Development of Near-fault Seismic Technology and Shaking Table Tests for Innovative Steel Buildings (NCREE 2019-2021 Research Program)

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Background

1. Environment-friendly building
   - Steel structure building
2. Innovative steel material
   - Super high tensile strength bolts, High-Performance Steel, Shape Memory Alloy
   - SM570 and SM690
3. Seismic performance technology
   - Performance evaluation of super high tensile strength bolts (張惠雲教授)
   - Beam-to-column connection using High performance steel (陳誠直教授)
   - Steel-Concrete-Steel Composite Shear Wall (鄭錦銅教授)
   - Steel Framed Structures with Highly Ductile Knee Braces (許協隆教授)
   - High-Performance Steel Dual-Core Self-Centering Braces (周中哲教授)
   - Steel Braces with the Application of High-Performance Steel(陳垂欣教授)
   - Steel Plate Shear Walls Using High-Performance Steels(蔡克銓教授)

Main Purpose

1. Environmental protection and sustainable development
2. Use the high-performance and high-strength steel produced in Taiwan.
3. Develop the technology to enhance the seismic performance of steel structures
4. Use the high-speed and long-stroke seismic simulation shaking table to investigate the seismic behavior of steel structures under near fault seismic
5. Interdisciplinary integration
   - Steel Structure
   - Strong Ground Motion
   - Structural Health Monitoring
   - Experiment Technology
   - Vision Measuring Technology

Program

1st year (2019)
Performance research of main components

- Bolts
- Beam-to-column connections
- Shear Wall
- Knee Braces
- Braces

2nd year (2020)
Large size one story Steel Structure
3rd year (2021)
Large size 5-story Steel Structure