

Gary Gan

Principal Consultant

Dr. Gan leads the full-size stay cable and tendon fatigue and tensile qualification and performance tests, as well as steel strand testing services in CTLGroup's Structural Transportation Laboratories. He has significant expertise in dynamic and static testing of structural and bridge systems, components and materials. Before joining CTLGroup, Dr. Gan worked as a post-doctorate research associate and facility manager at Network for Earthquake Engineering Simulation (NEES) at the University of Illinois at Urbana-Champaign.



Representative Project Experience

Steel Strand Qualification and Performance Tests

- Developed and performed extensive testing on HDPE-sheathed and epoxy-coated seven-wire strands, including: fatigue, tensile and relaxation tests per ASTM A416; strand creep test per ASTM E139; epoxy-coated strand tests per ASTM A882; strand performance test and one-pin test per PTI. Initiated a test program for epoxy-coated strand elevated temperature test and initiated a strand fatigue test program to obtain Strand Wohler Curve for the strand with higher upper fatigue limit applied in extradosed bridge. Developed the special grip to achieve free length failure in the fatigue tests.

Structural Dynamic and Static Load Testing

- Performed a shock transmission unit per AASHTO LRFD Bridge Construction Specifications for Busan-Geoje fixed link bridge in Korea.

Stay Cable and Tendon Evaluation and Investigation

- Tested more than 250 full-size stay cable specimens for bridges such as Stonecutters Bridge (the world's third longest main span stay cable bridge), Incheon Second Bridge (Korea's longest main span stay cable bridge) and North Arm Fraser River Crossing (the first extradosed bridge in North America).
- Tested several different PT anchor systems for load transfer tests and efficiency tests per AASHTO LRFD Bridge Construction Specifications; investigated anchorage failure mechanism; compared the test requirements between AASTHO and ETAG-013.
- Led the effort on wire pre-mature fracture investigation in stay cable and tendon projects.

Earthquake Engineering, Seismic Retrofitting, and Semi-Active Seismic Control

- Experimental and theoretical analysis for structures, buildings and bridges, especially shaking table testing, pseudo-dynamic testing and multi-site computational and experimental simulation: participated in a large-scale multi-site soil-structure-foundation interaction test; led an FHWA-sponsored study on the effect of seismic loading on timber bridge; performed a shaking table test on a three-quarter scale timber bridge; and developed analytical software to predict the strength and ductility of timber bridge.

Academic Credentials

Ph.D. in Structural Engineering
State University of New York at Buffalo, 2003
M.S. in Computer Science and Engineering
State University of New York at Buffalo, 2002
M.S. in Structural Engineering
Xi'an University of Architecture and Technology, 1995
B.S. in Structural Engineering
Xi'an University of Architecture and Technology, 1992

Professional Affiliations

Post-Tensioning Institute (PTI) -
Cable-Stayed Bridge Committee

Contact Information

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Earthquake Engineering, Seismic Retrofitting, and Semi-Active Seismic Control

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- Smart material and devices for vibration reduction: studied vibration reduction in helicopter blades by variable hydraulic damper sponsored by NASA (Ames Research Center); proposed a semi-active control scheme, and developed and performed dynamic tests and fatigue tests on a full-size helicopter blade; investigated the effect of silica fume on damping improvement for reinforced concrete structure; and performed the dynamic tests on RC columns with silica fume.