



PEOPLE

IN THIS SECTION:

PEOPLE

[Complete Listing](#)

[Faculty](#)

[Adjunct Faculty](#)

[Emeritus Faculty](#)

[Administrative Staff](#)

[Research Staff](#)

[Graduate Students](#)

[Advisory Council](#)

[Cornellians of Note](#)



[Group Members](#) ▶

NEWS:



[O'Rourke named ASCE Distinguished Member](#)

[Member](#)



[Professor Thomas O'Rourke](#)

[selected to receive the 2014 Le Val Lund Award](#)



[Thomas O'Rourke: Speaker in the T.T. Soong Student Lecture Series](#)

[Home](#) ▶ [People](#) ▶ Profile

THOMAS DENIS O'ROURKE

Biography

Professor O'Rourke has been a member of the teaching and research staffs at Cornell University and the University of Illinois at Urbana-Champaign. His teaching and professional practice include geotechnical engineering for earth retention systems, foundations, and soil/structure interaction; earthquake engineering; underground construction technology, and engineering of large, geographically distributed systems such as water supplies, gas and liquid fuel systems, electric power, and transportation facilities. He has authored or co-authored over 350 publications on geotechnical, underground, earthquake engineering, and impact of extreme events on civil infrastructure.

He is an elected member of the US National Academy of Engineering (1993) and a Fellow of the American Association for the Advancement of Science (2000). He was awarded the C.A. Hogentogler Award from ASTM in 1976 for his work on the field monitoring of large construction projects.

In 1983 and 1988, Prof. O'Rourke received the Collingwood and Huber Research Prize, respectively, from ASCE for his studies of soil and rock mechanics applied to underground works and excavation technologies. In 1995 he received the C. Martin Duke Award from ASCE for his contributions to lifeline earthquake engineering, and in 1997 he received the Stephen D. Bechtel Pipeline Engineering Award from ASCE for his contributions to pipeline engineering. In 2002 he received the Trevithick Prize from the British Institution of Civil Engineers and was designated



Thomas Denis O'Rourke

Dept: Civil and Environmental Engineering
Title: Thomas R. Briggs Professorship in Engineering
Address: Room 273 Hollister Hall
Phone: 607 255-6470
email: [return to list](#) ▶



[Cornell disaster expert O'Rourke named to panel on effects of](#)

[Hurricane Katrina in New Orleans](#)



[Katrina flooding caused more by history and politics than](#)

[engineering, Cornell's O'Rourke says](#)

[says](#)

[See all news](#) ▶

as an NSF Distinguished Lecturer. He received the 2003 Japan Gas Association Best Paper Award and the 1996 EERI Outstanding Paper Award. In 2005 he received the Ralph B. Peck Award from ASCE. He gave the 2009 Rankine Lecture in London, UK, sponsored by the British Geotechnical Association. He received both the College of Engineering Distinguished Service Award (2005) and the CEE Distinguished Alumnus Award (2000) from the University of Illinois. In 1998 and 2003, Prof. O'Rourke received Cornell University's College of Engineering Daniel Lazar and Kenneth Goldman Excellence in Teaching Awards, respectively. He holds a US patent for innovative pipeline design, with patent pending for a remote environmental monitoring system.

In 1998 he was elected to the Earthquake Engineering Research Institute (EERI) Board of Directors and served as President from 2003-2004. He testified before the US House of Representatives Science Committee in 1999 on engineering implications of the 1999 Turkey and Taiwan earthquakes and in both 2003 and 2009 on the reauthorization of the National Earthquake Hazards Reduction Program (NEHRP). He has served on numerous earthquake reconnaissance missions. He was a member of the US National Academies Committee on New Orleans Regional Hurricane Protection Projects. He is a member of the NIST Advisory Committee for Earthquake Hazards Reduction, which serves as the national advisory committee for NEHRP.

Professor O'Rourke has developed engineering solutions for problems concerning foundation performance, ground movement effects on structures, earth retaining structures, pipelines, earthquake engineering, tunneling, and infrastructure rehabilitation, both on a research and consulting basis. He has investigated and contributed to the mitigation of the effects of extreme events, including natural hazards and human threats, on civil infrastructure systems. He has developed techniques for evaluating ground movement patterns and stability for a variety of excavation, tunneling, micro-tunneling, and mining conditions. He has developed analytical methods and siting strategies to mitigate pipeline and tunnel damage during earthquakes, analyzed and designed high pressure pipelines, and has established full-scale testing facilities for underground facilities and pipelines. He has developed geographical information systems and network analysis procedures for geographically distributed infrastructure systems in areas vulnerable to earthquakes and other natural disasters. He has assisted in the development and application of advanced polymer and composite materials for the in-situ rehabilitation of water supply and gas distribution systems.

He has served as chair or member of the consulting boards of many large underground construction projects, as well as the peer reviews for projects associated with highway, rapid transit, water supply, and energy distribution systems. Many of these projects have included seismic design assessments. Representative projects include the Third NYC Water Tunnel, Boston CA/T, risk assessment for the First NYC Water Tunnel and NYC aqueducts, Tren Urbano Rapid Transit System, NYC

Second Avenue Subway and Fulton St. Transit Center, soft and hard rock tunneling for the Massachusetts Water Resources Authority, Dulles Airport underground expansion, San Francisco Transbay Transportation Center, TJPA Downtown Extension Project involving hard and soft ground tunneling, seismic design of tunnels in Turkey, Trans-bay Tube Seismic Retrofit, seismic design for the San Francisco water supply (including the SFPUC Crystal Springs By-pass Tunnel, Bay Tunnel, Irvington Tunnel, and Bay Division Pipelines), the Silicon Valley Rapid Transit System in San Jose, CA, geotechnical and seismic criteria for the Alaskan Way Viaduct in Seattle, WA, and many others.

He is a member of the ASCE, ASME, ASTM, AAAS, ISSMEE, EERI, and IAEG. He was a member of the NSF Engineering Directorate Advisory Committee, and served on the Executive Committee of the Multidisciplinary Center for Earthquake Engineering Research. He was chair of the U.S. National Committee on Tunneling Technology and co-chair of the Institute for Civil Infrastructure Systems. He was a member of the NRC Geotechnical Board, Board on Energy and Environmental Systems, and Board on Water Science and Technology. He is a past chair of the UTRC Executive Committee and both the ASCE TCLEE Executive Committee and Technical Committee on Gas and Liquid Fuel Lifelines. He is a past chair of the ASCE Earth Retaining Structures Committee, as well as past president of the ASCE Ithaca Section, and was a member of the intermunicipal water commission in his home town.

Research Interests

Professor O'Rourke has developed engineering solutions for problems concerning foundation performance, ground movement effects on structures, earth retaining structures, pipelines, earthquake engineering, tunneling, and infrastructure rehabilitation, both on a research and consulting basis. He has investigated and contributed to the mitigation of the effects of extreme events, including natural hazards and human threats, on civil infrastructure systems. He has developed techniques for evaluating ground movement patterns and stability for a variety of excavation, tunneling, micro-tunneling, and mining conditions. He has developed analytical methods and siting strategies to mitigate pipeline and tunnel damage during earthquakes, analyzed and designed high pressure pipelines, and has established full-scale testing facilities for underground facilities and pipelines. He has developed geographical information systems and network analysis procedures for geographically distributed infrastructure systems in areas vulnerable to earthquakes and other natural disasters. He has assisted in the development and application of advanced polymer and composite materials for the in-situ rehabilitation of water supply and gas distribution systems.

Teaching Interests

Professor O'Rourke taught the following classes: 1) CEE 4400/6400 - Foundation Engineering, Fall, 2012, 26 students; and 2) CEE 4410/6410 - Retaining Structures and Slopes, Spring, 2014, 14 students.

Service Interests

Professor O'Rourke is a member of the ASCE, ASME, ASTM, AAAS, ISSMEE, and EERI. He was a member of the NSF Engineering Directorate Advisory Committee, and served on the Executive Committee of the Multidisciplinary Center for Earthquake Engineering Research. He was chair of the U.S. National Committee on Tunneling Technology and co-chair of the Institute for Civil Infrastructure Systems. He was a member of the NRC Geotechnical Board, Board on Energy and Environmental Systems, and Board on Water Science and Technology. He is a past chair of the UTRC Executive Committee and both the ASCE TCLEE Executive Committee and Technical Committee on Gas and Liquid Fuel Lifelines. He is a past chair of the ASCE Earth Retaining Structures Committee, as well as past president of the ASCE Ithaca Section, and was a member of the intermunicipal water commission in his home town. He has also served as chair or member of the consulting boards of many large underground construction projects, as well as the peer reviews for projects associated with highway, rapid transit, water supply, and energy distribution systems.

In 1998 he was elected to the Earthquake Engineering Research Institute (EERI) Board of Directors and served as President from 2003-2004. He testified before the US House of Representatives Science Committee in 1999 on engineering implications of the 1999 Turkey and Taiwan earthquakes and in both 2003 and 2009 on the reauthorization of the National Earthquake Hazards Reduction Program (NEHRP). He has served on numerous earthquake reconnaissance missions. He was a member of the US National Academies Committee on New Orleans Regional Hurricane Protection Projects. He is a member of the NIST Advisory Committee for Earthquake Hazards Reduction, which serves as the national advisory committee for NEHRP.

Selected Publications

- ▶ O'Rourke, Thomas Denis, S-S. Jeon, S. Toprak, M. Cubrinovski, M. Hughes, van Ballegooy, S., D. Bouziou. 2014. "Earthquake Response of Underground Pipeline Networks in Christchurch, NZ." *Earthquake Spectra* .
- ▶ Ballegooy, van, P. Malan S., V. Lacrosse, M. E. Jacka, M. Cubrinovski, J. D. Bray, Thomas Denis O'Rourke, S. A. Crawford, H. Cowan. 2014. "Assessment of Liquefaction-Induced Land Damage for Residential Christchurch." *Earthquake Spectra J.* .
- ▶ O'Rourke, Thomas Denis, J. Jung, N A Olson. 2013. "Lateral Soil-Pipe Interaction in Dry and Partially Saturated Sand." *Journal of Geotechnical and Geoenvironmental Engineering* 139 (12): 2028-2036.
- ▶ O'Rourke, Thomas Denis, J Jung. 2013. "Numerical Approach for Upward Soil-Pipe Interaction in Dry Sand." *Canadian Geotechnical Journal* 50: 247-253.
- ▶ Xie, X., M. D. Symans, M. J. O'Rourke, T. H. Abdoun, Thomas Denis O'Rourke, Michael Palmer, Harry Eaton Stewart. 2013. "Numerical

Modeling of Buried HDPE Pipelines Subjected to Normal Faulting: A Case Study." Earthquake Spectra 29 (2): 609-632.

[see more publications](#) ▶

Selected Awards and Honors

- ▶ Elected Member to the National Academy of Engineering (National Academy of Engineering) 1993
- ▶ Stephen D. Bechtel Pipeline Engineering Award (American Society of Civil Engineers) 1997
- ▶ Ralph B. Peck Award (GeoInstitute of the American Society of Civil Engineers) 2005
- ▶ Trevithick Prize (British Institution of Civil Engineers) 2002
- ▶ Le Val Lund Award for Practicing Lifeline Risk Reduction (American Society of Civil Engineers) 2014

Education

- ▶ BS (Civil Engineering), Cornell University, 1970
- ▶ MS (Civil Engineering), University of Illinois at Urbana-Champaign, 1973
- ▶ Ph D (Geophysical Engineering), University of Illinois at Urbana-Champaign, 1975

[College of Arts and Sciences](#)

[College of Agriculture and Life Sciences](#)

[College of Engineering](#)



[Site Map](#) [Contact us](#) [Cornell University](#)