

## **Technical Consulting: The Intersection of Mythbusters, CSI, and Civil Engineering**

**Troy Morgan, PE**  
Exponent

### **Abstract**

Networks of complex, interdependent systems and rapidly evolving technology are markers of modern civilization. Many of these technologies, while born in academia, are implemented and refined in the world of industry. As today's complex ideas are put into practice, there is an increasing tendency for things to fail, and an urgent desire to prevent such failures. This is the realm of technical consulting, and the subject of this talk. Several projects from structural engineering, including nuclear safety analysis, earthquake reconnaissance, and hurricane storm surge analysis are presented to highlight the broader role of technical consultants in a world which increasingly depends on sophisticated engineering to protect itself from both natural and human-induced catastrophe.

### **Short Bio**



Dr. Troy Morgan is a Senior Managing Engineer at Exponent, specializing in the risk analysis and performance assessment of structures under extreme loading such as earthquakes, wind, flood, and explosions. He has served as a consultant on major projects, assisting with the analysis and design of essential structures including healthcare facilities, laboratories, industrial buildings, and critical infrastructure requiring sophisticated analysis techniques and the applications of advanced seismic protective systems. Dr. Morgan also has substantial consulting experience with the nuclear power generating industry, evaluating seismic risk to new and existing safety critical structures and equipment through ground motion selection/scaling and nonlinear structural analysis including soil-structure interaction. Prior to joining Exponent, Dr. Morgan was Assistant Professor at the Center for Urban Earthquake Engineering at the Tokyo Institute of Technology in Japan. He has also held positions as a post-doctoral researcher at the Pacific Earthquake Engineering Research Center and as a design engineer at Forell/Elsesser Engineers Inc.

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