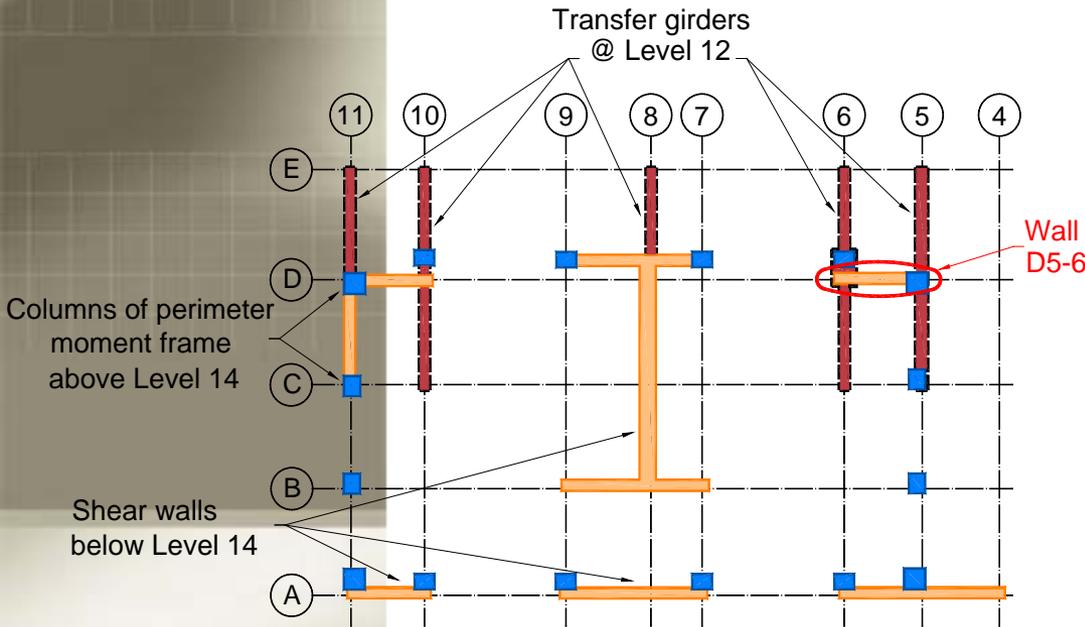
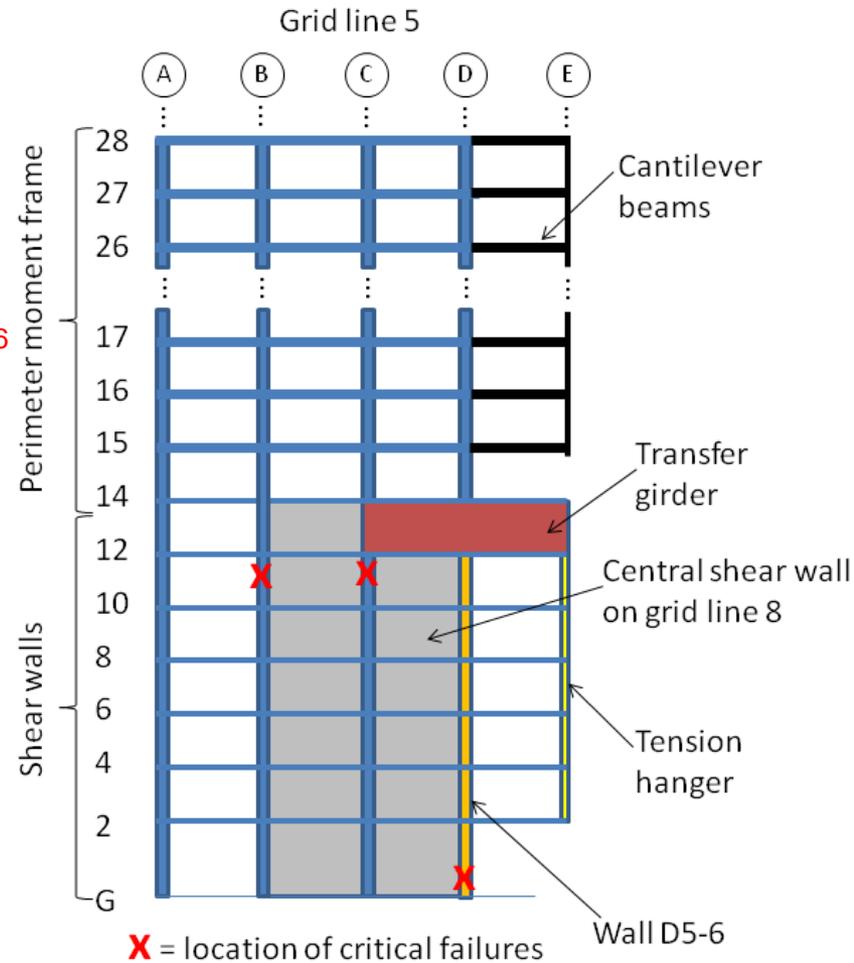


Figure courtesy of Ken Elwood

Elevation View



Material Variability & Knowledge Factor

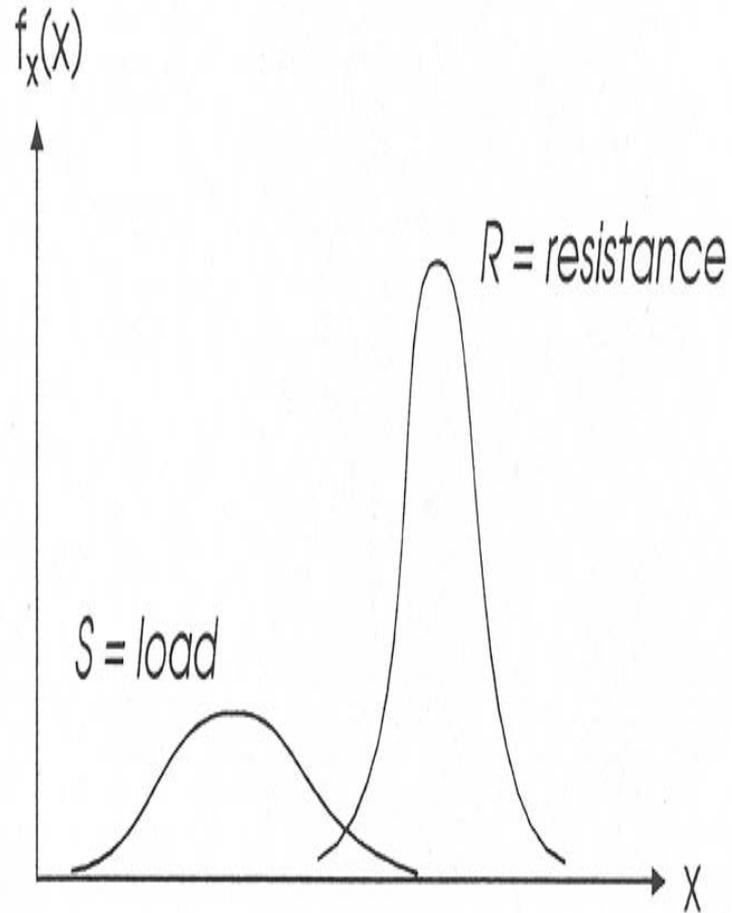


Figure courtesy of Bruce Ellingwood

Method to Assess Killer Buildings



From Beca 2011

2012 ACEHR – ASCE 41 Research Needs

Concrete Encased Steel with & without Brick Infill



Concrete Frames with Brick Infill

Nondestructive Testing

**More Nonductile Concrete
Research**

Research Needs
**ASCE 41-13: *Seismic Evaluation and
Retrofit of Existing Buildings***

Thank you...any questions?