

## Typical Projects

### National Natural Science Foundation of China (NSFC):

#### NSFC Major Focused Project:

Structural System and its Mechanics Problems of High-rise Buildings (1999-2003)

Demonstrative Research of Comprehensive Disaster-Prevention Countermeasures for Typical Moderate Cities (1994-1997)

#### NSFC Key International Collaboration Project:

Seismic Evaluation and Damage Mitigation of Urban Super-tall Buildings (2010-2012)

#### NSFC Key Focused Project:

Seismic Damages and Their Controls of Long Span Bridges with Deep Water Foundations (2010-2013)

Damage Mechanism and Evolution Process of Super-tall buildings under Strong Earthquakes(2009-2012)

Numerical Testing for Interactions between Major Structures and Special Environmental Dynamic Action (2006-2009)

Methodologies for Structural Model Testing and Long-Distance Shared-Use of Resource (2004-2007)

Research on the Shaking Table Test and Analysis of Soil-Structural-Interaction System (1998-2001)

Earthquake Resistance, Wind Resistance and Vibration Control of Building Structures (1993-1997)

#### NSFC General Project:

Mechanism of Earthquake Resistance and Mitigation for Large-Scale LNG Tank (2012-2015)

Seismic Performance of High-Axial-Ratio Sandwiched Composite Shear Walls with Confined Rods (2012-2015)

Shaking Table Test and Analysis of Tall Buildings Considering Adjacent Structure-Pile-Soil Interaction Effect (2012-2015)

Seismic Performance of Controlled Rocking Reinforced Concrete Frames (2012-2015)

Study of the Structural Reliability Robust Design Optimization Based on the Evidence Theory and Info-Gap Decision (2012-2015)

Study of Design Theory and Shear-bond Mechanism of Composite Floor with End Anchorage (2011-2013)

Damage Accumulation and Performance-based Seismic Design Theory and Method for Steel-concrete Hybrid Structures of Super-tall Buildings (2011-2013)

Key Problems for the Seismic Performance of Super-tall Buildings with New Energy-Dissipating Outriggers (2011-2013)

Research on Long-period Ground Motion Characteristic of Thick Soft Alluvium Site and Failure Mechanism of Super High-rise Building Structure (2010-2012)

The Study on Fire-Resistant Performance of Adhesive Rebar Connection Exposed to Fire (2008-2010)

Study of Design Principle and Buckling Theory of Prestressed Steel-Concrete Composite Beam with External Tendons (2007-2009)

Seismic Vulnerability and Torsional Vibration Control of High-Rise Building Structures with Large Local Space (2007-2009)

Equivalent Wind Load for Large Aqueducts along Wind Direction (2007-2009)

Study on the damage mechanism and assessing method of the fire-damaged RC structural members (2006-2008)

Shaking Table Test and Analysis on High-Rise Buildings Considering Liquefiable Soil-Structure Interaction (2006-2008)

Earthquake Effect and Seismic Characteristics of Large Scale Aqueduct Structural System (2003-2005)

Study on Vibration-Reduction Mechanics and Effectiveness of Hybrid Control for Opening Structure System (2003-2005)

Study on Damage Mechanism under Wind and Wind Resistance for Large Aqueducts (1999-2001)

Vertical Vibration Control for Large Span Structures (1998-2000)

New Type Boundary Integral Equation for Seismic Wave Propagation and Its Numerical Study (1998-2000)

Study on Seismic Response Control for High-Rise Building Setting on Soft-Soil Site (1998-2000)

Seismic Theory and Application of the Vertical Energy Dissipation of High-rise Buildings (1996-1998)

Research on the Dynamic Similitude Relation of the Structural Model Test (1994-1996)

#### NSFC Project for Young Scholars:

Particle Damping Mechanism and Preliminary Studies on its Application in Civil Engineering (2012-2014)

Seismic Performance and Damage Control of Shear Walls Based on Refined Numerical Simulation (2011-2013)

Theoretical Analysis and Experimental Research on the Fire-Resistance of Reinforced Concrete Flexural Members Strengthened with Near Surface Mounted CFRP Strips (2011-2013)

Study of Displacement-based Earthquake Damage Control Design for Reinforced Concrete Structures (2008-2010)

Study on the Decentralized Identification for Complex Structures Using Particle Swarm Optimization Algorithm (2008-2010)

Performance-based Design Method of Steel Frame-Reinforced Concrete Core Wall Hybrid Structures (2008-2010)

Shaking Table Tests and Analysis on Soil and Structure Interaction in Liquefied Ground (2004)

**NSFC for Innovative Research Group:**

Basic Research for Disaster Reduction in Civil Engineering (Phase II, 2007-2009)

Basic Research for Disaster Reduction in Civil Engineering (Phase I, 2004-2006)

**NSFC for Distinguished Young Scholars:**

Research on the Earthquake Resistance of High-rise Building Structures (2001-2004)

Researches on Responses, Monitoring and Control of Large Scale Structures under Wind and Earthquakes Loads (2000-2003)

**National Key Technology R&D Program:**

Key Technology for Assessment and Retrofitting of Damaged Buildings

Key Technology for Moving Retrofitting of Existing Buildings

Structural Seismic Performance of High-Speed Mega Line

Shaking Table Test and Computational Simulation of Complex Buildings

**National Key Technology R&D Program:**

Structural Design and Mass Engineering Application Technology for New Type of Steel Structures of Civil Buildings

Fast Seismic Responses Analysis Technique for Super-Long Sunk Tunnel under Multiple Support Excitation

**95 State Key Research Projects:**

Study on the Seismic Safety Evaluation Method of Liquid Sodium Pool and Reactor Core of Fast Breeder Reactor

**National Program on Key Basic Research Projects of China (973 Program):**

Earthquake Seismic Damage Evolution and Collapse Mechanism of Urban Multi-Age Buildings

Research on the New Natural Polymer Material for Tissue Engineering

**National Hi-Tech Research and Development Plan (863 Project) of China:**

Research on the Micro-nano-scale surface biology

**International Collaboration Projects of Ministry of Science and Technology:**

Research and Application of Sustainable Green Building Systems (2008-2010)

**International Collaboration Projects of Ministry of Education:**

Earthquake Resistance of Complex Tall Buildings (2009-2010)

**Earthquake Resistance Foundation of Ministry of Housing and Urban-Rural Development:**

Integrative Retrofitting Technology of Strengthening and Energy-Saving on Existing Buildings (2009)

Research on the Seismic Assessment Method of Reinforced Concrete Flat Plate-column Joints (1994-1999)

**Key Project of Science and Technology Plan of Beijing Government:**

Key Technology Research and Application of Large Complex Tall Buildings (2009-2011)

**Science and Technology Development Foundation of Shanghai Government:**

Survey and Advance of Policy on Prefabricated Housing (2011)

Research on New Prefabricated Shear Wall Structure Residential System with Sandwich Insulation (2011-2013)

Research and Demonstration Pilot of Industrialized Residential SI Decoration System in Shanghai (2010-2011)

The Failure Mechanism and Experimental Approaches of Curtain Walls under Earthquakes

Researches on the New Technology & New Material for Express Structure Strengthening Damaged by Earthquake (2008-2010)

Seismic Key Technology of Pre-cased Wall Structures (2007-2009)

Key Technology and Applications of Industrial Housing (2007-2009)

Research on the Key Seismic Technologies for the Terminal Building of Pudong Airport (Phase II) (2005-2007)

Shaking Table Test of Container Handling Crane for Iran Port (2005)

Seismic Testing and Development of Seismic Code of Wood Frame Building (2004-2008)

Research on the Key Seismic Technologies for High-rise Buildings with Extended Construction (2003-2005)

Research on Evaluation and Reduction Measures of Environmental Vibration Caused by Elevated Railroad Traffic (2001-2003)

Ground Motion Parameter Zoning of Shanghai Region (2001-2002)

Research on the Earthquake Resistance of High-rise Building Structures (1998-2002)

Observation of Microseism and Its Application for Site Seismic Safety Evaluation (1998-2002)

Vibration Control of High-rise Buildings of Shanghai Area (1997-2003)

Research on the Key Seismic Technologies for High-rise Buildings with Concrete-filled Tubular Columns (1997-1999)

Research on Seismic Design of Shield Tunnels in Shanghai Area (1997-1999)

Research on the Seismic Performance of Shanghai Typical Highrise Buildings and Special Structures (1995-1998)

**Shanghai Earthquake Resistance Office:**

Software Development for Dynamic History Analysis of Frame-Walled High-Rise Building Considering the Elasto-Plastic Behavior of the Structures (2000-2002)

Experimental Study on Vibration-Isolated Floor (2000-2001)

Seismic Behavior of Multi-Story Masonry Buildings with Staggered Floors (1999-2000)

**Other Key Research Projects:**

**Projects supported by Provinces and Ministry:**

Code for Seismic Appraisalment and Strengthening of Existing Buildings (DGJ08-81-2000)

Code for Seismic Design of Buildings (DGJ08-9-2003)

Seismic Design Guidelines for Code-exceeding High-rise Buildings

Seismic Design Guidelines for Code-exceeding High-rise Buildings

Code for Seismic Design of Buildings (DGJ08-9-2003)

Structural Treatment on Comprehensive Retrofitting of Multistory Masonry Housing (July 2009-July 2011)

Study of Seismic Damage Evolution and Performance-based Seismic Design of Tall Buildings (August 2008 - August 2010)

Shaking Table Test and Analysis on High-Rise Buildings Considering Liquefiable Soil-Structure Interaction (2007-2009)

Performance-based Seismic Design of High-rise Hybrid Structures (2008-2009)

Study of Performance-based Seismic Design of Tall Buildings (2009-2011)

Performance-based Seismic Design of Tall Buildings with Energydissipating Outriggers (2012-2014)

Open-System Dynamics on Large Underground Spatial Structures under Strong Ground Motions (2007-2009)

Seismic Analysis of Reactor Block Structure and Devices of China Experimental Fast-breeder Reactors (1998-2004)

Code for Seismic Appraisalment and Strengthening of Existing Buildings (DGJ08-81-2000)

**Tongji-Singapore University Collaborative Project:**

Test Study on the Behaviors of the Concrete Frame Joint under High Frequency Vibration (1996-2000)

**Tongji University-Japan Research Institution Collaborative Research Projects:**

Mechanical Tests on CST30 Viscoelastic Dampers (2011)

Agreement on Shaking Table Test on Steel Piers (2008-2012)

Research on the Vibration Control Technology of Shanghai World Financial Center Tower (2004-2006)

Seismic Evaluation and Retrofitting for Existing Buildings with New Technologies (2000-2003)

Shaking Table Test and Analysis of Base Isolated Buildings (1999-2001)

Research on the Performance of CFRT Structures (1996-1998)

**Sino-EU Collaborative Research Project:**

Research on the Earthquake Resistance of the New-type Precast Concrete Structures (2003-2006)

**Tongji University-USA Wellstream Corp. Collaborative Research Project:**

Experimental Study on the Mechanical Behavior of Oil Transportation Flexible Pipe (2001-2005)

**Tongji University-Canada Forintek Collaborative Research Project:**

Study and Application of New-type Light Wood Buildings (2005-2007)

Cyclic Loading Tests on Wood-frame Shear Walls (2005-2006)

### **Consulting Projects for key Engineering Structures:**

Seismic Test on Shanghai Tower

Structural monitoring on Shanghai Tower

Earthquake Performance of Glass Curtain Wall System of Shanghai Tower

Seismic Test on China Pavilion of Shanghai Expo 2010

Seismic Test on Shanghai Jiali Center

Seismic Test on Zhengda Himalaya Hotel

Seismic Test on Zhoushan Citizen Plaza

Seismic Performance of Precased Wall Structures (Wanke Corp.)

Checking and Optimization of the Structural Design for Tianjin Jinwan Square (Tangchen Corp.)

The Effect of the Construction of Code-exceeding Tall Buildings on Surrounding Buildings

Structural Survey and Retrofitting of Protective Buildings in Shanghai

Seismic Test and Nonlinear Analysis of Shanghai World Financial Center Tower

Seismic Test and Nonlinear Analysis of Shanghai Shimao International Plaza Building

Seismic Study on the Terminal Building of Shanghai Pudong International Airport

Experimental Study on the Fatigue Behaviors of Rail Grid of Shanghai Maglev Line

Long-time In-Situ Measurement of Temperature and Deformation for the Guideway Beam of Shanghai Maglev Line

Seismic Behaviors of the Equipments and Devices for Nuclear Power Plant, Internet Technology and Electric Devices

Seismic Performance Study on the LG Beijing Building

Seismic Performance Study on the Orient Pearl TV Tower

Seismic Performance Study on the Shanghai Grand Theater

Shaking Table Test and Analysis of Shanghai Pudong Shimao River Garden Building

Seismic Test and Analysis of Guangzhou Nanhang Building

Experimental Study on the Spatial Steel-Tube Joints of Guangzhou

International Exposition Center Structure

Seismic Tests on the Facilities in Nuclear Power Plants in Qingshan and Tianwan

Study on Seismic Safety of Aqueduct Structures in Water Supply Engineering from Dong-Jiang River to Shenzhen

Research on Seismic Behavior of Nuclear Reactor Structure

Loading Test on the Mechanical Properties of the C-section Girder of Light-rail Transit, Line 6 in Shanghai

Monitoring on the Stress Condition and Construction Loading of the Roof Structure of the Minor Grandstand, Shanghai International Circuit

Full-Scale Static Test on the Full-Ring Lining Structure of Shanghai Changjiang Tunnel

Experimental Study on the Double-Circular Shield Tunnel Lining of Shanghai M8

Monitoring and Testing on the Moving Project of Shanghai Concert Hall (Historic Building)

Seismic Response Analysis of Nuclear Power Plant Site

Monitoring and Testing on the Moving Project of Wuzhong Hotel in Ningxia Province (World Heaviest Moved Building in 2006)

Experimental Study on Seismic Behavior of Port Container Crane Structure (2006-2007)

Seismic Safety Evaluation for Engineering Site of Shanghai Railway South Station (2006)

Study on the Building Vibration Problems Induced by Subway (2006-2007)