

## Jonathan Paul Friedman | Principal Forensic Engineer, PE, PG

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### Professional Summary:

Mr. Friedman is a Professional Engineer with a broad experience base that includes projects ranging from single family residence to multi-million-dollar site developments located within the US and abroad. Mr. Friedman's specialties include forensic investigations, construction cost estimating, geotechnical and structural design as well as quality control/quality assurance compliance. Mr. Friedman's experience includes storm damage evaluations, geotechnical investigations, geotechnical design as well as structural analysis.

Projects have involved investigation, analysis and design of residential, commercial, and industrial construction along with analysis of structures that have exhibited distress or failure. Forensic related projects require root cause analysis investigations of foundations, structures and ancillary components to determine if damages are due to severe weather, construction defects, building code and or design deficiencies. Mr. Friedman has performed several litigation support and expert witness functions on civil and geotechnical related cases.

### Licenses and Certifications:

- Professional Engineer, Arizona, License #72568
- Professional Engineer, Colorado, License #31665
- Professional Engineer, Texas, License #125739
- Professional Engineer, Utah, License #6524419-2202
- Professional Engineer, Wyoming, License #8829
- Professional Geologist, Idaho, License #633

### Project Experience:

#### Representative Claim and Litigation Support

**APMT Marine Terminal, El Limon, Costa Rica.** Provided remedial construction activity monitoring and construction cost estimation related to damages caused by storm wave action to APMT Marine Terminal that was under construction. Prepared cost estimates for property damage quantum and payment on request purposes.

**Kingston Fossil Plant, Kingston, Tennessee.** Provided expert review, reporting and testimony for litigation support regarding root cause analysis, operations and maintenance, construction defects and slope stability issues associated with the failure of the ash containment system that occurred December 20, 2008. Insurance Market vs. Tennessee Valley Authority.

**Tuscany Center, Buildings 7 and 8, Austin, Texas.** Assisted with field measurements, documentation, analysis and report preparation addressing structural damage sustained to a newly constructed commercial building flatwork as a result of an exterior plumbing leak. Building was founded on swelling soil that had been treated with water saturation.

**Washington Group Building, Littleton, Colorado.** Provided expert review, opinions and reporting for litigation regarding heave and settlement of a 75,000 square foot, three story building foundation. Washington Group vs. Tarco, Inc.

**Linden Park Sub-Division, Ft. Collins, Colorado.** Provided expert review, testimony and reporting for litigation regarding wet utility pipeline backfill settlement and associated damage to street, sidewalk and single family structures. Centex Homes vs. Pate Construction Company.

**Talache Mine Run-On Control Ditch, Atlanta, Idaho.** Provided expert review, reporting and testimony for arbitration regarding construction defects and slope stability issues associated with the performance of the run-on-control water diversion ditch. Fluor Enterprises, Inc. vs. Western Const. Co., Inc.

**Louisiana Purchase II Condominiums, Aurora, Colorado.** Provided expert review, and reporting regarding foundation heave and settlement issues associated with a multi-building condominium complex. Louisiana Purchase II Home Owners Association vs. AMREPCO, Inc.

**Lower Willow Creek Dam, Gold Creek, Montana.** Provided expert investigation, review and reporting regarding the breach of a 50-foot high, 500-foot long earthen embankment that released approximately 30 acre-feet of water.

**Cook vs Lagro Construction, Inc., Loveland, Colorado.** Provided expert investigation, floor level surveys, foundation analysis, reporting and testimony regarding damages to a multi-million-dollar residence resulting from swelling soils activated by a plumbing leak.

**Iron Bridge Golf Club and Sporting Community Sinkhole Investigation, Glenwood Springs, Colorado.** Provided expert review, opinions and reporting associated with the occurrence of a 40 foot diameter by 40 foot deep sinkhole.

**Building Envelope.** Performed hundreds of forensic investigations including roof storm damage assessments, construction defects, design omission, water infiltration, post-hurricane/flood evaluations, wind related structural evaluations, and retrofit design.

## Representative Structural Foundation Experience

**Carlotta Copper, Miami, Arizona.** Responsible for geotechnical field investigation, structural foundation and pavement recommendation report for the mine maintenance and operations facility.

**City of Fallon Water Treatment Plant, Fallon, Nevada.** Responsibilities included site grading plan, facility layout, foundation recommendations and preparation of technical specifications associated with an 8-million dollar water treatment plant designed to remove arsenic to 2002 drinking water standards.

**Cherry Creek School District, Englewood, Colorado.** Duties included geotechnical engineering design, contractor change order review, fill control, laboratory testing of soils, foundation acceptance and pier installation for seven elementary school expansions.

**Cordilleran Compliance Services, Meeker, Colorado.** Responsible for site investigation and deep foundation design recommendations associated with a natural gas plant. Design report included both drilled shaft and micro-pile foundation alternatives.

**King County Medical Center, 1800 Ninth Avenue Building, Seattle, Washington.** On-site consultation pertaining to shoring procedures including soldier pile and lagging installation, tieback installation and stressing, sub-footing soil and foundation drainage inspection for a six story underground and 17 story aboveground high-rise building.

**PHI Homes, Inc., Arvada, Colorado.** Provide site investigation for both shallow and deep foundation recommendation reports including pier systems, structural floor systems and engineering review of design plans for custom residential home development.

### **Representative Mining and Mine Remediation Experience**

**Smoky Canyon Mine, Caribou County, Idaho.** Provided construction management associated with the Removal Action for the Pole Canyon Overburden Disposal Area pursuant to the Administrative Settlement Agreement and Order on Consent for Non-Time-Critical Removal Action. Responsibilities included weekly and monthly construction progress reporting to governing agency, approval of all contractor submittals, management of all quality control and quality assurance, preparing engineering change orders, enforce construction QA/QC related to a 125-acre soil cover and water management features that included diversion channels, infiltration and sedimentation basins.

**Triumph Mine, Ketchum, Idaho.** Geotechnical design criteria for the settlement and slope stability associated with the final closure of historic tailings impoundment, and the reshaping of waste rock dumps. Required geotechnical and geosynthetics laboratory data interpretation / reduction and implementation into design models.

**Copper Queen Mine, Bisbee, Arizona.** Oversee characterization / investigation utilizing cone penetrometer methods providing geotechnical design criteria for settlement and slope stability associated with the final closure of historic tailings impoundment, with use of waste rock and borrow materials. Required geotechnical and geosynthetics laboratory data interpretation / reduction and implementation into design models.

**Bridgeport Quarry, Chico, Texas.** Responsible for the geotechnical characterization and design for the construction of two side-by-side 30ft x 40ft tunnels connecting adjacent pits underneath railroad lines. Design included recommendations for roof support and high-wall revetment. Construction QA and long term roof instrumentation monitoring installation were also provided.

**El Boleo Mine, Santa Rosalia, Baja Sur Mexico.** Analysis and design of multifaceted mine adit bulkheads required to seal historic openings within tailings slurry storage facility including preparation of construction drawings and specifications for reinforced concrete, shotcrete, and earthworks along with providing construction QA.

**Cerro Yanacocha Heap Leach Facility, Northern Peru.** Responsible for geotechnical investigations, and final design associated with a 165 million tonne heap leach pad. Design included process plant foundation recommendations, diversion channels, three-phase process storage ponds layout, 65-meter-high water storage embankment design, slope stability analysis, and access roads layout. Project design required the use of geomembrane liner systems for the leach pads, diversion channels, process ponds and water storage facility.

## Representative Water Resources Experience

**Future Water Storage Projects, Two Forks Reservoir and Alternate Dam Sites, East Slope Colorado.** Assisted with the preparation of an EIS for the Corps of Engineers associated with several east slope water storage facilities. Responsibilities included seismotectonic evaluations of fault activity and site specific rock quality in project areas.

**Lake Las Vegas Dam, Henderson, Nevada.** Responsibilities included the development and implementation of all geological and geotechnical investigations associated with a 185 foot high, zoned earth embankment dam, appurtenant structures and 9600 feet of tandem bypass conduit. Performed inspection and quality assurance for reinforcing steel, concrete and compacted earth placement. Prepared monthly construction progress reports for local governing agencies and provided supervision of soils laboratory personnel.

**Upper Williams Fork Collection System, Colorado.** Technical support related to the geotechnical feasibility for expanding the existing water system for the Denver Water Department. Duties included exploratory core drilling, investigation of at-depth tunnel rock conditions, and geophysical survey to correlate and supplement rock-coring program.

## Court Qualifications/ Depositions:

Litigation CV available upon request..

## Professional Experience:

EFI Global, Principal Engineer, Denver, Colorado April 2015 – Present  
Agapito Associates, Inc.; Senior Associate, Golden, Colorado, April 2011 – April 2015  
Golden Engineering Group, LLC; Consulting Engineer, Golden, Colorado, 2002-2011  
MFG, Inc.; Geotechnical Engineer, Project Manager, Boulder, Colorado, 1998 – 2002  
Knight Piesold, LLC; Project Engineer, Denver, Colorado, 1993-1998  
Master's Degree Curriculum & Thesis Research; University of Colorado, 1992-1993  
E.O. Church and M. West & Associates; Staff Engineer, Denver, Colorado, 1990-1992  
Hart Crowser, Inc.; Senior Staff Engineer, Seattle, Washington, 1989-1990  
Denver Water Department; Geological Engineer, Denver, Colorado, 1983-1989

## Formal Education:

Master of Science, Civil Engineering (Geotechnical Emphasis), University of Colorado, Denver, Colorado, 1993

Bachelor of Science, Geological Engineering, Colorado School of Mines, Golden, Colorado, 1983

## Affiliations:

American Society of Civil Engineers  
Colorado Association of Geotechnical Engineers

### Publications and Presentations:

Friedman, J., Wallace, G., "Alluvial Terrace Investigation Along the North Fork of the South Platte River, South Platte River, and Horse Creek, East-Central Front Range Colorado, 1986", in Contributions to Colorado Seismicity and Tectonics A 1986 Update, Special Publication 28, Colorado Geological Survey.

Friedman, J., "Behavior of an Instrumented Pier in Clay Soil", Master of Science Thesis, University of Colorado at Denver, 1993.

Friedman, J., "GCL's in Mining Remediation and Reclamation – At high altitudes, geosynthetic clay liners resist freeze-thaw cycles", in *Geotechnical Fabrics Report*, Volume 20, number 1, January/February 2002.

Friedman, J., "Mined Waste Rock Pile Under-drain Interceptor Trenches, Effective Reclamation and Construction Methodology", presentation at Society of Mining and Metallurgical Exploration, Annual Conference, Denver, Colorado, 2004.

Friedman, J., Elliott, K., "Brownfield Development Challenges at a former Manufacturing Facility, Engineering 'Opportunities' Make the Difference", in *Proceedings of the 2008 Biennial Geotechnical Seminar*, GEO-velopment, The Role of Geological and Geotechnical Engineering in New and Redevelopment Projects, Geotechnical Practice Publication No.5, American Society of Civil Engineers, November 7, 2008.

Friedman, J., Mohanty, S., "Design and Analysis of Mine Adit-Plugs within a Tailings Storage Basin", 47<sup>th</sup> US Rock Mechanics / Geomechanics Symposium, San Francisco, California, American Rock Mechanics Association, Publication No. 13-558, June 2013.

Mohanty, S, J. Friedman, D. Conover, "Soil Stability, Support and Control," Chapter 7 in *SME Surface Mining Handbook* (P. Darling, ed.), Society for Mining, Metallurgy and Exploration, Inc., Englewood, CO, pp. 117-139, 2023.