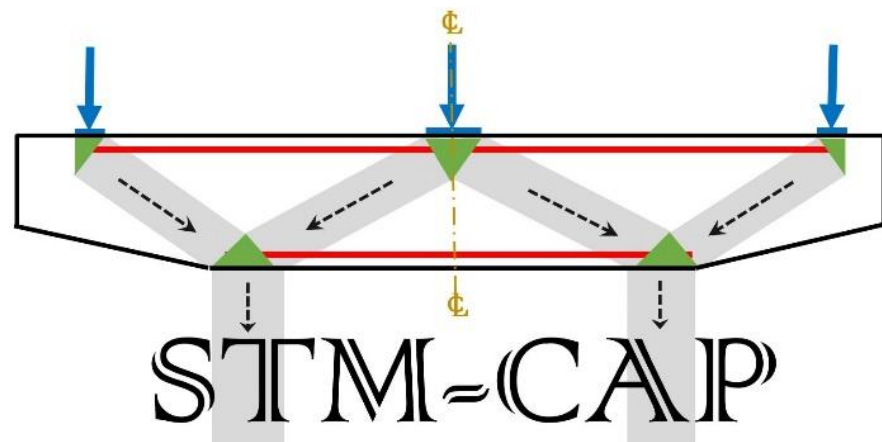


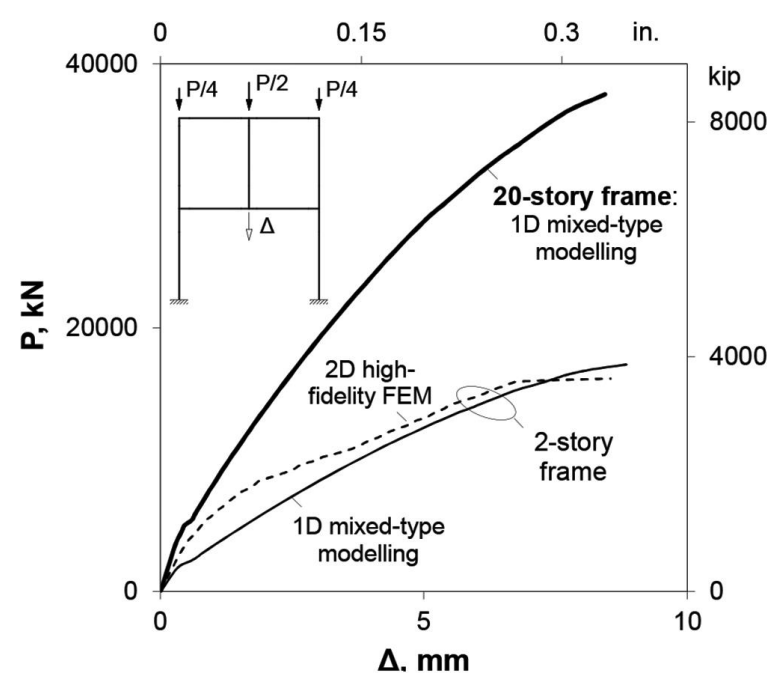
Bridge Engineering & Rehabilitation

- Deep beams and disturbed regions
- Shear behavior and strut-and-tie modeling
- Substructure analysis using refined methods
- Analysis of strengthened bridges



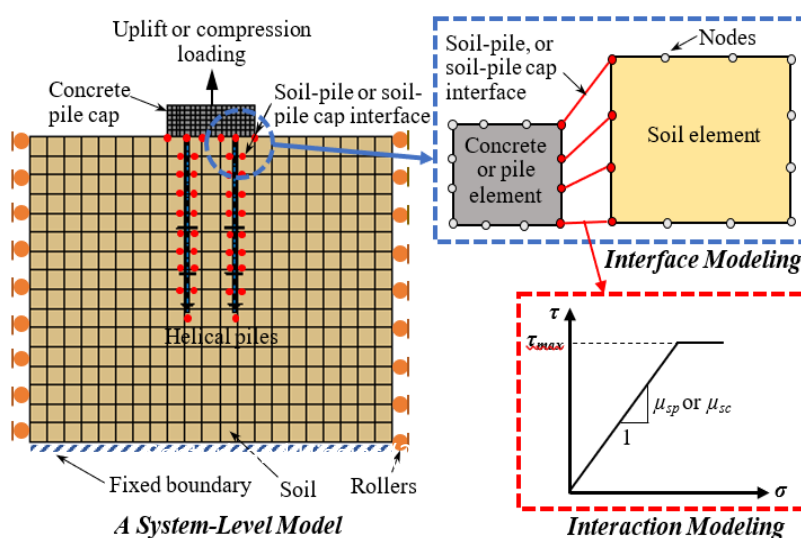
Performance-Based Engineering for Natural Hazard Resilience

- Mixed-type and high-fidelity modeling
- Shear behavior and cracking
- Post-peak response and ductility
- Sustainability and life cycle aspects



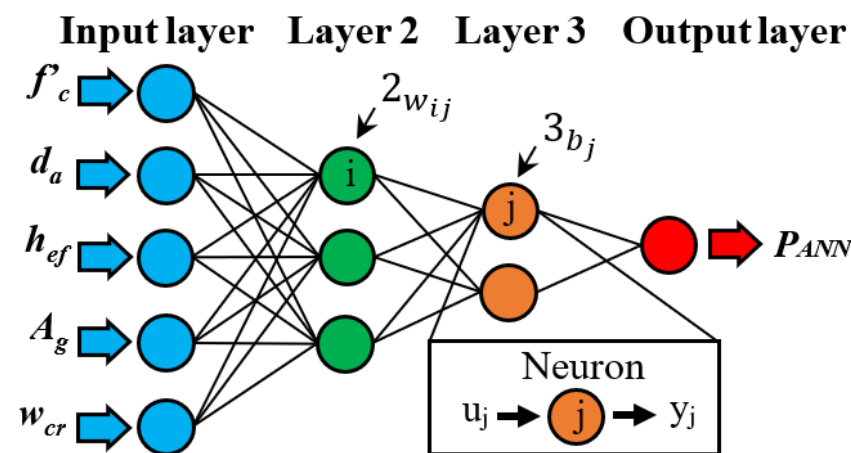
Foundations and Anchorage

- Pile-to-pile cap connections
- Response to uplift loads
- Foundations for energy and telecommunication infrastructure
- Foundations for dynamic equipment
- Strengthening and upgrade



Machine Learning

- Artificial neural networks
- Supervised and unsupervised models in structural engineering



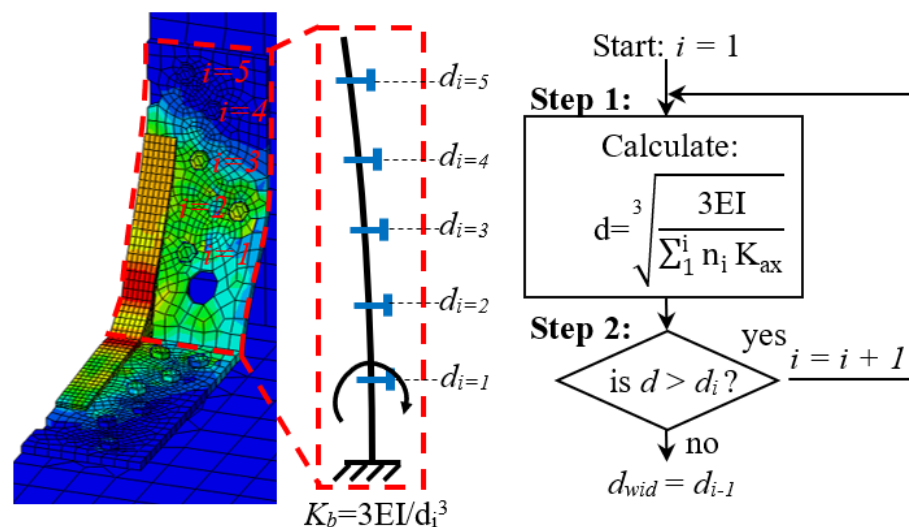
RESIST & Sustainable InfraStrucTure

RESIST Group

*Computational Mechanics,
Numerical Modeling &
Experimental Validation*

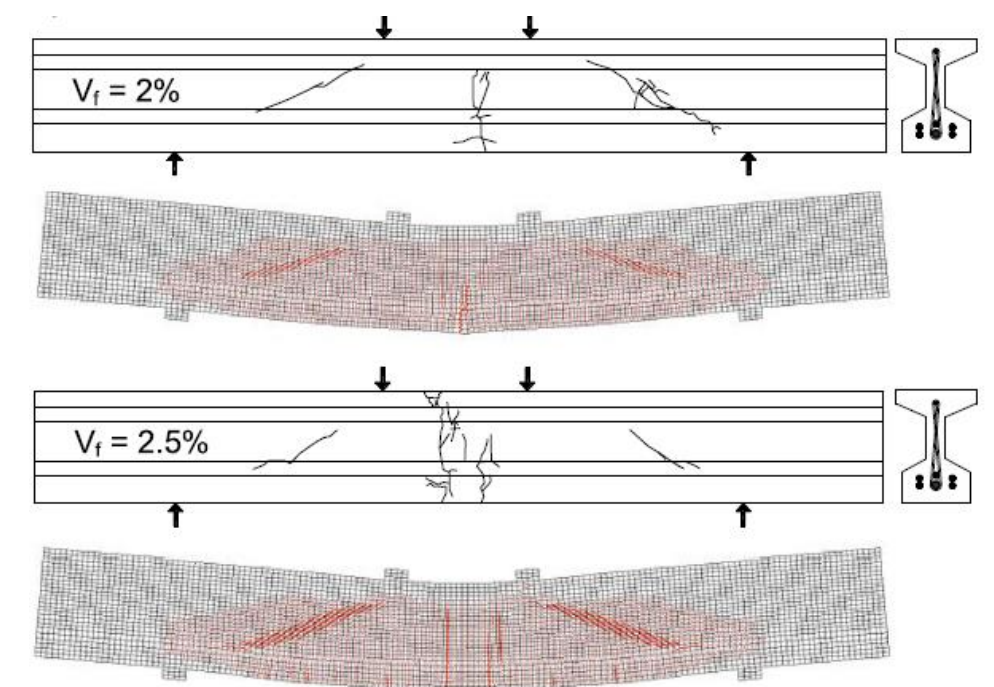
Cross Laminated Timber

- Out of plane behavior
- Wall-to-floor/foundation connections
- Response to earthquake and tsunami loads
- Life cycle assessment



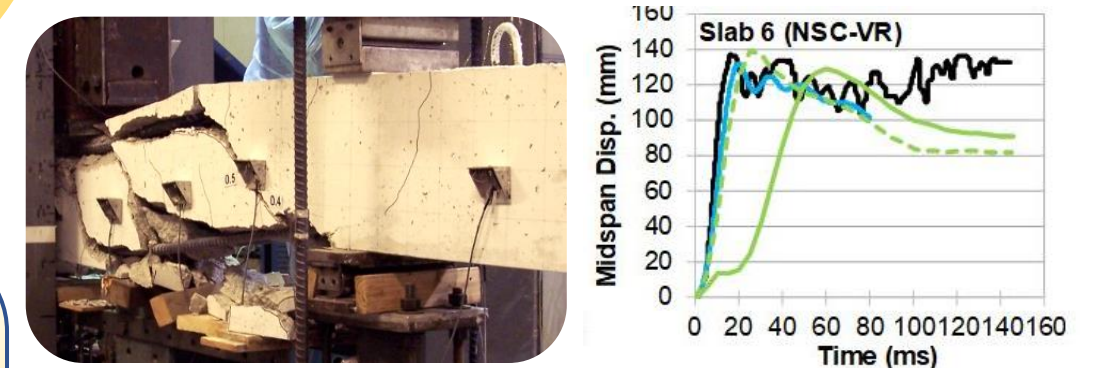
Ultra-High-Performance Conc. (UHPC)

- Constitutive model development
- Cracking and crack spacing formulation
- Strain-hardening and -softening mixes
- Members with no shear reinforcement
- Aging/overloaded structure strengthening



Response to Extreme Loads

- Impact and Blast loads
- Hurricane and tsunami impacts
- High strain rate mechanics
- Progressive collapse



Computer Tools & Software

- VecTor5 & Janus
- STM-CAP
- ANN-Anchors; ANN-Customize
- Fragility Generator
- Equivalent Cone Method

In collaboration with U. of Toronto, U. of Waterloo, and Carleton U., Canada.

