

Dr. Fischer is a Principal with ESi, specializing in forensic investigation, evaluation, and repair of damaged and distressed structures. His expertise spans failure analysis, construction evaluations, and repair designs, with a strong focus on delivering technically sound, practical solutions for complex structural challenges.

He has conducted inspections and evaluations of a wide range of structures, including residential buildings, high-rise commercial properties, industrial facilities, and critical infrastructure. Dr. Fischer routinely designs repair solutions for damaged buildings, integrating investigation findings with constructability, performance, and long-term durability considerations.

Dr. Fischer also has experience assessing transportation and bridge structures and has led multiple research initiatives focused on structural health monitoring and real-time condition assessment of in-service bridges.

He is actively engaged in post-disaster response, serving as a Structures Specialist with the Illinois Urban Search and Rescue Team (IL TF-1), where he also helps train engineers in emergency structural assessment. In addition, he has delivered training seminars nationwide for structural engineers, architects, and building officials on post-disaster building evaluation and response.

Education

PhD, Civil Engineering. University of Illinois Chicago. 2001

MS, Civil Engineering (Structural). University of Illinois Urbana-Champaign. 2000

BS, Civil Engineering (Structural/Construction Management). University of Illinois Urbana-Champaign. 1999

Licenses & Certifications

- State of Arizona P.E. License 67471
- State of California P.E. License 88874
- State of Florida P.E. License 81913

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ESi Aurora

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Areas of Specialization

- Engineering Analysis
- Construction Engineering
- Failure Analysis
- Damage Assessment
- Structural Health Monitoring
- Repair & Renovation Design
- Building Envelope Assessment
- Engineering Surveying

- State of Illinois S.E. License 081-006193
- State of Illinois P.E. License 062-057501
- State of Indiana P.E. License PE10708865
- State of Iowa P.E. License P26677
- State of Michigan P.E. License 6201055349
- State of Minnesota P.E. License 56442
- State of Mississippi P.E. License PE-34169
- State of Missouri P.E. License PE-2021016072
- State of Nebraska P.E. License E-16473
- State of Ohio P.E. License PE.84814
- State of Oregon P.E. License 103343PE
- Commonwealth of Pennsylvania P.E. License PE075699
- State of Rhode Island P.E. License 13769
- State of South Carolina P.E. License 28727
- State of Texas P.E. License 128135
- State of Wisconsin P.E. License 38908
- OSHA 30-Hour Construction Safety
- OSHA Suspended and Supported Scaffold
- Powered Industrial Truck Operator
- Certified ATC 45 Trainer: Safety Evaluation of Buildings After Windstorms and Floods
- Safety Assessment Program Evaluator Trainer (California Office of Emergency Services)
- Disaster Service Worker (California Office of Emergency Services)
- FEMA Urban Search and Rescue Structural Specialist
- Standardized Emergency Management System (California Office of Emergency Services)
- Emergency Building Assessment: Post-earthquake Safety Evaluation of Buildings, ATC-20
- PADI Open Water SCUBA Certified
- CertainTeed Master Craftsman™ Roofing Contractor

Positions Held

Engineering Systems Inc., Aurora, Illinois

- Principal and Vice President, 2001 – Present

Illinois Institute of Technology, Chicago, Illinois

- Department of Civil and Architectural Engineering Adjunct Faculty, 2008

US Army Corps of Engineers, Champaign, Illinois

- Research Assistant, 1999–2000

University of Illinois, Urbana, Illinois

- Teaching Assistant, 1999–2000

Hellmuth, Obata, and Kassabaum, St. Louis, Missouri

- Design Engineer, 1999

Korte Construction Company

- Assistant Project Superintendent/Surveyor, 1996–1997

Professional Affiliations/Honors

American Institute of Steel Construction

- Member

American Society of Civil Engineers

- Member
- Recipient, New Face of Civil Engineering, 2003
- Recipient, New York State Council Outstanding Civil Engineering Achievement Award, 2002

International Society for Structural Health Monitoring of Intelligent Infrastructure

- Member

National Council of Structural Engineers Association

- Member
- Structural Engineers Emergency Response Committee, 2002 - 2010

Structural Engineers Association of Illinois

- Member

University of Illinois Chicago

- Recipient, Outstanding Young Engineer Award, 2019

Publications

- "WiTel Technology Curtain Wall Framing Failure Investigation," D.A. Wojnowski and **C.R. Fischer**, ASCE Forensic Engineering 2012: Gateway to a Safer Tomorrow, January 18, 2013.
- "Mechanism Methodology for Structural Health Monitoring of Arch Bridges," **C.R. Fischer**, PhD Dissertation, University of Illinois Chicago, 2011.
- "A Hybrid Approach for Safety Assessment of the Double Span Masonry Vaults of the Brooklyn Bridge," I. Talebinejad, **C.R. Fischer**, and F. Ansari, Journal of Civil Structural Health Monitoring, Vol. 1, June 2011.
- "Simplified Technique for Remote Monitoring of Deflection in Arch Structures," I. Talebinejad, **C.R. Fischer**, and F. Ansari, Journal of Experimental Techniques, Vol. 37, No. 1, June 2011.
- "Numerical Evaluation of Vibration Based Methods for Damage Assessment of Cable Stayed Bridges," I. Talebinejad, **C.R. Fischer**, and F. Ansari, Journal of Computer-Aided Civil and Infrastructure Engineering, In Press, Vol. 26, No. 3, 2011.
- "Serially Multiplexed FBG Accelerometer for Structural Health Monitoring of Bridges," I. Talebinejad, **C.R. Fischer**, and F. Ansari, Smart Structures and Systems, Vol. 5, No. 4, July 2009.
- "Structural Health Monitoring of the Lingotto Cable-Stayed Pedestrian Bridge with Optical Fiber Sensors," I. Talebinejad, **C.R. Fischer**, et al., Proceedings of the Third International Conference on Structural Health Monitoring of Intelligent Infrastructure, November 2007.
- "Structural Health Monitoring of a Long-Span Cable-Stayed Bridge," G. Zhang, Z. Zhang, and **C.R. Fischer**, Journal of Intelligent Material Systems and Structures, Vol. 18, August 2007.
- "Kansas City Hyatt Hotel Skywalk Collapse," C.R. Morin and **C.R. Fischer**, Journal of Failure Analysis and Prevention, Vol. 6, No. 2, April 2006.
- "Roof Failure Due to Snow: The Implications of Improperly Applying Code Provisions," **C.R. Fischer** and D.A. Wojnowski, Forensic Engineering: Diagnosing Failures and Solving Problems, Proceedings of the 3rd International Conference on Forensic Engineering, November 2005.
- "Historical Failures: Kansas City Hyatt Hotel Skywalk Collapse," C.R. Morin and **C.R. Fischer**, Proceedings of the 2005 Materials Science & Technology (MS&T) Conference and Exhibition, September 2005.
- "Effect of Boundary Conditions on the Modal Analysis of a Staircase," M.T. Kenner, J.A. Wilkinson, and **C.R. Fischer**, ABAQUS Users' Conference Proceedings, May 2004.
- "SEERPlan Manual - Structural Engineers Emergency Response Plan," **C.R. Fischer**, et al., National Council of Structural Engineers Association, August 2003.

“Alternative Shear Panel Configurations for Light Wood Construction: Development, Seismic Performance, and Design Guidance,” J. Wilcoski, **C.R. Fischer**, et al., Engineering and Research Development Center, ERDC/CERL TR-02-12, April 2002.

Presentations

“Emergency Shoring and Building Stabilization: Loads and Strategies,” **C.R. Fischer**, ASCE Structural and GeoConfluence, St. Louis, MO, November 2024.

“Lifting and Rigging,” **C.R. Fischer**, Armour College of Engineering, Department of Civil, Architectural & Environmental Engineering, Illinois Institute of Technology, Chicago, IL, April 2024.

“Environmental Forces and Construction Defects,” **C.R. Fischer**, The Missouri Bar Fall Committee Meetings, Construction Law, November 2023.

“More Than Pretty Pictures, Using Drones in Forensic Investigations,” **C.R. Fischer**, Defense Trial Counsel of Indiana 28th Annual Conference, French Lick, IN, November 2021.

“Fall Protection for Buildings,” **C.R. Fischer**, Illinois Defense Counsel, Chicago, IL, August 2019.

“Structural Damage and Repair Requirements,” **C.R. Fischer**, Western Loss Association Spring Seminar, Oak Brook, IL, March 2019.

“Metal Roofing: Installation and Damage Assessment,” **C.R. Fischer**, Illinois Association of Mutual Insurance Companies Claims Seminar, Bloomington, IL, February 2019.

“Fall Protection for Buildings,” **C.R. Fischer**, Armour College of Engineering, Department of Civil, Architectural & Environmental Engineering, Illinois Institute of Technology, Chicago, IL, February 2018.

“ATC-45: Post Flood and Wind Safety Evaluation of Buildings,” **C.R. Fischer**, Illinois Emergency Management Agency, Rockford, IL, December 2013.

“Safety Assessment of Brooklyn Bridge Masonry Vaults Based on Real Time Monitoring and Laboratory Tests,” I. Talebinejad, **C.R. Fischer**, F. Ansari, and B.S. Yanev, 1st Middle East Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Structures, Dubai, UAE, February 8–10, 2011.

“Fiber Optic Monitoring of the Masonry Arch Approach Spans in the Brooklyn Bridge,” **C.R. Fischer**, I. Talebinejad, F. Ansari, and B.S. Yanev, NDE/NDT for Highways and Bridges: Structural Materials Technology, New York, NY, August 16–20, 2010.

“Structural Health Monitoring of the Masonry Arch Approach Spans in Brooklyn Bridge,” I. Talebinejad, **C.R. Fischer**, F. Ansari, and B.S. Yanev, Proceedings of the Transportation Research Board 89th Annual Meeting, Washington, DC, January 2010.

“Low Frequency Fiber Optic Accelerometer for Civil Structural Health Monitoring,” I. Talebinejad, **C.R. Fischer**, and F. Ansari, 16th SPIE Annual International Symposium on Smart Structures/NDE, San Diego, CA, March 9–12, 2009.

"ATC-45: Post Flood and Wind Safety Evaluation of Buildings," **C.R. Fischer**, Virginia Structural Engineers Council, Williamsburg, VA, July 2009.

"ATC-45: Post Flood and Wind Safety Evaluation of Buildings," **C.R. Fischer**, Disaster Response Training Seminar for Architects and Engineers Emergency Response Task Force, Rhode Island State Building Commissioner's Office, and Rhode Island State Emergency Management Agency, Lincoln, RI, 2007 & 2009.

"Structural Health Monitoring of the Lingotto Cable-Stayed Pedestrian Bridge with Optical Fiber Sensors," **C.R. Fischer**, Third International Conference on Structural Health Monitoring of Intelligent Infrastructure, Vancouver, Canada, November 2007.

"Uncomfortable Structural Vibrations and How to Avoid Them in Structural Design," **C.R. Fischer**, University of Illinois Structural Engineers Association, Urbana, IL, September 2007.

"Planning and Procedures for Post-Disaster Structural Evaluations," **C.R. Fischer**, Structural Engineers Association of Massachusetts, Boston, MA, April 2007.

"Strain Aging Embrittlement of Cold Bent Bars," C.R. Morin and **C.R. Fischer**, Failure Analysis Symposium, ASM International Materials Science & Technology (MS&T) Conference and Exhibition, Cincinnati, OH, October 2006.

"Emergency Response Engineering," **C.R. Fischer**, University of Illinois American Society of Civil Engineers, Champaign, IL, October 2006.

"Roof Failure Due to Snow: The Implications of Improperly Applying Code Provisions," **C.R. Fischer**, 3rd International Conference on Forensic Engineering, London, UK, November 2005.

"Masonry Design," **C.R. Fischer**, Judson College, Architecture Department, 2002 & 2004.

"Planning and Procedures for Post-Disaster Structural Evaluations," **C.R. Fischer**, Structural Engineers Association of Montana, Helena, MT, November 2004.

"Planning and Procedures for Post-Disaster Structural Evaluations," **C.R. Fischer**, Structural Engineering Association of Rhode Island, Warwick, RI, June 2004.

"Planning and Procedures for Post-Disaster Structural Evaluations," **C.R. Fischer**, Structural Engineers Association of Arizona, Phoenix, AZ, April 2004.

"Planning and Procedures for Post-Disaster Structural Evaluations," **C.R. Fischer**, Structural Engineers Association of Illinois, Chicago, IL, January 2004.

"Planning and Procedures for Post-Disaster Structural Evaluations," **C.R. Fischer**, Structural Engineers Association of Vermont, Randolph, VT, November 2003.

"Planning and Procedures for Post-Disaster Structural Evaluations," **C.R. Fischer**, Delaware Valley Association of Structural Engineers, Philadelphia, PA, October 2003.

"Planning and Procedures for Post-Disaster Structural Evaluations," **C.R. Fischer**, Structural Engineers Association of Utah, Salt Lake City, UT, October 2003.

“Planning and Procedures for Post-Disaster Structural Evaluations,” **C.R. Fischer**, Structural Engineers Association of Illinois, Bloomington, IL, April 2003.

“Understanding Structural Distress and Structural Assessments,” **C.R. Fischer**, Mutual Inspectors and Adjusters Association, Des Moines, IA, March 2004.

“The Ins and Outs of Roofing,” **C.R. Fischer**, National Association of Mutual Insurance Companies Claims Conference, Tampa, FL, February 2004.

“Everything You Ever Wanted to Know... Under One Roof,” **C.R. Fischer**, Illinois Association of Mutual Insurance Companies Annual Convention, Peoria, IL, August 2003.

“Post-Disaster Structural Assessment,” **C.R. Fischer**, Civil and Architectural Engineering Department, Illinois Institute of Technology, Chicago, IL, March 2003.

“Preliminary Impressions from the World Trade Center Disaster,” **C.R. Fischer**, Central Illinois Chapter of Structural Engineers Association of Illinois, Bloomington, IL, March 2002.

“Structural Disaster Preparedness Issues,” **C.R. Fischer**, University of Illinois American Society of Civil Engineers, Urbana, IL, March 2002.

“Structural Disaster Issues,” **C.R. Fischer**, Chicago Committee on High Rise Buildings, Chicago, IL, January 2002.

“World Trade Center Disaster: Examining Structural and Geotechnical Damages and Perturbation to Our Local Community,” **C.R. Fischer**, National Science Foundation Earthquake Engineering Research Center, Urbana, IL, November 2001.