

### Title/Firm

Founder and Chief Executive Officer  
Geocomp Corporation and GeoTesting Express, Inc.

### Years of Experience

50

### Education

Ph.D. M.I.T. in geotechnical engineering, 1974  
M.S.C.E. M.I.T. in geotechnical engineering, 1972  
B.S.C.E. Univ. of California at Davis in civil engineering, 1970

### Professional Registration

Registered Professional Engineer in  
MA, NH, CN, NY, GA, AZ, WV, TN, KT, AL and CA

### Areas of Specialized Knowledge

Design and construction of large earthworks, including dams and levees  
Value engineering for earthworks and earth retention systems  
Active Risk Management  
Instrumentation and real-time monitoring systems  
Minimizing impacts of construction on adjacent facilities  
Mechanical and physical properties of soil, rock and geosynthetics  
Forensic evaluations and litigation support

### Professional Societies

American Society of Civil Engineers, Honorary Member  
ASTM D18, Honorary Member  
ASTM D35, Former Member of Executive Committee  
Geo-Institute, Former Chair of TPC, D.GE, AGP Board Member  
Geosynthetic Institute, Member  
USSD, SME-UCA, Moles

### Employment History

GEOCOMP Corporation –1982 to present  
GeoTesting Express, Inc. – 1991 to present  
T.W. Lambe, Inc. – 1972 to 1982  
D'Appolonia Consulting Engr – 1972  
Massachusetts Institute of Technology – 1972 to 1982  
Woodward Clyde Consultants – 1970-1971  
Perini Corporation – 1967 to 1969

### Significant Publications/Presentations

Significant papers from 100+ publications in geotechnical engineering:  
"Instrumentation and Monitoring of Slope Stability", State-of-the-Art Paper for GeoCongress, ASCE GSP 231, 2224-2245. doi: 10.1061/9780784412787.22. 2013.  
"Dam Safety Performance Monitoring and Data Management – Best Practices." Co-authored with W. Broderick. CEATI International Report No. T082700-0210. 2012.  
"What Caused the I-Wall Failures at the EBIA North and South Breaches?" Expert report to US Dept. of Justice, Washington DC. March 12, 2012.  
"Principles of Geotechnical Monitoring", *ICE Manual of Geotechnical Engineering*, Vol. II, co-authored with J. Dunncliff and J. Standing. (2012)  
"Stress Path Method-Second Edition", *Proc. ASCE:JGED*, Vol. 105, No. GT6, pp. 727-738, coauthored with T. William Lambe, 1979.  
"Safety of a Constructed Facility: Geotechnical Aspects", *Proc. ASCE:JGED*, Vol. 107, No. GT3, pp. 339-352, coauthored with T. William Lambe and Francisco Silva, 1981.  
"Effective Uses of Finite Element Analysis in Geotechnical Engineering," *JBSCE*, 14(2), pp. 89-98, 1999.  
"State of Practice of Geotechnical Laboratory Testing," Proc. XVII Venezuelan Geotechnical Seminar, Caracas, Venezuela, Nov, 2002.  
"Geotechnical Engineering and Judgment in the Information Age," ASCE GSP GeoCongress-2006, Atlanta, GA.  
"Why Monitor Performance?" *ASCE GSP 117*. Keynote paper presented to 7<sup>th</sup> International Symposium on Field Measurements in GeoMechanics, Boston, 2007.  
"Factor of Safety and Probability of Failure," *ASCE:JGGE*. Vol. 120. No.12. pp. coauthored with F. Silva and T.W. Lambe. 2009.

### Significant Honors/Awards

2019 ASCE Geo-Institute H. Bolton Seed Award and Lecture  
2015 Elected to the Moles which recognizes leaders in heavy civil construction  
2014 ASTM Hotentogler Award for paper on Resonant Column Testing  
2009 Elected to Academy of Geo-Professionals  
2008 Elected to National Academy of Engineers  
2007 Recipient of 2007 Distinguished Alumnus of College of Engineering, Univ. of California at Davis.  
2006 Invited Keynote Speaker for Geo-Institute Geo-Congress 2006, Atlanta.  
2004 ASTM D-18 Woodland G. Shockley Award for exceptional and long-term meritorious service.  
2003 State-of-the-Practice Lecture for Sowers Lecture, Georgia Tech, 2003.  
2000 Invited Keynote Speaker for Geo-Institute Specialty Conference on Performance Confirmation of Constructed Geotechnical Facilities.  
1998 ASTM award for standard on Interface Shear Strength of Geosynthetic Clay Liners.  
1994 IACMAG Award for Significant Paper in Geomechanics.  
1984 ASCE Wellington Prize for "Differential Settlement Criteria for Tanks".

### Professional Achievements in Civil Engineering

Dr. Marr is a professional civil engineer with specialized expertise in design of the underground portions of large earthwork facilities; design of slopes, MSE walls and cover systems; WEB-based performance monitoring; testing of soils, rocks and geosynthetics; forensic engineering; and active risk management. He has provided consulting services on a wide variety of projects including earthen dams, levees, tailings and ash storage, tunnels, excavations, embankments, natural slopes, MSE structures, land reclamation, landfills, and foundations. Dr. Marr has spent his 44-year professional career focused on incorporating applied research into geoenvironmental and civil engineering practice. He has repeatedly demonstrated the ability to identify emerging trends in research and technology and apply those developments in ways that produce safer and more economical solutions to a variety of infrastructure problems. He started his professional career teaching and managing research at MIT. Dr. Marr has made significant contributions in advanced numerical analysis, laboratory testing to measure engineering properties, monitoring performance during construction to minimize collateral damage, and application of risk management principles to underground engineering. Among his accomplishments are:

- Co-author of book on Dam Safety Performance Monitoring and Data Management – Best Practices.
- Guided first known effort to use probabilistic failure analyses of a dam to design an instrumentation system to manage risk of failure for the US Army Corps of Engineers Clarence Cannon Dam.
- As a member of Board of Consultants for foundation design of the 7 km long Oosterschelde Storm Surge barrier, the final and most challenging component of Holland's flood protection system, was instrumental in proving that key mechanism of performance for design was deformation and not liquefaction from repeated wave loading.
- Developed methodology to improve earthquake resistance of loose soils by permanent dewatering that saved an Owner more than \$60,000,000 and became a design standard for Japanese Fire Defense Agency.
- Developer of the concepts of "Active Risk Management," "Key Risk Indicators" and "Risk Monitoring" to better manage risks associated with heavy civil construction. His efforts contributed to an estimated savings of \$500,000,000 on the Central Artery/Tunnel project from avoided risks. Now applying ARM to portions of MassDOT \$3B Accelerated Bridge Program.
- Developer of a suite of devices to automate the measurement of mechanical properties of soil, rock and geosynthetics that are used worldwide by universities, governmental agencies and commercial firms to improve the quality and reduce the time and effort to test geo-materials.
- Founder of GeoTesting Express Inc, one of largest geotechnical labs in the US and specializing in high quality testing of soils, rock and geosynthetics with fast turnaround.
- Developer of an integrated iSite™ system to monitor sensors and information located anywhere in the world via a Web browser. This system is increasingly used to monitor the safety of facilities during construction and operation, provide early warnings of adverse performance and provide asset management.
- Member of Interagency Performance Evaluation Task Force that evaluated the cause of levee failures in New Orleans from Hurricane Katrina and expert for the US Dept. of Justice in major litigation resulting from failure of the IHNC levees that flooded the lower 9<sup>th</sup> Ward.
- Leader of project team using Best Practices in site investigation, laboratory testing and analysis to evaluate TVA CCR facilities and saving client more than \$200 million in avoided mitigation work.

Dr. Marr has also participated in several forensic investigations on projects that experienced problems with geotechnical/geological causes. His in-depth knowledge of the properties and behavior of geologic materials, advanced numerical analysis, testing, ground improvement and remediation methods, and instrumentation to monitor performance have been very helpful to owners, contractors, engineers, consulting boards and project advisors.

As founder and principal shareholder of Geocomp Corporation, Dr. Marr has guided the company's efforts to adapt new technologies to underground challenges. Starting with two people in 1982, the firm has grown to a staff of 100 people with an annual turnover of over \$20,000,000. Today Geocomp is known internationally for its high quality automated laboratory testing equipment and nationally for its strong capabilities in testing of geomaterials, monitoring of performance of constructed facilities, and analysis and design for complex underground facilities. Dr. Marr is sought out for his leadership abilities on difficult assignments. This is best illustrated by a sampling of the projects he is currently or recently involved with that involve skill sets comparable to those required in this work:

- Expert for defense in major litigations involving large settlement of luxury high rise in San Francisco.
- Provide risk register for design, construction and operation of 1.5 km long underground frozen barrier at Fukushima Nuclear Power site to stop flow of irradiated water into the sea.
- Project Executive for on-call risk assessment team to New York City Transit on new capital construction projects, including \$1 billion rehab of the L Line tunnel beneath East River.
- Advisor to owner for remediation of site with new construction where river bank is failing by global instability.
- Expert in litigation involving failure of reinforced soil slopes on new road construction in Utah.
- Member of IPET team to determine cause of levee failures during Hurricane Katrina.
- External peer reviewer for design and construction of IHNC Risk Reduction Measures in New Orleans, the largest civilian design-build project ever awarded by the USACE now estimated at \$1.3B.
- Consultant to Palo Verde Nuclear Station on repairs and upgrades to cooling water storage facilities resulting from slope instabilities and groundwater.
- Consultant to Ohio DOT slope failures and foundations for major new suspension bridge across Cuyahoga River in Cleveland.
- Evaluation of global instability and monitoring of 45 ft deep excavation surrounded by several historic multi-story buildings in Savannah, GA
- Expert witness for US Department of Justice on litigation arising from the stability failures of levees during Hurricane Katrina.
- Design of excavation support systems, jacking pits, pile foundations and retaining walls for general contractor for Eastside Access Harold Structures project.
- Design of slopes and cover systems for several landfills and testing of materials used for construction.
- Geotechnical designer of record for 110 ft deep excavation adjacent to Ohio River for new hydroelectric facility
- Expert to TVA for seismic stability of all of their coal ash storage impoundments at 11 sites.
- Team leader for real-time monitoring of Kentucky Lock and Dam during construction of new lock.
- Monitoring contractor for new generating facilities on banks of USACE dams at Smithland and Willow Island.
- Monitoring Contractor to NY Port Authority and Phoenix Constructors on the reconstruction of the World Trade Center in Manhattan.
- Group leader to provide real-time monitoring of vibrations and movements of adjacent structures, including active subway line during new construction of East Side Access project in Manhattan, NY, including Grand Central Station.
- Monitoring subcontractor on two major subway projects in Los Angeles to help minimize potential for global stability failures and damage to adjacent structures from construction.

In addition to a demanding work schedule, Dr. Marr has consistently devoted approximately 10% of his time to professional activities. He frequently lectures to universities and professional meetings on subjects in real-time monitoring, risk management and geotechnical engineering. Examples of significant lecture invitations include:

- H. Bolton Seed Lecture, ASCE Geo-Institute, 2019 "Geotechnical Judgment and Risk."
- Special Lecture for Cambridge University College of Engineering 2017.
- Keynote Lecture on monitoring of dams at 2015 Conference on Field Measurements in Geomechanics, Sydney, Australia
- State-of-the-Art Keynote Lecture for 2013 Geo-Congress in San Diego on "Instrumentation and Monitoring for Slopes and Embankments"
- Invited to deliver the 2012 Spencer Buchanan lecture at Texas A&M on risk management in geotechnical engineering.
- Florida Section ASCE Geo-Institute 2<sup>nd</sup> Annual Anwar Wissa Lecture on use of performance monitoring to help manage risk
- Cornell University's Schiffman Lecturer – 2011
- Keynote lecture to GeoInstitute Specialty Conference on Field Measurements in Geomechanics – 2007
- Keynote lecturer to PanAmerican Conference on Soil Mechanics and Foundation Engineering in Venezuela - 2007
- Keynote lecture to India Bengal Engineering and Science University on occasion of their 150-anniversary celebration – Jan, 2007.
- Keynote lecture to Geo-Congress – 2006
- Keynote lecture to Ohio River Valley Soils Seminar - 2006
- Keynote lecture to Boston Society of Civil Engineers – 2005.
- Keynote lecture to Venezuelan National Society of Geotechnical Engineers – 2002.

He teaches short courses on subjects in geotechnical engineering. Examples include:

- Structural Monitoring as a Risk Management Tool in Underground Construction, UCA Conference, 2009
- Monitoring to Manage Risk, Lorman Lecture Program, New York City, 2009 and 2010.
- Finite Element Method for Practicing Engineers taught at MIT, University of California at Berkeley and University of Colorado at Boulder.
- Geotechnical Instrumentation. For National Highway Institute taught to State DOT staff in CA, NM, PA, FL, SC, OH and CO.
- Soil Properties. Presented to Florida Department of Environmental Protection.

Dr. Marr has also provided significant service to the ASCE Geo-Institute and the American Society for Testing Materials. He currently serves as President of the Board of Trustees for the Academy of Geo-Professionals which provides Board Certification in Geotechnical Engineering in the US. He chaired the ASCE Technical Publications Committee, which oversees the periodic publication of two technical journals and a monthly magazine. In 2002 he chaired a task group to select significant papers in geotechnical engineering from US publications for republication as an ASCE Special Publication. He chaired the ASTM Subcommittee D35.01 on Mechanical Properties of Geosynthetics and Subcommittee D18.95 on Data Automation Practices in Geotechnical Engineering and D18.23 on Soil and Rock Instrumentation. He organized three ASTM conferences and edited the conference proceedings. He organized and chaired the 2007 Geo-Institute 7<sup>th</sup> International Conference on Field Measurements in GeoMechanics and will deliver one of three keynote lectures in the upcoming 9<sup>th</sup> Conference to be held in Australia.

Dr. Marr serves as a leader in the practice community and a respected professional in the academic environment. He is frequently invited to deliver presentations to university students. He served on the Visiting Committee for the University of Texas at Austin for 3 years. His professional contributions earned him election to the National Academy of Engineering in 2008 and membership in the Moles, a prestigious US organization of tunneling professionals.

W. Allen Marr, P.E., Ph.D., NAE  
Representative Projects Related to Failures, Claims and Litigation

## **Recent Projects**

### **MSE Retaining Wall, NY**

Evaluated cause of failure for MSE retaining wall on I-287 and advise NY DOT on methods to assess safety of other MSE walls.

### **Colony MSE Retaining Walls, Park City, Utah**

Evaluate causes of failure, develop remaining life projections and assist with settlement negotiations for large project involving MSE walls.

### **MSE Retaining Walls, Keyesville, Utah**

Advice to owner on methods of repair for defective MSE walls on I-15.

### **Cinema Complex, NH**

Provided expert advice to defendant on possible sources of water intrusion into new cinema facility.

### **MSE Retaining Wall, Collin County, Texas**

Expert services to defendant as part of a \$100 million claim of construction defects. (Settled).

### **San Vicente Pipeline, San Diego, CA**

Provided expert engineering services for plaintiff for differing site condition claim of unexpected harder rock. (Testimony to Dispute Review Board. Settled)

### **Thomas & Hutton Engineering et al v. ECS Southeast et al, GA**

Provided expert engineering services to plaintiff regarding failure of a walkway platform beside the Savannah River. (Provided deposition.)

### **Terra Contracting, Inc. v. EMD Chemicals et al., VA**

Provided expert engineering services to plaintiff on arbitration related to failed groundwater interceptor trench. (Testified to arbitrator.)

### **Evironfinance Group, LLC et al. v. The Louis Berger Group, Inc. et al., NJ**

Provided expert engineering services to defendant on litigation related to alleged design defects and failed retaining structures during storms. (Settled)

### **Jacksonville Port Authority v. Yates et al, FL**

Provided expert engineering services to defendant on litigation related to design and construction quality control for 120-acre container port facility. (Expert report)

### **Atlantic Coast Materials v. South Carolina State Ports Authority, SC**

Provide expert engineering services to plaintiff in litigation related to failure of a berthing structure loaded with large pile of aggregate. (Settled)

### **Town of Glastonbury, CT**

Provided expert engineering services to Owner in connection with slope failure on bank of Connecticut River, including expert engineering services for litigation support. (Ongoing)

### **US Army, Ft. Jackson, SC**

Expert services for USDOJ related to failure of 3 dams during heavy rainfall and subsequent flooding of homes (Gave deposition, ruling in favor of US).

### **2D Construction, Ohio**

Expert services for defendant in construction claim related to collapse of a deep excavation.

### **Expert services in litigation over settlement and tilt of high-rise building, San Francisco, CA**

Expert advice to legal team defending adjacent property owner and consultants for alleged contribution to settlement and tilt of high rise building from adjacent construction of deep excavations with presentations to mediation team. (ongoing)

### **Expert services in settlement of homes, Redwood City, CA**

Expert services to legal team defending against \$100 million claim for damages due to foundation settlement of 140 homes.

### **SELA Project, New Orleans**

Expert services to Civil District Court for Orleans Parish to review reports of experts for plaintiffs and defendant and advise court on technical matters.

### **Slope failure, Shrewsbury, MA**

Provide geotechnical engineering expert services to attorney in a claim against contractor (ongoing).

### **Embankment foundation failure, VA**

Provide geotechnical engineering expert services to attorney in a claim by contractor against designer (ongoing).

### **Glastonbury Boathouse, Glastonbury, CT**

Provide expert engineering services to owner to remediate slope failure and assist legal team in cost recovery.

### **Stanford Blvd Explosion, Columbia, MD**

Providing expert services to legal team determine cause of rupture of gas pipeline that lead to building explosion.

## **Older Projects**

### **Menominee Landfill, MI**

Evaluated cause of a major stability failure for plaintiff of landfill cap. Provided expert services to attorney leading to settlement of \$1,000,000 construction claim in favor of our client.

### **Meadow Pond Dam, NH**

Determined cause of failure for defendant of 35-ft high earthen dam that caused one death and substantial property damage. (Provided expert report and assisted attorneys in associated litigation.)

### **CMW Landfill, MA**

Evaluated construction deficiencies for defendant in a landfill liner and developed remedial measures acceptable to regulatory agency so that project could be completed. Subsequently provided support services to attorneys in connection with a claim to recover damages for owner.

W. Allen Marr, P.E., Ph.D., NAE  
Representative Projects Related to Failures, Claims and Litigation

**Circuit City Reinforced Slope Failure, CT**

Evaluated cause of failure of a reinforced soil slope and provided expert advice to insurance company related to repairs.

**IMC HL-2 Dam, FL**

Provided specialized laboratory testing to Consulting Board formed to determine why this dam failed during first filling.

**Kansas Power and Light Auxiliary Dam, KS**

Provided specialized laboratory services to help determine cause of failure of this earthen dam following completion of construction. Work consisted of specialized compaction and strength testing together with detailed examination of large quantity of quality control data taken in the field during construction.

**TARP Tunnel, IL**

With instrumentation and analyses, determined the cause of premature failure of polyurethane wheels for a concrete form carrier used to line a 10-mile-long tunnel. Our work identified the cause of failure and lead to changes which essentially stopped additional failures. Prepared to provide expert witness services in connection with a litigation on this project.

**Buffalo Creek Dam Failure, WV**

Examined site immediately after failure to identify cause of failure and prepared report for the National Academy of Engineering.

**Exxon Minerals Dam, TX**

Advised attorneys on cause of leaks from a reservoir in connection with a litigation on this construction project.

**Walter Bouldin Dam, AL**

Performed site and laboratory investigations to determine the cause of failure of this earthen dam and provided support services to attorneys in connection with litigation.

**Agrico Chemical Dam, FL**

Performed flow and stability analyses to help investigate cause of failure of this dam in connection with a litigation.

**Phelps Dodge Chemical Co. Dam, NM**

Performed analyses to help defendant determine likely cause of failure for a waste retention dam in connection with a litigation over damage downstream.

**Rochester Sewage Treatment Plant, NY**

Advised on causes of cracking of a settling basin for treatment plant in connection with a litigation.

**LNG Storage Facility, Qatar**

Evaluated damage to foundations for large LNG tanks caused by intense fire in connection with a litigation and advised attorney for insurance carrier.

**Richmond Cultural Center, VA**

Reviewed construction records and advised on cause of soil erosion and stability problems inside an excavation in connection with a construction claim.

**Omaha GSA Building, NE**

Investigated potential cause of failure of a tied-back wall as part of work in connection with a litigation.

**LAMTA Red Line, CA**

Provided expert engineering services for defendant in connection with claims for extra work related to leakage of groundwater into transit tunnels and stations. (Provided depositions and preparation for trial testimony.)

**Damage from Cellular Tower, MA**

Provided expert engineering services for defendant in connection with claim for damages to existing brick building due to construction of adjacent cellular phone tower. (Included deposition.)

**Shaw's Market Slope, CT**

Provided expert engineering services to evaluate cause of failure of mechanically reinforced retaining wall.

**Home Depot Site, MA**

Provided expert engineering services to evaluate cause of failure of pavement system for parking lot.

**Dearborn CSO, MI**

Provided expert engineering services to attorneys for plaintiff in connection with litigation for design of shafts and tunnel in limestone. (Included deposition.)

**Coakley Landfill, NH**

Provided expert engineering services for plaintiff in connection with litigation over quality of sand to be used for gas venting layer in landfill cover. (Included trial testimony.)

**Central Artery/Tunnel, MA**

Provided expert engineering services for defendant in connection with litigation regarding claimed changed site conditions leading to slope stability failure. (Included testimony before Dispute Review Board.)

**San Diego Sewer Tunnel, CA**

Provided expert engineering services for plaintiff in connection with litigation regarding changed site conditions for tunnel in rock. (Included deposition.)

**Flushing Meadows CSO, NY**

Provided expert engineering services for plaintiff in connection with litigation regarding wrongful termination of subcontract to provide excavation support system by deep soil mixing. (Provided deposition and trial testimony.)

**Harvard University Beren Tennis Courts  
Cambridge, MA**

Provided expert engineering services for plaintiff in connection with failure of bond between coating and concrete slab placed on soils with high water table.

**Hopkinton Building Slab Failure, MA**

Provided expert engineering services for plaintiff in connection with failure of concrete floor slab from unknown cause and advised on design of repairs.

W. Allen Marr, P.E., Ph.D., NAE  
Representative Projects Related to Failures, Claims and Litigation

**Seaport Hotel Garage, Boston, MA**

Provided expert engineering services for plaintiff in connection with leakage through walls of underground parking garage. Provide one year of monitoring data on wall performance for use by team of experts preparing a claim.

**Hamden High School Athletic Field, CT**

Determined cause of failure of new athletic field with artificial turf and provided engineering support to contractor-plaintiff in mediation.

**Keyspan, Long Island, NY**

Provided expert engineering services to owner in connection with failure of low permeability GCL liner for base of tank storing fuel oil.

**Building Foundation, Pulaski, NJ**

Provided expert engineering services for plaintiff in connection with differing site condition claim due to unexpected rock. (Provided deposition and court testimony.)

**Newark Dam, Newark, DE**

Provided expert engineering services for plaintiff in connection with litigation over failure of reservoir geomembrane liner for 100 ft high dam.

**Westminster Landfill, MA**

Determined cause of failure for plaintiff for sliding of a landfill cover.

**Middleboro Landfill, MA**

Provided expert engineering services for defendant in connection with permitting issues on new construction of capping and liner system for MSW. (Participated in mediation.)

**Tampa Bay Reservoir, Tampa, FL**

Provided expert engineering services for defendant on collapse of loose soil related to failure of reservoir liner.

**New Doha International Airport, Qatar**

Provided expert engineering services for defendant on a \$440 million claim of different material conditions for large dredging project. (Participated in mediation.)

**Alvarado Trunk Sewer, San Diego, CA**

Provided expert engineering services for plaintiff for differing site condition claim of unexpected strong rock.

**Mass Bay Transportation Authority**

Provided expert engineering services for defendant to assist defense against claim from property owner with a failed retaining wall.

**Ellis Square Underground Parking Garage, Savannah, GA**

Provided expert engineering services for plaintiff in connection with failure of earth retention system for major excavation and assist client's legal staff in preparation of claim and defense of other claims. (Provided deposition and court testimony.)

**Keenleyside Dam Canal, Canada**

Provided expert engineering services to Owner's engineer to help determine cause of failure and potential repair schemes for major service canal to power plant.

**Levee Failures in New Orleans During Hurricane Katrina, LA**

Provided expert engineering services to USACE-IPET team to determine cause of failure for 17<sup>th</sup> Street Levee failure.

**Los Reales Landfill, Tuscon, AZ**

Provided expert engineering services in connection with disputes over quality of geosynthetic materials used for lining of a new landfill cell.

**Mass Bay Transportation Authority, MA**

Provided expert engineering services for defendant to assist with defense against claim from property owner adjacent to MBTA Green Line. (Expert report and court testimony.)

**Hartford Landfill, CT**

Determined cause of failure for sliding of a landfill cover.

**APS Palo Verde Nuclear Station, AZ**

Evaluated cause of failure of geomembrane pond liner system for 45-acre water reservoir for Owner.

**Industrial Building, Hopkinton, MA**

Evaluated cause of spalling of concrete floor slab and monitored repairs for Owner.

**St. Francis Hospital Addition, Hartford, CT**

Provided expert engineering services and litigation support to defendant related to settlement of existing building during construction of foundations for additional.

**City Market, Savannah, GA**

Provided expert engineering services for defendant on effects of adjacent excavation on cracking of a building. (Provided expert report and testified in settlement meetings with plaintiff.)

**East Bank Industrial Area, New Orleans, LA**

Provided expert engineering services to the US Dept. of Justice defending US Army Corps of Engineers for failure of levee sections during Hurricane Katrina. (Provided expert report and testified in Federal Court.)

**Confidential Case – mid-Atlantic**

Provided expert engineering services to defendant on litigation related to damage to building from adjacent excavation for a new building.

**Welch Company v. Suffolk-Berry on UMass Campus project, MA**

Provided expert engineering services to subcontractor to support claims for extra work.

**Slope failures on bank of Cuyahoga River, Cleveland, Ohio**

Advised engineers on causes of failure and recommended designs for foundations of two new bridges within the slope that were successfully constructed with savings of \$60,000,000 compared to conceptual plan.