



## AGENDA REPORT

**Meeting Date:** September 27, 2011  
**Item Number:** E-2  
**To:** Honorable Mayor & City Council  
**From:** Aaron Kunz, Deputy Director of Transportation *ak*  
**Subject:** AGREEMENT BETWEEN THE CITY OF BEVERLY HILLS AND EXPONENT, INC. FOR A PEER REVIEW OF THE WESTSIDE SUBWAY EXTENSION FINAL ENVIRONMENTAL IMPACT STATEMENT/REPORT AND GEOTECHNICAL STUDIES FOR POTENTIAL IMPACT ON BEVERLY HILLS' BUILDINGS, INFRASTRUCTURE AND PUBLIC SAFETY

AUTHORIZE A PURCHASE ORDER IN THE AMOUNT OF \$75,000 TO EXPONENT, INC. FOR THE CONSULTANT SERVICES

**Attachments:**

1. Agreement
2. Professional Experience

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### RECOMMENDATION

Staff recommends approval of an agreement with Exponent, Inc. to conduct a peer review of the Westside Subway Extension Final Environmental Impact Statement/Report (FEIS/FEIR) and geotechnical studies for potential impact on Beverly Hills' buildings, infrastructure and public safety; and authorize a purchase order in the amount of \$75,000.

### INTRODUCTION

The Los Angeles County Metropolitan Transportation Authority (Metro) is near completion of the geotechnical and related surveys for the Westside Subway Extension FEIS/FEIR. Metro currently plans for the release of the Westside Subway Extension FEIS/FEIR in Fall 2011 and Metro Board action on the FEIS/FEIR, including selection of the alignment between Beverly Hills and Century City, in Winter 2012. Metro's geotechnical studies regarding the alignment between Beverly Hills and Century City may be provided for the City's review prior to the release of the FEIS/FEIR. While the City may submit comments to the Metro Board, there is not a formal comment period on

the FEIS/FEIR. A minimum of 10 days is required between the release of the FEIS/FEIR and Metro Board action.

At its July 7, 2011 Study Session, per the Legislative Committee's recommendation, the City Council agreed to allocate an initial \$350,000 for efforts related to the City's position on the Westside Subway Extension alignment route. The City Council agreed this amount could be augmented with additional City funds if deemed necessary. The intent of this allocation is to retain experts related to tunneling as well as geotechnical experts, consultant firms, public relations firms and legal services.

To prepare for Metro's release of the FEIS/FEIR and geotechnical data, Public Works & Transportation staff is recommending the City retain two technical consulting firms: 1) Exponent, Inc. to conduct a peer review of data related to potential impact on Beverly Hills' buildings and infrastructure, and 2) Shannon & Wilson, Inc. for geotechnical peer review of the overall FEIS/FEIR.

### **DISCUSSION**

The recommended team from Exponent, Inc. is led by Piotr Moncarz, Ph.D, PE., a consultant professor at Stanford University with expertise in earthquake engineering, seismic assessments and field and analytical structural failure investigations. The team is comprised of subject-matter experts in geology, soil-structure interaction, earthquake engineering, structural performance, and geomechanics. Each member of the team has a Ph.D. and is affiliated with a major university (California Institute of Technology, UCLA, UC Berkeley and Stanford).

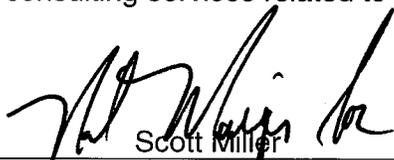
Once Metro releases technical information, staff will be able to refine the scope of services as deemed necessary. At this time, the following work identified for Exponent, Inc. to perform includes engineering and scientific review of:

- Subway tunneling and station construction in and under seismic fault zones,
- Potential tunneling construction and operating a Subway under existing Beverly High School buildings and planned future construction and operation of new high school buildings (including Division of State Architect requirements), and
- Impact of tunneling construction and operating a Subway under other facilities, infrastructure in the City, both under private property and within the public right-of-way.

Exponent, Inc. has performed geotechnical and seismic investigations for numerous City agencies and large scale international projects. The City Attorney's Office has retained them for consultant services on certain matters in the past.

### **FISCAL IMPACT**

Staff has identified funding up to \$350,000 from the year end FY 2010-11 fund balance for consulting services related to the Westside Subway Extension.

  
\_\_\_\_\_  
Scott Miller  
Finance Approval

  
\_\_\_\_\_  
David Gustavson  
Approved By

# **Attachment 1**

The Agreement for Exponent, Inc. will be provided under separate cover.

# **Attachment 2**

**Piotr D. Moncarz, Ph.D., P.E., S.C.P.M.**  
**Corporate Vice President and Principal Engineer**

**Professional Profile**

Dr. Piotr Moncarz is a Corporate Vice President at Exponent. Dr. Moncarz's efforts are directed particularly in the energy sector, including assistance in power plant development projects, and in the oil and gas industry in programs implementing risk management in system operations. With a background in civil engineering, Dr. Moncarz has worked in the areas of reinforced and prestressed concrete, the study of concrete distress due to material problems and adverse conditions, cracking of concrete, wood mechanics, steel structures, earthquake engineering and seismic assessments, field and analytical structural failure investigations, structural analyses of transmission towers, and investigations of ship and offshore platform failures. Dr. Moncarz is a Stanford Certified Project Manager skilled at providing means and methods to project and program organization and management. For over 15 years Dr. Moncarz has worked on projects associated with energy. He leads Exponent's Energy Initiative Program which includes electric power plants, Liquefied Natural Gas (LNG), oil, natural gas, shale gas, and renewable resources. Dr. Moncarz has conducted energy policy studies focusing on gas for Central Asian Republics and Bangladesh.

Dr. Moncarz serves as a Consulting Professor in the Civil Engineering Department of Stanford University. He is Chairman and Co-Founder of the U.S.-Polish Trade Council of Silicon Valley. Dr. Moncarz also serves on the Board of Directors of the San Francisco Global Trade Council.

**Academic Credentials and Professional Honors**

Ph.D., Structural Engineering, Stanford University, 1981  
M.S., Civil Engineering, University of Colorado, Boulder, 1975  
Bridge and Road Construction Vocational School, Poznan, Poland, 1968

Stanford Certified Project Manager, Stanford University Advanced Project Management, 2003

John A. Blume Fellow; E. Kwiatkowski Economy Award of Poland, 1997; Recipient of Gold Engineer Award 2010 of "Technical Review" and Council of Engineers and Technicians of Poland; Polonia Technica, New York, Honorary Membership Award, 2011

**Licenses and Registrations**

Registered Professional Civil Engineer, California, #36916; Registered Professional Civil Engineer, Nevada, #013278; Registered Professional Civil Engineer, Florida, #0061456; Registered Professional Civil Engineer, Washington, #41579; Registered Professional Engineer, Missouri, #2008011611; Licensed Professional Civil Engineer, Saskatchewan, Canada, #7304; Licensed Professional Engineer, British Columbia, Canada, #N1537

## **Publications**

Moncarz P., Skrobiszewski F, Pniewska J. Successfully transferring Silicon Valley innovation approaches the Polish way – “Krok po Kroku.” Proceedings, Triple Helix IX International Conference, Stanford University, CA, July 11–14, 2011.

Radlinski M, Moncarz P, Harris, Nathan. Concrete spalling in a slip-form constructed industrial chimney. Proceedings, Awarie Budowlane, 25th Engineering Conference on Construction Failures, Szczecin-Miedzydroje, Poland, May 24–27, 2011. (In Polish).

Radlinski M, Harris N, Moncarz P. Sustainable concrete: impacts of existing and emerging materials and technologies on the construction industry. Proceedings, 2011 Architectural Engineering National Conference, Oakland, CA, March 30–April 2, 2011.

Moncarz P, Uriz P. Impact of change in use or conditions of a structure on its safety and performance. Proceedings, Awarie Budowlane, 23<sup>rd</sup> Engineering Conference on Construction Failures, Szczecin-Miedzydroje, Poland, May 23–25, 2007. (In Polish).

Moncarz P, Griffith M. Collapse of a reinforced concrete dome in a wastewater treatment plant digester tank. Journal of Performance of Constructed Facilities, American Society of Civil Engineers 2007; 21(1), February.

Moncarz P, Krstulovic-Opara. Tougher concrete structures for LNG facilities. Project Facilities and Construction, Society of Petroleum Engineers 2006; 1(2), June.

Gupta A, Caligiuri R, Sire, R, Moncarz P. Fatigue damage assessment techniques for SPM anchorages. Proceedings, 16<sup>th</sup> International Offshore and Polar Engineering Conference, San Francisco, CA, May 28–June 2, 2006.

Boehm P, Kytomaa H, Moncarz P. LNG projects: Myths and realities of environmental and safety risks. American Bar Association Energy Committee Newsletter, October 2005.

Moncarz P. From the development through demolition—Life cycle of a facility. Proceedings, Awarie Budowlane, 22<sup>th</sup> Engineering Conference on Construction Failures, Szczecin-Miedzydroje, Poland, May 17–20, 2005. (In Polish).

Moncarz P, Osteraas J. Expert testimony in construction disputes. Proceedings, International Conference on Construction Arbitration, Makati City, Philippines, July 2004.

Moncarz P, Emami N, Wren J. Micro-biological attack on deep foundation concrete. Proceedings, 9<sup>th</sup> International Conference on Piling and Deep Foundations, Nice, France, June 2002.

Moncarz P, Noakowski P. Replacement of brick liner with steel flue. Proceedings, 57<sup>th</sup> Meeting of the International Committee on Industrial Chimneys (CICIND), Sydney, Australia, March 2002.

Moncarz P, Eiselstein L, Saraf V. Prestressing wire failures in prestressed concrete pipeline. Proceedings, Awarie Budowlane, 20<sup>th</sup> Engineering Conference on Construction Failures, Szczecin-Miedzydroje, Poland, May 22–26, 2001. (In Polish).

Moncarz P, Kilic S, Noakowski P. A preliminary analysis of the Tupras refinery stack collapse during the Koacaeli Earthquake of 17 August 1999. International Committee on Industrial Chimneys (CICIND) Report, Vol. 17, No. 1, March 2001.

Moncarz P, Shusto L. Damage observations from the Izmit (Koacaeli), Turkey Earthquake of August 17, 1999. International Committee on Industrial Chimneys (CICIND) Report, Vol. 17, No. 1, March 2001.

Moncarz P, Eiselstein L. Loss of composite system reliability due to long term environmental alteration. Proceedings, International Federation for Information Processing (IFIP), 9<sup>th</sup> Working Conference on Reliability and Optimization of Structural Systems, Ann Arbor, MI, September 25–27 2000.

Moncarz P, Taylor R. Hyatt failure from the perspective of a forensic engineer. Proceedings, American Society of Civil Engineers, Second Congress, San Juan, Puerto Rico, pp. 28–36, May 2000.

Moncarz P, Taylor R. Engineering process failure. Journal of Performance of Constructed Facilities, American Society of Civil Engineers 2000; 14(2), May.

Moncarz P, McDonald B, Caligiuri R. Earthquake failures of welded building connections. International Journal of Solids and Structures, Elsevier Science Ltd. 2000; 38:2025–2032, January 13.

Moncarz P, Coetze R, Noakowski P. Circular reinforced concrete shaft cracking caused by moisture differential. International Committee on Industrial Chimneys (CICIND) Report, Vol. 15, No. 2, September 1999.

Moncarz P, Coetz R, Noakowski P, Stegeman M. Stabilization of cracked chimney flues at Matimba Power Station, RSA. International Committee on Industrial Chimneys (CICIND) Report, Vol. 15, No. 2, September 1999.

Moncarz P, McDonald B, Caligiuri R. Earthquake failures of welded building connections. Proceedings, 6th Pan-American Congress of Applied Mechanics and 8th International Conference on Dynamic Problems in Mechanics, Applied Mechanics in the Americas, Vol. 7, Rio de Janeiro, Brazil, January 4–8, 1999.

Emami N, Moncarz P, Wren J. Microbiological attack on concrete: A threat to concrete infrastructure. International Conference on Forensic Engineering: A Professional Approach to Investigation, London, England, September 28–29, 1998.

Moncarz P, Caligiuri R, McDonald B, Sire R, Borduin W. Ultimate moment capacity of many steel connections: Failure in design, materials or workmanship? EUROMAT '98 Conference on Materials in Oceanic Environment, Lisbon, Portugal, July 22–24, 1998.

Moncarz P, Caligiuri R, McDonald B, Sire, R. Failures in steel frame building connections: A multi-billion dollar example of professional wishful thinking. International Federation for Information Processing 8<sup>th</sup> Working Conference on Reliability and Optimization of Structural Systems, Krakow, Poland, May 11–13, 1998.

Noakowski P, Moncarz P. Stiffness oriented design of R.C. Structures close-to-reality and practicable computation procedures and their applications. The Jubilee Publication to Commemorate the Birthday of Professor T. Godyckie–Cwirko, Gdansk Technical University, 1998.

Moncarz P. Engineering failures—A question of resource allocation. Civil Engineering at Stanford University Newsletter, No. 3, March 1997.

Moncarz P, Maslov L. Analysis of technological risk. Conference on Engineering and Environmental Safety Problems in Construction, Moscow State University of Civil Engineering, Moscow, Russian Federation, March 18–19, 1997. (In Russian).

Moncarz P, Horne R, Maslov L, Frankle R, Medhekar S, Marston T. An American recipe for Russian gas pipelines. Journal of Oil and Gas Technology Market in Newly Independent States, November 1996. (In Russian).

Moncarz P, Noakowski P. Damage by Hurricane Andrew to reinforced concrete stacks in Florida. Proceedings, 45<sup>th</sup> Meeting of the International Committee on Industrial Chimneys, CICIND, Orlando, FL, April 1996.

Moncarz P, Barrett R, Mallet R, Osteraas J. Multimedia in dispute resolution. The Construction Specifier, Construction Specifications Institute, Vol. 49, No. 1, January 1996.

Moncarz P, Lahnert B, Hooley R, Osteraas J. Analysis of stability of L'Ambiance Plaza lift-slab towers. American Society of Civil Engineers Journal of the Performance of Constructed Facilities, Vol. 6, No. 4; 232–245, November 1992.

Noakowski P, Schafer H, Moncarz P. Cracks in tower shafts—Causes, mechanism dimensioning, evaluation, damages, repairs. VGB Kraftwerkstechnik 1992; 72(9):749–757, September.

Noakowski P, van Dornick K, Moncarz P. Evaluation of building material on the basis of the measurement regulations—An Investigation into Industrial Chimneys. VGB Kraftwerkstechnik 1992; 72(3):232–240, March.

Burke M, Moncarz P. The Effects of natural aging on a polymer modified glass fiber reinforced concrete. 8<sup>th</sup> Biannual Congress of the Glass Fibre Reinforced Cement Association, Maastricht, Netherlands, October 22–24, 1991.

Piotr D. Moncarz, Ph.D., P.E., S.C.P.M.

Moncarz P. The measurement and impact evaluation of corrosion deterioration in reinforced concrete chimneys. Proceedings, International Committee on Industrial Chimneys (CICIND) Meeting, Atlanta, GA, April 1991.

Moncarz P, Noakowski P. Quality of constructed facility: Definition of safety serviceability and economy in engineering decisions. Proceedings, 33<sup>rd</sup> Meeting of the International Committee on Industrial Chimneys, CICIND, Barcelona, Spain, April 1990.

Moncarz P, Noakowski P. Kiln degradation control by design and operation measures. Journal of Performance of Constructed Facilities, American Society of Civil Engineers 1990; 4(1), February.

Moncarz P, Rau C. Connections of jumbo sections, cracking, testing criteria and flaw tolerance. Inżynieria i Budownictwo, December 1990. (in Polish).

Moncarz P, Ross B. Evaluation, investigation and failure analysis of structures. 15<sup>th</sup> Conference on Our World in Concrete & Structures, Singapore, August 23–24, 1990.

Moncarz P, Noakowski P, Ross B. constraint cracking in continuous, pier supported R/C Beams. 1<sup>st</sup> Conference on Concrete and Structures, Malaysia, October 1989.

Moncarz P, Shyne J, Derbalian G. Failures of 108–inch steel pipe water main. Journal of Performance of Constructed Facilities, American Society of Civil Engineers, August 1987.

Moncarz P, Ross B. Importance of dimensional considerations to structural reliability. 2<sup>nd</sup> International Conference on Structural Failure, Product Liability, and Technical Insurance, Vienna, Austria, July 1986.

Moncarz P, Osteraas J, Wolf J. Designing for maintainability. Civil Engineering, June 1986.

Moncarz P, Osteraas J, Wolf J. Impact of design/construction/maintenance practices on structural deterioration. Proceedings, Structural Division of the American Society of Civil Engineers Convention, Seattle, WA, April 1986.

Moncarz P, Paulling J, Taylor R, Thomas J. Stability of damaged platform in waves. 4<sup>th</sup> International Conference on Behavior of Offshore Structures, Delft, The Netherlands, July 1985.

Moncarz P, Osteraas J, Curzon A. Modeling of reinforced concrete containment structures, design of concrete structures, the use of model analysis. Elsevier Applied Science Publishers, London, England, November 1984.

Moncarz P, Ross B. Structural failures and the side benefits of seismic codes. 8<sup>th</sup> World Conference on Earthquake Engineering, San Francisco, CA, July 1984.

Moncarz P, Krawinkler H. Modeling of steel and reinforced concrete structures for seismic response simulation. Design for Dynamic Loading, the Use of Model Analysis, London and New York: Construction Press, 1982.

Moncarz P. Considerations in small scale reinforced concrete models subjected to static and dynamic loading. Proceedings, Sandia National Laboratories Workshop on Containment Integrity, Arlington, VA, June 1982; SAND82-1659, October 1982.

Krawinkler H, Moncarz P. Modeling of steel and reinforced concrete structures for seismic response simulation. International Seminar on Dynamic Modeling of Structures, Building Research Station, Watford, England, November 1981.

Moncarz P, Gerstle K. Effects of non-linear connections in steel frames. Journal of Structural Division, American Society of Civil Engineers, August 1981.

Krawinkler H, Moncarz P. Material simulation in dynamic model studies of steel and reinforced concrete structures. 7<sup>th</sup> World Conference on Earthquake Engineering, Istanbul, Turkey, September 1980.

Krawinkler H, Moncarz P. Similitude requirements for dynamic models. American Concrete Institute Convention, Las Vegas, NV, March 1980.

Krawinkler H, Mills R, Moncarz P. Model studies on earthquake simulators. Society for Experimental Stress Analysis Spring Meeting, San Francisco, CA, Paper No. R-79-157, May 1979.

### **Presentations and Reports**

Moncarz P. Performance and failure of constructed facilities—Are we learning? Structural Engineers Association of Northern California Summer Seminar, June 9, 2011.

Moncarz P. The energy challenge of East-Central Europe. University of Washington, Distinguished Polish Speakers Series, Polish American Chamber of Commerce Pacific Northwest, February 10, 2011.

Moncarz P. Intellectual capital i.e. knowledge and experience matter. Global Technology Symposium at Silicon Valley, March 2011.

Moncarz P., Absolwenci kształtują wizerunek uczelni (alumni shape the image of the university). Senate of Gdansk Technical University Conference, May 25, 2010.

Moncarz P. Poland's energy strategy: Clean coal and renewables. The National Academies, Washington, D.C., December 3, 2009.

Moncarz P. Alumni shape the image of the university. Warsaw University of Technology, November 13, 2009.

Moncarz P. Risk and intellectual property—Innovativeness, competitiveness, employment. Key Note Speaker at Business Council for International Understanding, Vienna, Austria, November 15, 2009.

Moncarz P. Risk and intellectual property—Innovativeness, competitiveness, employment-lead or follow. Association of European Science and Technology Transfer Professionals, Krakow, Poland, October 29, 2009.

Moncarz P. The electricity age for passenger vehicles. Global Technology Symposium at Stanford University, March 27, 2009.

Moncarz P, Harrison, K. Direct and cross examination of an expert witness. Orrin G. Hatch Distinguished Trial Lawyer Lectures Series, Utah, November 8, 2008.

Moncarz P. When mathematics and physics need(ed) to overrule state-of-the-art. West Point Military Academy Center for Faculty Development, March 27, 2008.

Moncarz P. Clean coal technology in the United States. Joint Technology Initiative for Clean Coal Conference organized by National Coordination Center for Research and Development Programs in European Union, Parliament (Sejm) of the Republic of Poland, March 23, 2007.

Moncarz P. Bangladesh gas sector issues, options, and the way forward. Asian Development Bank, July 2006.

Moncarz P. Risks and common misconceptions associated with LNG. Exponent Seminar, Washington, D.C., June 15, 2006.

Moncarz P. Risks and common misconceptions associated with LNG. Exponent Seminar, Houston, TX, March 30, 2006.

Moncarz P, Latanison R. The mechanism of corrosion: The effects of fabrication, exposure, and interaction with other materials. Transport Properties and Concrete Quality Workshop, Arizona State University, October 10–12, 2005.

Moncarz P. LNG: Hardening the water perimeter. Zeus Investigative Conference—LNG: Hardening the Perimeters, Houston, TX, December 13–15, 2004.

Moncarz P, Dahlen E, Brugger G, Duffner D. Digester Dome collapse at the Spokane advanced wastewater treatment plant. Exponent Report, December 2004.

Moncarz P. Regional economic cooperation in Central Asia Phase II, Year III. Asian Development Bank, September 2003.

Moncarz P, Ross B, Osteraas J, Luth G, Bozorgnia Y. Seismic collapse of reinforced concrete towers at Royal Palm Resort, Guam, USA. 25<sup>th</sup> Anniversary Conference on Our World in Concrete & Structures, Singapore, August 22–24, 2000.

Moncarz P, Maslov L. Prognosis of reliability and technological risk analysis in oil and gas systems. 8<sup>th</sup> Annual International Congress on Innovation Technologies for Oil-Gas Industry and Communication, Kazan, Russia, June 16-20, 1998.

Moncarz P, Hendrickson R. Cracked welds: A big problem waiting to happen. Association of General Contractors of California-Legal Advisory Committee, San Francisco, CA, February 10, 1998.

Moncarz P, Medhekar S. Risk management approaches in the evaluation of gas pipeline projects. Risk Management Conference for the Oil and Gas Industry, London, England, September 22-23, 1997.

Moncarz P, Maslov L. Intergrate models for providing safety engineering systems for cities. Scientific and Practical Conference on the Safety of Large Cities, Moscow, Russia, June 18-19, 1997.

Moncarz P. New power plants: From concept to KW's. 2<sup>nd</sup> Annual Conference on Successfully Developing Private Power in Central & Eastern Europe, Washington, D.C., May 29-30, 1997.

Moncarz P. The view from the marketplace. Symposium on International Education, Stanford University, CA, May 1, 1997.

Moncarz P, Horne R, Hutton G, Shah H. Seismic risk management for Washington State. Washington State Office of Emergency Preparedness-Washington State, Tacoma, WA, January 24, 1996.

Moncarz P, Osteraas J. Condition assessment of the existing pier servicing the Nakhodka Oil Terminal. Failure Analysis Associates, Inc. Report, August 1993.

Moncarz P, Horne R. Profile information of industrial facility (Omsk Region). Failure Analysis Associates, Inc. Report, June 1993. (In Polish).

Moncarz P, Luth G, Pellicchia A. Preliminary assessment of feasibility of proposed City of Moscow joint development projects. Failure Analysis Associates, Inc. Report, June 1993.

Moncarz P, Horne R. A strategic plan for conversion and how to start the process: An outsider's observation. International Conference on Conversion Problems, Moscow, Russia, October 1992.

Moncarz P, Noakowski P. Examples of the failure evaluation process. 4<sup>th</sup> International Conference on Structural Failure, Product Liability and Technical Insurance, Vienna, Austria, July 1992.

Moncarz P, Horne R. An assessment of the proposed expansion of the Nakhodka Oil Terminal. Failure Analysis Associates, Inc. Report, November 1992.

Moncarz P, Noakowski P, Rau C, Brunssen G. Goudey Station reinforced concrete chimney. Failure Analysis, Inc. Report, April 1991.

Moncarz P. The Loma Prieta Earthquake: A pictorial essay with engineering comment. PACAM II, Pan American Congress of Applied Mechanics, Valparaiso, Chile, January 2–5, 1991.

Moncarz P, Noakowski P. Analysis of the long term performance of prestressed concrete pipe. XI FIP Congress, Hamburg, West Germany, June 4–9, 1990.

Moncarz P, Osteraas J, Sharma M. Risk analysis of seismically induced damage to critical equipment components, Southvale Technologies. December 1989.

Moncarz P. Investigation of Station Square roof collapse. Burnaby, British Columbia, November 1989.

Moncarz P, Lahnert B. Investigation of Floor Slab Cracks. Sunnyvale, CA, September 1989.

Moncarz P, Luth G, Lahnert B. Investigation of steel erection failure. May 1989.

Moncarz P, Ross B. Failure investigation of concrete runway support system, Ederer 35 Ton Portal Gantry Crane. March 1989.

Moncarz P, Caligiuri R. Conceptual evaluation of selected support and transportation components of mobile service tower. February 1989.

Moncarz P. Application of system reliability concepts and techniques. National Science Foundation Workshop, University of Colorado, Boulder, CO, September 12–14, 1988.

Moncarz P. Performance and failure in construction. Construction Litigation Superconference, San Francisco, CA, December 4, 1987.

Moncarz P, Hooley R. Methodology evaluation in the seismic analysis and design of Titan IV launch feasibility mobile service tower. November 1987.

Moncarz P, Grove S. Investigation of dislodging of a precast concrete tread. November 1987.

Moncarz P, Rau C. Evaluation of Lamellar tearing and repairs. October 1987.

Moncarz P, Day S, William K. Equivalent material properties for reinforced concrete. June 1987.

Moncarz P, Johnston P. Study of subsidence and related damage due to the construction. April 1987.

Moncarz P. Construction failures: Generic and case study. 2<sup>nd</sup> Annual Construction Litigation Conference, New York, NY, April 9, 1987.

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Moncarz P, Derbalian G. Prying action analysis of cable tray base plate and comparison of stiffness of channel with a bolt hole to a solid section. March 1987.

Moncarz P, Derbalian G, Thomas J, Lange C. A literature survey on the effects of oversize bolt holes in base plates and a recommended methodology for evaluating the acceptability of specific oversize bolt holes. February 1987.

Moncarz P. Structural failures—Are they necessary? Department of Civil Engineering, Stanford University, February 18, 1987.

Moncarz P. Rolm Building 3, Santa Clara, California: Review of structural integrity. December 1986.

Ross B, Moncarz P, Andrew S, Santana C. Structural and risk analyses of a helicopter accident. October 1986.

McCarthy R, Lange, R, Moncarz P. The Impact of “Downsizing,” the American Automobile Fleet on Overall Motor Vehicle Safety. August 1986.

Moncarz P, Bobroff C. Investigation of KYA–FM Radio Tower Failure. June 1986.

Moncarz P. Failure analysis. American Institute of Architects, Santa Clara Valley Chapter, April 23, 1986.

Moncarz P, Heiman T. Investigation of Golden Gate Bridge sidewalk cracking. February 1986.

Moncarz P, Heiman T. Investigation of parking garage slab. February 1986.

Moncarz P, Wolf J. Investigation of waterproofing failure at Palo Alto Redwoods. August 1985.

Moncarz P, Rau C. Analysis and testing of the Hilton Tower curtain wall. April 1985.

Moncarz P, Ross B. Investigation of catastrophic upset in the fluid catalytic cracking unit at Texas City refining petrochemical plant. March 1985.

Moncarz P, Shyne J, Derbalian G. Preliminary investigation of Conduit No. 27 failures at water main from Foothills Treatment Plant to Highlands Pump Station in Colorado. March 1985.

Moncarz P, Shyne J, Derbalian G. Supplementary investigation of Conduit No. 27 failures at water main from Foothills Treatment Plant to Highlands Pump Station in Colorado. March 1985.

Moncarz P, Rau, C. Structural analysis of the Coal Loadout Gallery at the Poplar River Mine. February 1985.

Moncarz P, Wolf, J. Investigation of General Electric Supply Company building collapse, March 1984, Anchorage, Alaska. January 1985.

Moncarz P. Side effects in structural performance. James Chinn Memorial Session of the American Society of Civil Engineers Conference, Denver, CO, April 30, 1985.

Moncarz P. Structural failures: Distribution and investigation. Structural Engineers Association of Central California, Sacramento, CA, January 8, 1985.

Moncarz P, Osteraas J. Major considerations in scale modeling of reinforced containment structures. Specialty Conference on Structural Engineering in Operating Nuclear Facilities, North Carolina State University, Raleigh, NC, September 1984.

Moncarz P, Osteraas J. Structural aspects of leakage in reinforced concrete containments—Experimental approach. 2<sup>nd</sup> Sandia National Laboratories Workshop on Containment Integrity, June 1984.

Moncarz P. Civil engineering failures. American Society of Civil Engineers, Marysville Branch, May 22, 1984.

Moncarz P, Johnston P, Shusto L, Thomas J. Model studies of gravity drydocks. May 1984.

Moncarz P. Long span structures. Architect's Licensing Examination seminar, American Institute of Architects, Santa Clara Valley Chapter, Santa Clara, CA, April 1984 and April 1985.

Moncarz P. Investigation of the deterioration of coal silos at Buckskin Coal Mine, Gillette, Wyoming. March 1984.

Moncarz P, Osteraas J, Curzon A. Experimental modeling techniques for reinforced concrete containment structures. December 1983.

Moncarz P. Structural failures—Their causes and lessons learned. American Society of Military Engineers, San Diego Chapter, San Diego, CA, December 6, 1983.

Moncarz P. Structural failure—Anatomy, impact, investigation. California Department of Transportation, Engineering Staff Meeting, Sacramento, CA, November 10, 1983.

Moncarz P, Rau, C. Investigation of failure of the coal loadout gallery at the Poplar River Mine. October 1983.

Moncarz P, Kadlex R. Failure investigation of the Kilroy Industries Building at 901 East Ball Road, Anaheim, California. August 1983.

Moncarz P, Thomas J, Taylor R, Paulling J. Stability of the Alexander Platform under conditions of the accident of May 1983.

Moncarz P, Osteraas J. Impact of calcium chloride addition to Portland cement concrete mix on the corrosion potential of post-tensioning tendons. February 1983.

Moncarz P, Osteraas J. Failure investigation of the California fabrics roof. November 1982.

Moncarz P, Nelson E. Experimental investigation of shear capacity of anchorage bolts. July 1982.

Moncarz P, Tolles E. Study of the cause of the February 13, 1980, roof collapse at 919 Branston Road, San Carlos, California. July 1982.

Moncarz P, Hopkins. Study of the cause of slab cracking along the western wall of Tektronics Building, 3200 Coronado Drive, Santa Clara, California. November 1981.

Moncarz P, Thomas J, Rau C. Comments on the Norwegian inquiry commission report on the Alexander L. Kielland accident. June 1981.

Moncarz P, Krawinkler H. Theory and application of experimental model analysis in earthquake engineering. John A. Blume Earthquake Engineering Center, Report 50, Stanford University, Palo Alto, CA, June 1981.

Moncarz P. Effects of non-linear connections in steel frames. University of British Columbia, Department of Civil Engineering, Vancouver, British Columbia, March 1980.

Moncarz P. Effects of non-linear connections in steel frames. Report, Department of Civil, Environmental and Architectural Engineering, University of Colorado to American Iron and Steel Institute, December 1976.

### **Professional Affiliations**

American Society of Civil Engineers (fellow); Structural Engineering Association of Northern California (member); American Concrete Institute (member); American Concrete Institute Committee for Concrete Structures for Refrigerated Liquefied Gas Containment (LNG) (member); International Committee on Industrial Chimneys (CICIND) (member); American Water Works Association (member); Prestressed Concrete Institute (member); Earthquake Engineering Research Institute (member); Association of Energy Engineers (member); American Management Association (member); Institute for Energy Law (member); Institute for Energy Law Oil & Gas Committee (member); California Universities for Research in Earthquake Engineering (member); Polish Academy of Science (foreign member); Academy of Technological Sciences of the Russian Federation (foreign member); International Concrete Repair Institute (member); United States Industry Coalition (member); Deep Foundation Institute (member); The Center for Liquefied Natural Gas (LNG) (member); The International Society of Offshore and Polar Engineers (member)

**Philip J. Shaller, Ph.D., R.G., C.E.G.  
Senior Managing Scientist****Professional Profile**

Dr. Philip Shaller is a Senior Managing Scientist and head of the Geo Group within Exponent's Civil Engineering practice. He has worked for 20 years as an engineering geology consultant. His expertise includes geological and geotechnical site investigations, slope stability analysis, landslide and debris flow identification and mitigation, rheological modeling of debris flows, evaluation of debris flow recurrence intervals, potential travel pathways and protective structures, geologic field mapping, analysis of aerial photographs and remote sensing images including InSAR and synthetic aperture radar imagery, sub-surface characterization by means of small diameter borings, rock coring and large diameter borings (downhole logging), assessment of bedrock permeability by means of downhole packer testing, well construction and development, fluvial geomorphology, assessment of alluvial fan flooding patterns, field and aerial photo analysis of historic flood patterns, assessment of future flood pathways, investigation of fire-flood-erosion processes, investigation of dam failure, foundation construction and earthwork observation, rock mass characterization for tunneling and dam construction, seismic hazard characterization, assessment of aggregate resources for use as railroad ballast, expansive and collapsible soils hazards, coastal geomorphology, and karst geomorphology.

Dr. Shaller's specialty is in the field investigation and mechanics of large-scale landslides and debris flows. He also holds bachelors and masters degrees in geochemistry, with a specialty in the chemistry of liquid sulfur and aqueous- and vapor-phase sulfur compounds.

**Academic Credentials and Professional Honors**

Ph.D., Geology, California Institute of Technology, 1991

M.S., Geochemistry, Montana College of Mineral Science and Technology, 1985

A.B., Geochemistry, Occidental College, 1983

Robert P. Sharp Graduate Teaching Award, California Institute of Technology, Division of Geological and Planetary Sciences, 1990

Moderator (with MW Hart), Symposium on Long-Runout Landslides and Rock Avalanches, 52nd Annual Meeting of Association of Engineering Geologists, Lake Tahoe, CA, September 23, 2009.

**Licenses and Registrations**

Professional Geologist, California, #6132; Certified Engineering Geologist, California, #1912  
Registered Geologist, Idaho, #1010; Registered Geologist, Washington, #261  
40-Hour HAZWOPPER certification

## **Publications**

Shaller P, Shrestha P, Doroudian M, Sykora D, Hamilton D. Numerical modeling of the 2005 La Conchita landslide, Ventura County, California. In: Flood Hazard Identification and Mitigation in Semi- and Arid Climates. French R, Miller J (eds), College Press (London), in press.

French R, Fuller JE, Shaller P, Shrestha P. Needs and benefits of co-operation. In: Flood Hazard Identification and Mitigation in Semi- and Arid Climates. French R, Miller J (eds), College Press (London), in press.

Shaller P, Heron C. Proposed revision of marine terrace extent, geometry, and rates of uplift, Pacific Palisades. California Environmental & Engineering Geoscience 2004; X(3):253–275, August.

Shaller P, Shaller A, Abbot PL, Seymour DC (eds). Review of proposed mechanisms of Sturzstroms (long-runout landslides). pp. 185–202. In: Sturzstroms and Detachment Faults, Anza-Borrego State Park, California, South Coast Geological Society, Annual Field Trip Guidebook No. 24, October 1996.

Shaller P, Komatsu G. Landslides on Mars. pp. 18–21. In: Landslide News, No. 8, 1994.

Shaller P. Analysis of a large moist landslide, Lost River Range, Idaho, U.S.A. Canadian Geotechnical Journal 1991; 28:584–600.

## **Presentations and Published Abstracts**

Shaller PJ, Shrestha, PL, Hamilton, DL, Jordan N, Rezakani M. Assessment of alluvial fan flooding hazards and proposed mitigation, Thousand Palms, California. Presented at 2010 Floodplain Management Association Annual Meeting, Henderson, NV, November 3, 2010.

Shaller PJ, Shrestha PL, Doroudian M, Rezakani M. Assessment of flood hazard, Travertine Point Area, Southeastern California. Presented at 2010 Floodplain Management Association Annual Meeting, Henderson, NV, November 3, 2010.

Shaller PJ, Shrestha PL, Doroudian M, Hamilton DL, Sykora, DW. The January 10, 2005 La Conchita landslide. Presented at 2010 Geological Society of America Cordilleran Section and Pacific Section AAPG Meeting, Anaheim, CA, May 29, 2010.

Shaller PJ. An introduction to long-runout landslides. Presented at 52nd Annual Meeting of Association of Engineering Geologists, Lake Tahoe, CA, September 23, 2009.

Shaller PJ, Mathieson B, Okubo S. The Travertine rock avalanche, southern Santa Rosa Mountains, southeastern California. Presented at 52nd Annual Meeting of Association of Engineering Geologists, Lake Tahoe, CA, September 23, 2009.

Hart MW, Shaller P, Farrand GT, Olson B. Reconnaissance of long-runout rock avalanches in eastern California. Presented at 52nd Annual Meeting of Association of Engineering Geologists, Lake Tahoe, CA, September 23, 2009.

Shrestha PL, Hamilton DL, Cydzik K, Wardak S, Jordan N, Shaller PJ, Doroudian M. Flood hazard analysis and mitigation. Proceedings, International Conference on Water, Environment, Energy and Society (WEES-2009), pp. 699–706, New Delhi, India, January 12–16, 2009.

Wardak S, Murillo B, Hamilton D, Shrestha PL, Doroudian M, Cydzik K, Medellin J, Shaller PJ. Sedimentation analysis in an open channel network for existing and proposed development conditions. ASCE-EWRI World Environmental & Water Resources Conference, Honolulu, HI, May 12–16, 2008.

Shrestha PL, Hamilton D, Jordan N, Lyle JE, Doroudian M, Shaller PJ, Wardak S, Cydzik K, Medellin J. Inland flood hazard analysis and mitigation. ASCE-EWRI World Environmental & Water Resources Conference, Honolulu, HI, May 12–16, 2008.

Shaller P. Dig or drill? Weighing options for robotic planetary surface exploration missions. Presented at ASCE Aerospace Division, International Earth and Space Conference, Long Beach, CA, March 3-5, 2008.

Shaller P. Out of the frying pan and into the mud—The fire-flood sequence in southern California. Presented at a meeting of the Orange County Coastal Coalition, Newport Beach, CA, September 27, 2007.

Shaller P, Hamilton D, Lyle J, Mathieson E, Shrestha P. The fire-flood-erosion sequence in California—A recipe for disaster. Presented at ASCE World Environmental and Water Resources Congress, Omaha, NE, May 21–25, 2006.

Shaller P, Hamilton D, Shrestha P, Lyle J, Doroudian M. Investigation of flood and debris flow recurrence—Andreas Canyon, San Jacinto Range, Southern California. Presented at ASCE World Environmental and Water Resources Congress, Omaha, NE, May 21–25, 2006.

Shaller P. Investigating subsurface conditions in bouldery terrain. Presented at ASCE Aerospace Division International Earth & Space Conference, Houston, TX, March 5–8, 2006.

Shaller P, Shrestha P, Hamilton D, Doroudian M, Lyle J, Cattarossi A. Investigation of flood hazards on alluvial floodplains. Presented at ASCE World Water and Environmental Resources Congress, Anchorage, AK, May 16–19, 2005.

Shaller P, Wren J. 2005 landslides: Observations from the trenches. Presented at Minimum Continuing Legal Education Seminar Series, California Club, Los Angeles, CA, May 11, 2005.

Shaller P, Hamilton D, Shrestha P, Lyle J, Doroudian M. Investigating flood hazards on alluvial floodplains. Presented at Alluvial Fan Flood Hazard Management Symposium, Phoenix, AR, April 20–22, 2005.

Shaller P. Investigating the ups and downs of the geology of Las Vegas, Nevada. Presented at Pomona College (presentation to undergraduate students), Pomona, CA, February 21, 2005.

Shaller P, Hamilton D, Doroudian M, Shrestha P, Lyle J, Cattarossi A. Interpretation of tectonic, fluvial and eolian landforms in the Upper Coachella Valley, California, using aerial photography, DEM and LIDAR technology. Geological Society of America, Abstracts with Programs, Vol. 36, No. 5, p. 299, November 2004.

Shaller P, Hamilton D, Lyle J, Doroudian M, Shrestha P. Fire-flood-erosion sequence: Analysis and mitigation. Presented at ASFPM Arid Regions 10<sup>th</sup> Biennial Conference, Restoration and Management of Arid Watercourses, Mesa, AZ, November 2004.

Shaller P, Hamilton D, Lyle J, Doroudian M, Shrestha P. Multi-disciplinary approach to distinguishing flood hazards on alluvial floodplains. Presented at ASFPM Arid Regions 10<sup>th</sup> Biennial Conference, Restoration and Management of Arid Watercourses, Mesa, AZ, November 2004.

Shaller P, Mathieson E. Geological aspects of slope stability. Presented at Slope Stability and Landslides short course, University of Wisconsin-Madison Department of Engineering Professional Development, University of California Los Angeles, February 8–10, 2006, February 16–18, 2005, February 18–20, 2004, February 19–21, 2003, February 20–22, 2002, and February 21–23, 2001.

Shaller P, Medley E, Hamilton D, Lyle J, Mathieson E, Weirich F. Hydrologic impacts and watershed recovery following the 1999 Lowden Ranch Fire, Lewiston Area, Trinity County, California. Presented at Wildland Fire Impacts on Watersheds Conference, Denver, CO, October 2003.

Shaller P, Medley E, Sutarwala S. Meeting the challenges of characterizing subsurface conditions in bouldery terrain. Paper No. 115-8, Session No. 115, Engineering Geology (Posters). Presented at Annual Conference, Geological Society of America, Denver, CO, October 29, 2002.

Shaller P, Wren J, Sykora D. New approaches to evaluate and explain recurring geotechnical issues in litigation cases, Part 3: Synthetic Aperture Radar Interferometry (InSAR). Presented at 7<sup>th</sup> Annual ASCE Forensic Engineering Technical Group Meeting, Los Angeles Section, University of California Irvine, CA, May 10, 2002.

Shaller P, Gupta A, Saraf V. Gujarat Earthquake reconnaissance. Web page developed for Exponent Web Site, Spring, 2001.

Shaller P. Geologic work at the Getty Center, Los Angeles: A study in geologic complexity. Presented at 43 Annual Meeting of Association of Engineering Geologists, San Jose, CA, September 2000.

Shaller P, McSaveney M, Gillon M, Beetham R, Freeman T. Age and failure style of a large landslide complex at Matahina Reservoir, New Zealand. Presented at 40<sup>th</sup> Annual Meeting of

Philip J. Shaller, Ph.D., R.G., C.E.G.

Association of Engineering Geologists, Portland, OR, October 1997, and in Geological Society of America, Abstracts with Programs, Vol. 29, p. 64, May 1997.

Shaller P, Heron C. Reinterpretation of wave-cut marine terraces west of Castellammare Mesa, Pacific Palisades, California. Geological Society of America, Abstracts with Programs, Vol. 29, p. 19, May 1997.

Shaller P. Review of proposed mechanisms of Sturzstroms (long-runout landslides). Presented at 24th Annual South Coast Geological Society Field Trip, October 1996.

Shaller P, Rapp L. Folds, faults and fills: The geology and geotechnical engineering of the Getty Center, Brentwood, California. Presented at Monthly Meeting of Association of Engineering Geologists, Southern California Section, Los Angeles, CA, June 1996.

Shaller P. Mechanics of long-runout landslides. Presented at Monthly Meeting of Association of Engineering Geologists, Southern California Section, Los Angeles, CA, February 1996.

Shaller P. The runaway mountain. Television appearance on documentary program *Horizon*, British Broadcasting Corporation, 1996.

Shaller P, Sabins E. Last motion on the Benedict Canyon Fault, Santa Monica Mountains, California. Geological Society of America, Abstracts with Programs, Vol. 26, p. 185, October 1994.

Shaller P, Murray B, Ivanov B. 3rd Caltech/U.S.S.R. Schmidt Institute of Earth Physics Conference on Long-Runout Landslides. *Landslide News*, No. 5, pp. 37–38, 1991.

Shaller P. Long-runout landslides on Mars. Presented at U.S.S.R. Academy of Sciences, O. Yu. Schmidt Institute of Earth Physics, Moscow, October 1990.

Shaller P, Murray B, Albee A, Shelton J. A large composite landslide/debris flow, Lost River Range, Idaho. Geological Society of America, Abstracts with Programs, Vol. 21, p. 344, October 1989.

Shaller P, Murray B, Albee A. Subaqueous landslides on Mars? Presented at 20<sup>th</sup> Lunar and Planetary Science Conference, pp. 990–991, October 1988.

### **Prior Experience**

Senior Staff Geologist to Project Geologist, Woodward-Clyde Consultants, 1991–1999  
Project Geologist, Bing Yen and Associates, 1999–2000

## **Project Experience**

Evaluated cause and origin of distress to single-family residence in La Mirada, California and possible relationships to underlying fill character and adjacent buried CMP storm drain line.

Led team that carried out post-earthquake reconnaissance of damaged infrastructure and ground deformation following the Mexicali Earthquake, April 4, 2010. Developed web site material based on findings of the reconnaissance.

Evaluated the engineering geologic feasibility of installing a pipeline system through the Niger Delta and contributed to the development of a preliminary risk assessment to assist the government and operator in quantifying potential risks and in making a go or no go decision on the project.

Evaluated geomorphic effects of early 2005 storm runoff on the Santa Clara River system in northern Los Angeles County, California. Documented areas of bank erosion by means of aerial photo analysis and field inspection.

Performed geologic and geomorphic investigations for 100-year flood hazard evaluations for sites located on active alluvial fan surfaces in Rosamond, Tujunga, North Fontana, Desert Hot Springs, Palm Springs, Thousand Palms, Indio, Oasis and Thermal, California, and Phoenix, Arizona. Combined field observations with aerial photo interpretation to document active and inactive portions of the alluvial fans. Used findings to document the geologic and geomorphic history of the sites, including the role of active tectonics and climate change on fan processes. Provided oversight for hydrologic modeling of peak 100-year stormwater flows on active portions of fans.

Conducted soils and geologic investigations for construction of temporary and permanent flood control levees in the Whitewater River spreading grounds and in the central Coachella Valley, California. Performed field investigations, including field mapping, drilling, logging and sampling of soils along levee alignments. Participated in development of recommendations for temporary and permanent levee construction.

Project engineering geologist for flood control-related investigations and design of detention dam, pipeline, and open channels at the Sunrise Mountain landfill, Las Vegas, Nevada. Performed or directed geologic mapping, aerial photo interpretation, mapping and characterization of late Quaternary faulting and seismic sources, rock coring, down-hole packer testing, test pits, aggregate sampling, and logging of fault trenches. Participated in preparation of design geotechnical report and provided geologic input for design plans.

Project manager for the geotechnical investigation of the Agua Caliente Cultural Museum, near Palm Springs, California. Conducted boulder mapping, directed test pit excavations, conducted an in-situ load test for collapsible soil, and prepared a summary geotechnical report. Also conducted an investigation of the debris flow flood hazard using aerial photos and field mapping and provided recommendations for mitigation of the hazard. Participated in discussions of footing design options with the project architect and structural engineer.

Project manager for the Lowden Fire investigation, Lewiston, California. Managed a six-member team evaluating the geologic, hydrologic and ecologic effects of a 1999 wildfire. The project entailed aerial photo analysis, engineering geologic evaluation of slope stability and mass wasting issues, storm water runoff and sediment yield analysis, as well as evaluation of the intensity of the burn and the level of recovery from the fire.

Project manager for investigation of alleged wall distress and out-of-tolerance residential slab tilts at a 1,300-home residential development in Las Vegas, Nevada. These claims were investigated by combining field observations and manometer measurements with In-SAR remote sensing techniques, historical aerial photographs of the development, geologic mapping, and available construction plans and documents.

Observed and documented field load testing for collapsible soils, Hamaca Refinery, Venezuela. Also performed geologic field mapping, logged test pits and trenches, developed geologic maps and cross sections, and participated in construction of project database.

Served as geology representative from Exponent in EERI-sponsored visit to site of January 2001 (magnitude 7.7) Gujarat, India, earthquake. Conducted 10-day field reconnaissance in epicentral region with team of seismologists seeking evidence of coseismic ground rupture.

Observed CPT-LIF testing at the Kinder-Morgan Mission Valley tank farm, San Diego, California. Developed geologic cross sections derived from the CPT data and developed maps and cross sections depicting the subsurface distribution of hydrocarbons beneath the facility.

Performed visual inspections and destructive testing for single-family residences and apartment complexes at various locations in Fontana, Huntington Beach, Laguna Niguel, Santa Monica, Van Nuys and Hollister, California, to investigate claims of slab distress, moisture intrusion and/or earthquake damage.

Performed historic air photo analysis for the Ocean Trails Golf Course, Rancho Palos Verdes, California. Documented intersections of construction haul roads and buried sewer pipeline in area of major slope failure.

Directed an investigation of a potentially life-threatening landslide complex at Lukes Farm, Matahina Reservoir, New Zealand, and a reconnaissance slope stability hazard investigation along the Pacific Coast Highway from Santa Monica to Malibu, California.

Assisted in the development of an emergency response and remediation of a landslide threatening a residential development in Diamond Bar, California, and performed an emergency evaluation and geotechnical investigation of a landslide at the Getty Villa museum complex in Pacific Palisades, California.

Performed a variety of geotechnical site investigation activities, including logging bucket auger borings for a proposed dam near Graybull, Wyoming; mapping stream scour above a heated oil pipeline in Santa Barbara, California; directing a CPT investigation of a bridge crossing of the San Gabriel River in Pico Rivera, California; and investigating and developing cross sections for the proposed expansion of a flood control channel in San Clemente, California. The latter

included observing the installation of two slope inclinometers in large fill slopes along the banks of the channel.

Served as a project geologist during construction of The Getty Center museum complex in Brentwood, California, and is the geologist of record for the site's funicular tramway. Developed cross sections, performed computer-aided slope stability evaluations, and logged a combined total of more than 100 test pits, bucket auger borings, drilled pier shafts, drilled slope drains, mass grading cuts, and spread footing excavations at the museum site.

Directed the engineering geologic investigation for a 115-mile railway alignment on the Tongue River, Montana. The project called for the excavation of major cuts and fills in areas underlain by soft sedimentary rock, coal deposits and burned coal.

Performed construction observation tasks, including the documentation of an approximately 1,000-foot long retaining wall footing in Chino Hills, California, and observed the over-excavation for a water pump plant in San Diego, California. Performed geologic mapping in mass grading cuts at a landslide overexcavation in Diamond Bar, California.

Performed investigations of landslide-related problems for home sites in Malibu, California, and an apartment complex in El Sereno, California.

Investigated vibration issues at a condominium complex in Anaheim, California, and construction defects case for a condominium complex in Lemon Grove, California.

Performed geotechnical and seismic investigations for city agencies. These projects include the revision of seismic safety elements for the City of Monterey Park, California, and the City of West Hollywood, California, as well as the reconstruction of an elementary school in Glendale, California, and the development of a sports park for the City of Chino Hills, California. The latter project included the construction of three groundwater monitoring wells in an area of historically high groundwater.

Served as an instructor at Ranch Santiago Community College in Santa Ana, California, and as a teaching assistant at the California Institute of Technology in Pasadena, California.

### **Professional Affiliations**

- Geological Society of America (member)
- Association of Engineering Geologists (member)
- Seismological Society of America (member)

**Eric R. Ahlberg, Ph.D., P.E.**  
**Senior Engineer**

**Professional Profile**

Dr. Eric R. Ahlberg is a licensed Civil Engineer in the State of California and is in Exponent's Buildings and Structures practice. He received a Ph.D. in Civil Engineering at the University of California, Los Angeles. Dr. Ahlberg's primary area of research is in soil-structure interaction of foundation elements. He is involved in drilled shaft and abutment wall research, including lateral performance of drilled shafts and passive pressure development for wall-type foundations. He has assessed damage to structures due to earthquake, storm surge, wind, fire, ground settlement, and soil pressure. He also has experience in earthquake engineering, reinforced concrete, steel, wood and masonry design, as well as geotechnical designs for retaining walls, tiebacks, and deep foundations.

**Academic Credentials and Professional Honors**

Ph.D., Civil Engineering, University of California, Los Angeles, 2008  
M.S., Civil Engineering, University of California, Los Angeles, 2005  
B.S., Architectural Engineering, California Polytechnic State University, 2001

SEAOSC Scholarship, Civil Engineering Department, UCLA, 2003

**Licenses and Certifications**

Registered Professional Engineer, California, #C73736

## **Publications**

Ahlberg E. Interaction between soil and full scale drilled shafts under cyclic lateral loads. Doctoral Dissertation, Civil Engineering, Department of Civil and Environmental Engineering, University of California, Los Angeles, CA, Spring 2008.

Stewart JP, Wallace JW, Taciroglu E, Ahlberg E, Lemnitzer A, Rha C, Tehrani P, Keowen S, Nigbor RL, Salamanca A. Full scale cyclic testing of foundation support systems for highway bridges. Part II: Abutment backwalls. Report No. UCLA-SGEL 2007/02, Structural and Geotechnical Engineering Laboratory, University of California, Los Angeles, October 2007.

Stewart JP, Wallace JW, Taciroglu E, Ahlberg E, Lemnitzer A, Rha C, Tehrani P, Keowen S, Nigbor RL, Salamanca A. Full scale cyclic testing of foundation support systems for highway bridges. Part I: Drilled shaft foundations. Report No. UCLA-SGEL 2007/01, Structural and Geotechnical Engineering Laboratory, University of California, Los Angeles, December 2007.

Ahlberg E, Rha C, Stewart JP, Nigbor RL, Wallace JW, Taciroglu E. Field testing and analytical modeling of a reinforced concrete embedded pile under lateral loading. 5<sup>th</sup> National Seismic Conference on Bridges and Highways, San Mateo, CA, September 18, 2006.

Ahlberg E, Stewart JP, Wallace JW, Rha C, Taciroglu E. Response of a reinforced concrete embedded pile under lateral loading. Part I: Field testing. Caltrans Bridge Conference, Sacramento, CA, November 1, 2005.

Rha C, Taciroglu E, Ahlberg E, Stewart JP, Wallace JW. Response of a reinforced concrete embedded pile under lateral loading. Part II: Numerical simulations. Caltrans Bridge Conference, Sacramento, CA, November 1, 2005.

## **Presentations and Published Abstracts**

Ahlberg E, Rha C, Stewart JP, Nigbor RL, Wallace JW, Taciroglu E. Field testing and analytical modeling of reinforced concrete foundation systems under lateral loading. George E. Brown Network for Earthquake Engineering Simulation (NEES) Annual Meeting, Snowbird, UT, June 19, 2007.

## **Reviewer**

- Peer Reviewer, American Society of Civil Engineers, *Journal of Geotechnical and Geoenvironmental Engineering*

## **Professional Affiliations**

- Structural Engineers Association of Southern California (Associate Member)
- American Society of Civil Engineers (Associate Member)

**Jeffrey P. Hunt, Ph.D.**  
**Associate**

**Professional Profile**

Dr. Jeffrey Hunt is an Associate in Exponent's Buildings and Structures practice, where he specializes in engineering analysis of complex structures, performance-based earthquake engineering, and evaluation of the safety associated with architectural components in buildings such as curtain walls and window systems. He also has experience with structural reliability theory and its application to nonstructural components.

Dr. Hunt's educational background includes study of structural analysis, design of steel, concrete and timber structures, and earthquake engineering. He was a visiting researcher at the Institute for Lightweight Structures and Conceptual Design at the University of Stuttgart, Germany, where he studied the analysis and design of lightweight and spatial structures.

Prior to joining Exponent, Dr. Hunt was a researcher at the University of California, Berkeley, where he focused on the seismic response of precast concrete cladding systems, including how cladding systems and facades can influence the global seismic response of multistory buildings. He developed fragility curves for the damage states of various cladding components, and performed repair cost analysis of the cladding systems using a probabilistic performance-based approach.

**Academic Credentials and Professional Honors**

Ph.D., Civil and Environmental Engineering, University of California, Berkeley, 2010  
M.S., Civil and Environmental Engineering, University of California, Berkeley, 2005  
B.S., Architectural Engineering, University of Texas, Austin (high honors), 2004

Fulbright Scholar, Universität Stuttgart, Germany, 2006–2007  
IASS Hangai Prize, 2008

**Licenses and Certifications**

Engineer-in-Training, Texas, #34559

**Languages**

German – Conversational

## **Publications**

Hunt J, Stojadinovic B. Seismic performance assessment and probabilistic repair cost analysis of precast concrete cladding systems for multistory buildings. PEER Report No. 2010/110, Pacific Earthquake Engineering Research Center (PEER), University of California, Berkeley, November 2010.

Hunt J, Stojadinovic B. Repair cost analysis of multistory buildings with precast concrete cladding. Proceedings, 9<sup>th</sup> US National and 10<sup>th</sup> Canadian Conference on Earthquake Engineering, Toronto, Canada, July 25–29, 2010.

Hunt J. Seismic performance assessment and probabilistic repair cost analysis of precast concrete cladding systems for multistory buildings. Doctoral Dissertation, Structural Engineering, Mechanics and Materials, Department of Civil and Environmental Engineering, University of California, Berkeley, CA, Spring 2010.

Hunt J, Haase W, Sobek W. A design tool for spatial tree structures. *Journal of the International Association for Shell and Spatial Structures* 2009; 50(1):3–10.

Hunt J, Haase W, Sobek W. Designing adaptive spatial structures. *Journal of the International Association for Shell and Spatial Structures* 2008; 49(3):167–173.

Hunt J, Stojadinovic B. Nonlinear dynamic model for seismic analysis of non-structural cladding. Proceedings, 14<sup>th</sup> World Conference on Earthquake Engineering, Beijing, China, October 12–17, 2008.

Hunt J, Stojadinovic B, McMullin K. Modeling the effect of non-structural cladding in buildings. Proceedings, 6<sup>th</sup> Annual NEES Meeting, The Value of Earthquake Engineering Research, Portland, OR, June 18–20, 2008.

## **Presentations**

Hunt J. Seismic performance assessment of three precast cladding designs using the PEER PBEE repair cost methodology. SEMM Seminar, Department of Civil and Environmental Engineering, UC Berkeley, Berkeley, CA, September 20, 2010.

Hunt J. Repair cost analysis of multistory buildings with precast concrete cladding. 9<sup>th</sup> US National and 10<sup>th</sup> Canadian Conference on Earthquake Engineering, Toronto, Canada, July 25–29, 2010.

Hunt J. Designing adaptive spatial structures. Symposium IASS-2008, Shell and Spatial Structures: New Materials and Technologies, New Designs and Innovations – A Sustainable Approach to Architectural and Structural Design, Acapulco, Mexico, October 27–31.

Hunt J. Nonlinear dynamic model for seismic analysis of non-structural cladding. 14<sup>th</sup> World Conference on Earthquake Engineering, Beijing, China, October 12–17, 2008.

Hunt J. Modeling the effect of non-structural cladding in buildings. 6<sup>th</sup> Annual NEES Meeting, The Value of Earthquake Engineering Research, Portland, OR, June 18–20, 2008.

**Professional Affiliations**

- Structural Engineers Association of Northern California (associate member)
- Earthquake Engineering Research Institute (member)

**K. Medji Sama, Ph.D., P.E.**  
**Senior Engineer**

**Professional Profile**

Dr. Medji Sama is a Senior Engineer in Exponent's Civil Engineering practice. He specializes in geotechnical engineering, foundation analysis and design, and geotechnical earthquake engineering. His project experience includes landslide investigations, failure analysis and performance evaluation of foundations and retaining walls, and post-earthquake reconnaissance and assessment. His prior research has dealt with the numerical modeling of soil and rock behavior, and the characterization of localized failure patterns, such as faulting in rocks and slip surface formation behind slopes and earth-retaining structures. In addition, he has performed laboratory experiments seeking to understand the effects of specimen preparation, fines content, and stratification on the liquefaction behavior of sandy soils.

Prior to joining Exponent, Dr. Sama was a research assistant in the Department of Civil and Environmental Engineering at Stanford University. He has served as instructor for soil mechanics laboratory courses and has assisted in the teaching of the fundamentals of geotechnical engineering, foundation engineering, and computational geomechanics.

**Academic Credentials and Professional Honors**

Ph.D., Geomechanics, Stanford University, 2004  
M.S., Geomechanics, Stanford University, 2000  
B.S., Civil Engineering, University of the District of Columbia, 1998

National Science Foundation Graduate Research Fellow, 1999–2002

**Licenses and Certifications**

Registered Civil Engineer, California, #71098

## **Publications and Presentations**

Sama KM. Some stability characteristics of three-invariant plasticity models. GeoCongress 2006, Atlanta, GA, 2006 (Poster presentation with P.F. Sanz).

Borja RI, Sama KM, Sanz PF. On the numerical integration of three-invariant elastoplastic constitutive models. *Computer Methods in Applied Mechanics and Engineering* 2003; 192(9–10):1227–1258.

Borja RI, Lin CH, Sama KM, Masada GM. Modeling non-linear ground response of non-liquefiable soils. *Earthquake Engineering and Structural Dynamics* 2000; 29:63–83.

Borja RI, Lai T, Regueiro R, Sama KM. Modeling strain localization in soil-nailed excavations. XI Pan-American Conference on Soil Mechanics and Geotechnical Engineering, Sao Paulo, Brazil, 1999.

Amini F, Sama KM. Behavior of stratified sand-silt-gravel composites under seismic liquefaction conditions. *Soil Dynamics and Earthquake Engineering* 1999; 18:445–455.

Amini F, Sama KM. Effect of sample preparation on the liquefaction behavior of layered sand-gravel mixtures. 11<sup>th</sup> European Conference on Earthquake Engineering, Rotterdam, The Netherlands, 1998.

## **Seminars Attended**

“Design and Installation of Buried Pipes,” American Society of Civil Engineers, St. Louis, MO, March 2–3, 2006.

## **Professional Affiliations**

- American Society of Civil Engineers (member)
- Geo-Institute (member)

**John G. Shipp, S.E., F.ASCE**  
**Senior Managing Engineer**

**Professional Profile**

Mr. Shipp is a licensed civil and structural engineer with over 40 years of diversified professional experience. Mr. Shipp has served as a structural engineering manager for numerous projects ranging in cost from \$10 million to more than \$200 million, and has supervised staffs of structural, civil, mechanical, and electrical engineers, architects, and designers. He has performed structural analysis and design, site-adaptation and proto-typical facility design, and seismic retrofit design of various municipal, commercial, residential, and industrial buildings, high-rise office and medical buildings, modular structures, offshore structures, petrochemical plants, and nuclear facilities. He has also been responsible for the development of structural design criteria, and the design and analysis of many buildings for retrofit construction to strengthen these structures to meet current building code criteria, and/or to repair damage caused by earthquakes. Mr. Shipp has also developed detailed analysis/design criteria for numerous essential facilities that require analysis for tornado-induced pressure and missile loads, ANSI wind and snow loads, seismic qualification of equipment, seismic analysis including two- and three-dimensional response spectra and time histories, blast design, and in-structure response spectra generated from both time histories and site-specific response spectra. He also has extensive experience in the application of FEMA 350-353, FEMA 273/356, and FEMA 310 (FEMA 178, ATC-14, ATC-22) methodologies.

Mr. Shipp has performed structural evaluation and retrofit analysis for damage caused by earthquakes to a variety of structural systems, including both low rise and high rise buildings, for most of the major earthquakes dating back to the 1971 Sylmar California earthquake, with extensive studies of damage from the 1987 Whittier, 1989 Loma Prieta, and the 1994 Northridge California earthquakes. Mr. Shipp has also performed similar studies for damage caused by wind and/or water (storm surge) due to Hurricane Katrina for buildings located in Louisiana, Mississippi, and Alabama.

Prior to joining Exponent, Mr. Shipp was a Vice President and Office Director with ABS/EQE. Mr. Shipp was a part-time faculty member at the California State University, Long Beach, where he taught courses in structural analysis, timber design, steel design, reinforced concrete design, and advanced structural design and analysis

**Academic Credentials and Professional Honors**

M.S., Civil Engineering, University of Southern California, 1967  
B.S., Civil Engineering, California State University, Long Beach, 1964  
A.A., Engineering, Long Beach City College, California, 1962

Engineer of the Year Award- SEAOSC, June 2000; Institute for the Advancement of Science, Fellow; Tau Beta Pi-California Theta, Civil Engineering Honor Society

## Licenses and Registrations

Licensed Professional Engineer (Civil), California, #CE 17905  
Licensed Professional Engineer (Structural), California, #SE 1728  
Licensed Professional Engineer (Civil/Structural), Hawaii, #6435-S  
Licensed Professional Engineer (Civil/Structural), Washington, #28167

## Publications

Shipp JG. Separate licensing for structural engineers, two-tier practice act. ASCE 150<sup>th</sup> Anniversary Annual Conference, Washington, D.C., November 3–7, 2002.

“A Comprehensive Plan Check Procedure,” *Building Standards*, May/June 2001 (with B. Nagarajim).

“Findings from Cyclic Testing of Plywood Shear Walls,” *Structure*, March 2001.

“The Seismic Design Handbook—Second Edition,” Klumer Academic Publishers, 2001 (with F. Naeim).

“Plywood Shearwalls—Cyclical Testing Gives New Design Insight,” *Structural Engineering*, July 2000.

“Structural Steel Details,” *Civil Engineering*, March 1984 (with T. Sakoff).

“Design of Headed Anchor Bolts,” *AISC Engineering Journal* 20, No. 2, 1983.

“Bolted Joints on Trans-Alaska Pipeline Structures,” *ASCE Journal of the Structural Division* 103, No. ST1, January 1977 (with J.M. Plecnik).

“Single Leg Catenary Mooring and Anchors,” *ASCE Journal of the Waterway, Port Coastal and Ocean Division*, 1978.

“Structural Design of Timber Structures—Vol. 1 and Vol. 2,” Professional Engineering Publications, Inc. 1994.

## **Presentations**

“The Performance of Steel Moment Resisting Frames During the Northridge Earthquake,” Paper presented at the 5<sup>th</sup> DOE National Phenomena Hazards Mitigation Symposium, Denver, CO, November 1995 (with R.O. Hamburger).

“A Rational Elf Dynamic Analysis for IBC 2000,” Paper presented at the 1995 Annual SEAOC convention; published in Proceedings, 1995 SEAOC Convention, October 1995 (with M. Lew and M. Kallros).

“Northridge Earthquake, 17 January 1994: Seismic Performance of Steel.” Paper presented at American Iron and Steel Institute 1994 General Meeting, New York, May 1994.

“Seismic Strengthening of Johnstown Tank in Lakeside, California,” Paper presented at Structures Congress 93; published in Proceedings, April 1993.

“Seismic Design of Wood and Masonry Buildings,” Paper presented at Boston Society of Civil Engineers 1991 Seismic Design Lecture Series; published in Lecture Series Proceedings, October 1991.

“Performance of Engineered Buildings,” Paper presented at ASCE's 9<sup>th</sup> Structures Congress; published in Conference/Book Title for Structures Congress 1991, April 1991.

“Earthquake Damage Evaluation and Earthquake Repair for Emporium Capwell Building,” Paper presented at the 1990 Annual SEAOC Convention, published in Proceedings 1990 SEAOC Convention, September 1990.

“Seismic Loss Estimation for Non-Structural Components in High-Rise Buildings,” Paper presented at 4<sup>th</sup> U.S. National Conference on Earthquake Engineering, May 1990.

“Use of Vibration Isolation for Support of Large Module with Mounted Reciprocating Compressors: Prudhoe Bay, Alaska,” Paper presented at the 1987 Annual SEAOC Convention; published in Proceedings 1987 SEAOC Convention, October 1987.

“Interactive Anchorage Design Using ACI-349,” Paper presented at ACI Annual Convention; published in convention proceedings, March 1984.

“Low Temperature Effects on High Strength Bolted Steel Connections,” Paper presented at the 2nd International Symposium on Cold Regions Engineering, University of Alaska, Fairbanks, Alaska, August 1976 (with J.M. Plecnik).

### **Chair of Publications**

- Seismic Design Manuals
- Volume I – Code Application Examples
- Volume II – Building Design Examples Light Frame, Masonry and Tilt-up
- Volume III – Building Design Examples Steel, Concrete and Cladding
- 2000 IBC Structural/Seismic
- Volume I – Design Manual Code Application Examples
- Volume II – Design Manual Building Design Examples
- Volume III – Design Manual Steel & Concrete Building Design Examples

### **Professional Affiliations**

Structural Engineers Association of California (Past President); Structural Engineers Association of Southern California (Past President); National Council of Structural Engineering Associations (Past Member Board of Directors); Consortium of Universities for Research in Earthquake Engineering (Past Member Board of Directors); American Society of Civil Engineers (ASCE), Life; ASCE Forensic Engineering Technical Group; American College of Forensic Examiners; Forensic Consultant's Association of Orange County; CSULB; American Institute of Steel Construction; American Concrete Institute; Portland Concrete Association; Earthquake Engineering Research Institute; The Masonry Society; International Conference of Building Officials (Professional Member); Applied Technology Council (Past Member Board of Directors); National Council of Examiners for Engineering and Surveying