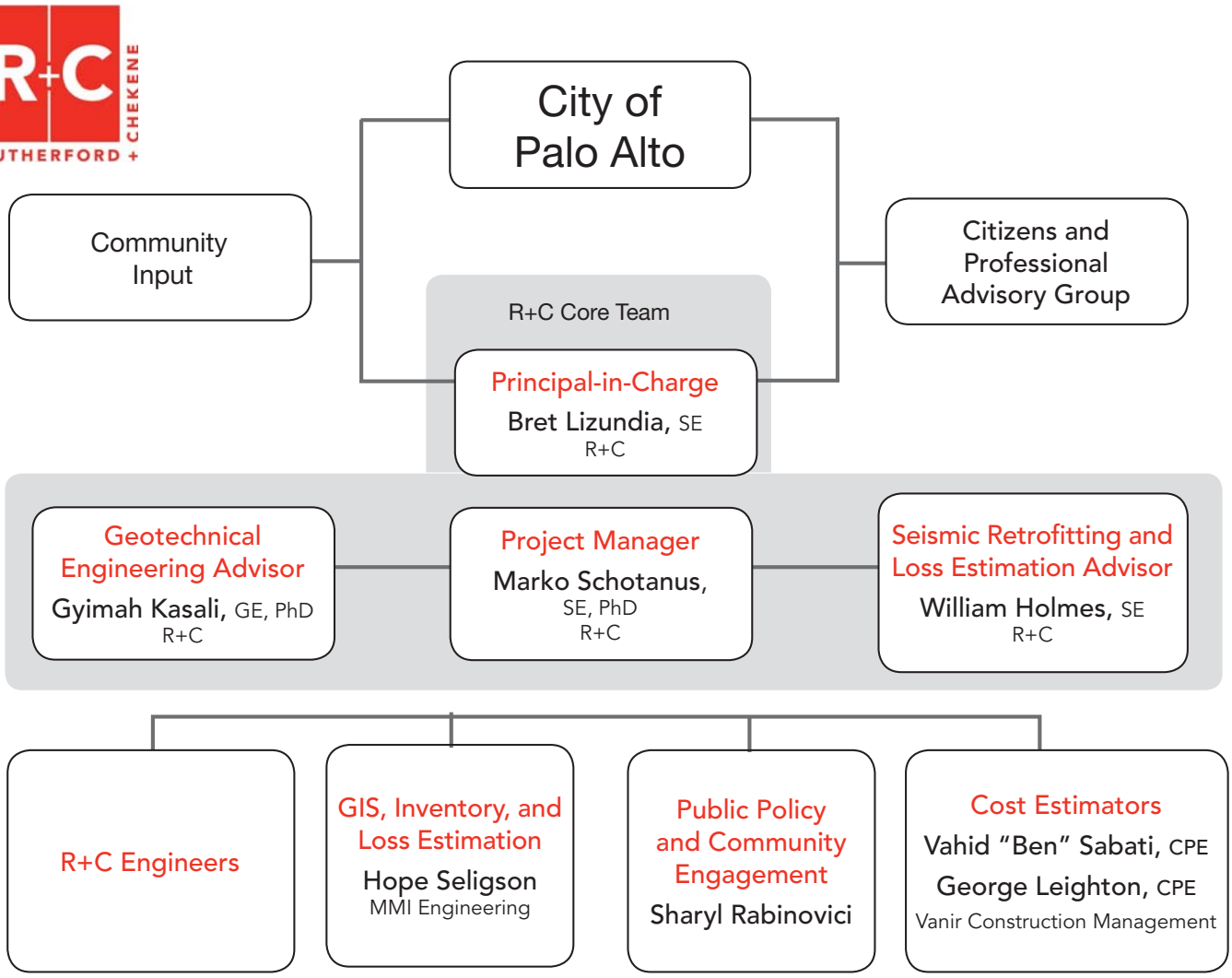
City of Palo Alto
Community Input
Citizens and Professional Advisory Group
R+C Core Team
Principal-in-Charge
Bret Lizundia, SE
R+C
Geotechnical Engineering Advisor
Gyimah Kasali, GE, PhD
R+C
Project Manager
Marko Schotanus, SE, PhD
R+C
Seismic Retrofitting and Loss Estimation Advisor
William Holmes, SE
R+C
R+C Engineers
GIS, Inventory, and Loss Estimation
Hope Seligson
MMI Engineering
Public Policy and Community Engagement
Sharyl Rabinovici
Cost Estimators
Vahid "Ben" Sabati, CPE
George Leighton, CPE
Vanir Construction Management

Chapter 6: Project Staffing

Team Resumes

Bret Lizundia, SE

Rutherford + Chekene
Executive Principal

Project Role
Principal-in-Charge

Education
M.S., Structural Engineering, Stanford University, Stanford, CA

B.S., Civil Engineering, Stanford University, Stanford, CA

With Rutherford + Chekene since 1988, Mr. Lizundia has more than 26 years of experience in the structural design of new laboratories, museums, academic centers, libraries, aquariums, and office buildings; seismic evaluation and rehabilitation of existing buildings; peer review and plan checking; applied research and guidelines development, and loss and cost estimate studies.. His portfolio of work includes the seismic rehabilitation of Frank Lloyd Wright's Hanna House, a national landmark structure located at Stanford University and the retrofit of many other existing buildings..

Mr. Lizundia was the project manager and co-author of FEMA 547 *Techniques for the Seismic Rehabilitation of Existing Buildings*, a co-author of FEMA 306/307 *Evaluation of Earthquake Damaged Concrete and Masonry Wall Buildings*, and project director for the update to FEMA P-154 *Rapid Visual Screening of Buildings for Potential Seismic Hazards*. He is the recipient of the Earthquake Engineering Research Institute's prestigious Shah Family Innovation Prize and the H.J. Brunnier Award from the Structural Engineers Association of Northern California.

Project Experience

Community Action Plan for Seismic Safety (CAPSS) Project, San Francisco, CA—Mr. Lizundia served as project consultant for ATC 52-4: Post-Earthquake Repair and Retrofit Requirements. This CAPSS project, carried out by the Applied Technology Council, recommends clarifications as to how owners should repair and strengthen their damaged buildings after an earthquake.

New Zealand Canterbury Earthquakes Royal Commission, Peer Reviewer for Unreinforced Masonry Building Reports and Post-Earthquake Safety Evaluations, Christchurch, New Zealand—Mr. Lizundia was an invited expert to review New Zealand's assessment of the damage to URM buildings and proposed changes in seismic retrofitting and proposed revisions to standards for assessing the safety of buildings for occupancy following earthquakes.

ATC-71-1/FEMA P-807 Project Review Panel—Mr. Lizundia was a project review panel member of ATC-71-1 project: Simplified Interim Guidelines for Seismic Retrofit of Weak-Story Wood-Frame Buildings. The project resulted in publication of FEMA P-807: *Seismic Evaluation and Retrofit of Multi-Unit Wood-Frame Buildings with Weak First Stories*.

FEMA 154 Update—The FEMA 154: *Rapid Visual Screening of Buildings for Potential Seismic Hazards* project updated the existing document. Mr. Lizundia was Project Technical Director, of this Applied Technology Council project for FEMA.

San Francisco Unreinforced Masonry Buildings Study—The Mr. Lizundia was the project manager for this groundbreaking study for the San Francisco Department of City Planning that provided loss estimates and cost estimates for three different levels of seismic retrofitting to San Francisco's URM building stock.

Other Relevant Projects

Engineering Cost and Loss Estimates

- Study of Seismic Retrofitting Alternatives for URM Buildings, City

of Oakland
- Study of Seismic Retrofitting Alternatives for Tuckunder Apartment Buildings, City of San Jose
- Corresponding Member, Project Oversight Committee, National Institute of Building Sciences, National Loss Estimation Methodology Project

Seismic Evaluation, Rehabilitation and Renovation

- Seismic Evaluation and Rehabilitation of Buildings, US Department of State, Foreign Service Posts Worldwide
- 318 Lambton Quay, Wellington, New Zealand
- 604 Mission Street, San Francisco, CA
- Aeneas Cannery Building, Monterey, CA
- Anthony Hall, UC Berkeley, Berkley, CA
- Branner Hall, Stanford University, Stanford, CA
- Building 280, Stanford Linear Accelerator Center, Menlo Park, CA
- Buildings 35, 42, 43, and 44, Stanford Linear Accelerator Center, Menlo Park, CA
- Buildings 90, 100, 110 and Freestanding Arcades, Stanford University, Stanford, CA
- Building 02-500, Stanford University, Stanford, CA
- Buildings 02-520 and 02-524, Stanford University, Stanford, CA
- Building 02-610, Stanford University, Stanford, CA
- Building I-001, Stanford University, Stanford, CA
- California Hall, UC Berkeley, Berkeley, CA
- Center for Advanced Study in the Behavioral Sciences, Stanford University, Stanford, CA
- DeGuerre Aquatics Complex, Stanford University, Stanford, CA
- First Church of Christ, Scientist, Menlo Park, CA
- First Church of Christ, Scientist, San Francisco, CA
- Graduate School of Business Renovation (now Lathrop Library), Stanford University, Stanford, CA
- Lakewood Apartments, San Francisco, CA
- Lower Sproul Plaza, UC Berkeley, Berkeley, CA
- Main Quad Portals, Stanford University, Stanford, CA
- Martin Luther King, Jr. Student Union, UC Berkeley, Berkeley, CA
- McFarland Hall, Stanford University, Stanford, CA
- Memphis Law School and Courthouse, Memphis, TN
- Roble Gym, Stanford University, Stanford, CA
- Row House Renovation and Rehabilitations (Durand, Phi Sig, Roth, Sigma Nu, and Xanadu Houses), Stanford, CA
- Row House Evaluations, Stanford, CA
- Stanford Stadium, Stanford, CA
- Stern Hall, UC Berkeley, Berkeley, CA
- Toyon Hall, Stanford University, Stanford, CA
- Tower House, Stanford University, Stanford, CA
- Wilbur Hall, Stanford University, Stanford, CA

Applied Research/Earthquake Reconnaissance/Guideline Development

- Analysis of URM Building Damage Patterns, USGS Research Grant
- ATC-43: Evaluation and Repair of Earthquake Damaged Concrete and Masonry Wall Buildings, Applied Technology Council Project, funded by FEMA (also known as FEMA 306, 307 and 308),

Unreinforced Masonry Consultant. Also served as seminar presenter on the method following 2001 Nisqually, Washington Earthquake.

- ATC-20 for Bhutan, co-lead author for a joint Geohazards International and ATC project to update ATC-20 for use with the country of Bhutan's unique building stock
- ATC-71-1: Simplified Interim Guidelines for Seismic Retrofit of Weak-Story Wood-Frame Buildings, Project Review Panel Member. Project resulted in publication of FEMA P-807 Seismic Evaluation and Retrofit of Multi-Unit Wood-Frame Buildings with Weak First Stories
- ATC-83: Improved Procedures for Characterizing and Modeling Soil Structure Interaction for Performance Based Engineering, Project Technical Committee,
- ATC-124: Seismic Retrofit Design Examples for ASCE/SEI 41-13, Project Technical Director
- CUREE-Caltech Woodframe Research Project, Design of Tuckunder Building Test Specimen at UC Berkeley
- Cyclic Test Program Formulation for Wood-frame Shear Wall System Used in Hanna House Seismic Rehabilitation, Stanford University, Stanford, CA
- Development of a Framework for URM Rehabilitation Guidelines for Enhanced Performance, National Institute of Standards and Technology
- Study of Damage to URM Buildings in the Loma Prieta Earthquake, National Science Foundation and California Seismic Safety Commission
- Study of Strengthening URM Buildings with Braced Frames, Consultant to University of Michigan, National Science Foundation
- US-Iran Program on Seismic Retrofit Techniques for School Buildings

Professional Affiliations and Honors

Applied Technology Council (ATC)

- President, 2011-2012; Director, 2009-2015 Secretary/Treasurer, 2010-2011
- 27 February 2010 Chile Earthquake Reconnaissance Team
- 22 February 2011 Christchurch New Zealand Earthquake Reconnaissance Team

Earthquake Engineering Research Institute (EERI)

- 9 January 2010 Northern CA Earthquake Reconnaissance Team
- FEMA 547 Traveling Lecture Series
- Member of 1995 and 2001 Annual Meeting Planning Committees
- Chair of Seismic Ethics Committee, 1997-1998

Structural Engineers Association of California (SEAOC)

- Fellow, named in 2012
- Director, 2006-2009
- Chair of Professional Activities Committee, 1994-2000
- Long Range Planning Committee, 2006

Structural Engineers Association of Northern California (SEAONC)

- Fellow, named in 2009
- President, 2007-2008; Director, 1996-98, 2006-09
- Chair of Professional Activities Committee, 1993-94

Marko Schotanus,
PhD, SE, LEED AP

Rutherford + Chekene
Associate

Project Role
Project Manager

Education
Ph.D., International Doctorate in Earthquake Engineering, University of Pavia, Italy

M.Sc., Earthquake Engineering, ROSE School, European School for Advanced Studies in Reduction of Seismic Risk, Pavia, Italy

M.Sc.Eng., Civil Engineering – Mechanics, Materials and Structures, Delft University of Technology, The Netherlands

Dr. Schotanus' practice at R+C focuses on seismic assessment and retrofit of existing buildings. His experience as a prime consultant has deepened his understanding of the design and construction process, and makes him a strong team player on any project. He is currently leading R+C's "soft-story" retrofit work in response to the recent City of San Francisco ordinance.

Dr. Schotanus is an expert in performance-based assessment procedures. As part of his PhD research, he developed a fully performance-based method to quantify the seismic performance of structural systems in terms of economic losses from structural and non-structural damage, taking account of uncertainties in the ground-motion, in structural parameters, and in consequence modeling. The project devoted particular attention to the development of practical methods for the efficient determination of fragility functions for structural (sub) systems.

In addition to his work for the firm, Dr. Schotanus is a leader in several professional organizations, where he is involved in the advancement of codes and standards, and provides technical support to local jurisdictions for development of seismic risk mitigation policies. He was involved in the organization of the "Soft Story" surveys for San Francisco and Oakland, and was a leader of the Building Inventory survey in Albany as part of the Adopt-A-City program of the Northern California Chapter of the Earthquake Engineering Research Institute.

Project Experience

City of San Francisco "Soft-Story" Building Program, San Francisco, CA—In 2013, San Francisco's Board of Supervisors unanimously approved an ordinance that mandates seismic retrofit of "soft-story" wood-frame buildings. Dr. Schotanus assisted more than 100 building owners in completing their initial screening, and is continuing to assist several of them with evaluation and design of upgrades for these buildings.

City of San Francisco, Earthquake Safety Implementation Program (ESIP), San Francisco, CA—As a partner to the Applied Technology Council, Rutherford + Chekene is currently assisting the Office of the City Administrator/ Earthquake Safety Implementation Program (ESIP) with tasks identified in the Community Action Plan for Seismic Safety's (CAPSS). Dr. Schotanus serves on the Project Review Panel for selected tasks.

HAZUS Re-assessment Application—R+C developed an application to determine the collapse probability of hospital buildings classified as Structural Performance Category 1 (SPC-1) using the HAZUS methodology. The application allows R+C to accurately predict the outcome of OSHPD's collapse probability assessment, helping clients set realistic expectations and make informed decisions about development of retrofit solutions that would meet OSHPD HAZUS re-assessment criteria. Dr. Schotanus was lead developer.

EERI Reconnaissance Leader for South Napa Earthquake, Napa, CA—Dr. Schotanus worked with disciplinary team leaders to compile observations into a report and briefing for EERI members.

LESSLOSS—Risk Mitigation for Earthquakes and Landslides, SP9—Probabilistic risk assessment—As part of a report on practical methods for structure specific probabilistic seismic risk assessment, Dr. Schotanus developed a simple simulation-based method for seismic fragility analysis. This method was applied to benchmark structures chosen for comparison of

the various methods discussed in the report.

Other Relevant Projects

Structural and Seismic Evaluation and Retrofit

- U.S. GSA, Frank Hagel Federal Building Partial Seismic Retrofit, Richmond, CA
- Stanford Health, ValleyCare Health Facility Due Diligence Assessments, Pleasanton, CA
- Seismic Assessment of Tauranga Hospital East and West Wing, Tauranga, NZ
- Judicial Council of California, Seismic Evaluation of 600 S. Commonwealth Avenue, Los Angeles, CA
- BART Parking Structure Evaluations and Retrofits
- Oakland International Airport Terminal 1 Structural/Seismic Study
- Oakland International Airport Terminal 1 Renovations
- UC Berkeley Tolman Hall Evaluation and Conceptual Retrofit, Berkeley, CA
- San Francisco International Airport As-Needed Structural Engineering Support Services, San Francisco, CA
- U.S. GSA Federal Center South Seismic Evaluation, Seattle, WA

Applied Research/Earthquake Reconnaissance/Guideline Development and Relevant Publications

- Judicial Council of California, Napa Courthouse Post-Earthquake Inspection, Napa, CA
- Bruce Maison, Brian McDonald, David McCormick, Marko Schotanus, and Jonathan Buckalew (2014) Commentary on FEMA P-807 for Retrofit of Wood-Frame Soft-Story Buildings. *Earthquake Spectra*: Vol. 30, No. 4, pp. 1359-1380.
- Price H.J., De Sortis A., Schotanus M. (2012) “Performance of the San Salvatore Regional Hospital in the 2009 l’Aquila Earthquake”, *Earthquake Spectra:* Vol. 28, No. 1, pp. 239-256.
- Franchin P., Pinto P.E., Schotanus M.I.J. (2006) “Seismic loss estimation by efficient simulation.” *Journal of Earthquake Engineering:* Vol. 10, Supplement 1, pp. 31-44.
- “Diagnosis and Safeguarding of Architectural Artefacts with Particular Attention to the Effects Deriving from Earthquakes and Other Calamities”, 2005, funded by the National Research Council and the Ministry for Public Instruction and Research under law 449/97, D.D. MIUR n. 693.

Professional Affiliations and Honors

Structural Engineers Association of Northern California

- Chair, Existing Buildings Committee (2010-2012)
- Assistant to Chair, AB-083 Tall Buildings Task Group
- CAPSS delegate: Liaison between SEAONC and City of San Francisco Earthquake Safety Program
- Giles Scholarship recipient
- Edwin G. Zacher Award recipient

Structural Engineers Association of California

- Chair, Existing Buildings Committee (2011-2012)
- SEAONC Delegate, Existing Buildings Committee (2010-present)

Earthquake Engineering Research Institute (EERI) Northern California

- Director (2009-2011)
- Secretary-Treasurer (2011-present)

William Holmes, SE

Rutherford + Chekene
Senior Consultant

Project Role
Seismic Retrofitting and Loss Estimation Advisor

Education
B.S., Civil Engineering, Stanford University, Stanford, CA

M.S., Structural Engineering, Stanford University, Stanford, CA

William Holmes has 40 years of structural engineering experience and is a prominent national authority on seismic code and design issues. He has extensive experience in seismic evaluation, seismic risk assessments and seismic upgrading, renovation and restoration of buildings. He participates on many technical boards, commissions and associations and has authored or co-authored many of the seismic studies and guidelines that have been used nationally for the basis of seismic codes.

Mr. Holmes' interests and experience includes a remarkably wide variety of topics, including postearthquake reconnaissance and analysis, postearthquake response of hospitals, seismic protection of nonstructural systems, fragility and retrofit standards for URM buildings, regional loss estimation, development of seismic standards for both new and existing buildings, research and development of seismic technology, seismic isolation, public policy, and performance based seismic engineering.

Project Experience

Community Action Plan for Seismic Safety (CAPSS) Project, San Francisco, CA—Mr. Holmes served as project consultant for ATC 52-4: Post-Earthquake Repair and Retrofit Requirements. The CAPSS project, carried out by the Applied Technology Council, recommends clarifications as to how owners should repair and strengthen their damaged buildings after an earthquake.

Seismic Consultant to New Zealand Royal Commission—Mr. Holmes served in this consultancy role for the government-appointed commission established after the February, 2011 Canterbury earthquakes. His work involved review of reports and presenting at hearings before the Commission.

ICSSC RP-6 and 8 Updates— Chair of the project team to update RP-6, Standards of Seismic Safety for Existing Federally Owned and Leased Buildings, 2010–2011. RP-6 is the document used by the Interagency Committee for Seismic Safety in Construction (ICSSC) to provide guidance to all federal agencies with regard to evaluation and retrofit of existing federal buildings and to private buildings leased to federal agencies.

Hazus Development—Bill Holmes has been involved in Hazus since its inception and has chaired the Hazus Development Committee since 1992. R+C Hazus development projects include the following: initial development of the Hazus methodology; development of a specialized use of the Hazus Advanced Engineering Building Module to utilize the results of FEMA 178 evaluations as input; in-house development of a methodology for predicting the probability of a building's collapse using Hazus—this methodology allowed R+C to create realistic scenarios and work with healthcare clients to develop the best retrofit solutions in order to meet OSHPD Hazus reassessment criteria; development of recommendations for new Hazus-based "emergency regulations" to re-prioritize SPC-1 hospital buildings.

Other Relevant Projects

Engineering Cost and Loss Estimates

- Seismic Survey of Buildings, Palo Alto Unified School District, CA
- San Francisco Unreinforced Masonry Buildings Study, Department of City Planning, City of San Francisco
- Seismic Vulnerability Evaluation of 65 Buildings, Moffett Field NAS, CA

- UC Berkeley, FEMA Earthquake Loss Analysis Study for Nonstructural Components, Berkeley, CA

Applied Research/Earthquake Reconnaissance/Guideline Development

- ATC 21, Rapid Visual Screening, Project Engineering Panel
- ATC 22, Handbook for Seismic Evaluation of Buildings, Project Engineering Panel
- ATC 28 (FEMA 237): Guidelines of the Seismic Rehabilitation of Buildings, Issues Identification and Resolution, Co-Principal Investigator
- ATC 33 (FEMA 273): NEHRP Guidelines for the Seismic Rehabilitation of Buildings, Senior Technical Advisor
- ATC 65: Rapid Visual Screening of Buildings for Potential Seismic Hazards
- ATC 68: Seismic Mitigation Training
- FEMA 577, *Risk Management Series Design Guide for Improving Hospital Safety in Earthquakes, Floods, and High Winds*: Providing Protection to People and Buildings, June 2007
- Chairman of the Technical Update Team for FEMA 547: *Techniques for the Seismic Rehabilitation of Existing Buildings*.

Structural and Seismic Evaluation and Retrofit

- Numerous Seismic Evaluations of Buildings at Stanford University
- Republic of Turkey, Seismic Risk Mitigation Program, Istanbul, Turkey
- Sutter Medical Center, SB 1953 Compliance Evaluations
- VA Hospital Building Systems Study
- Restoration and Seismic Strengthening of 6 Historic Quad Buildings, Stanford University, CA
- Seismic Protection of Computer Room and Related Equipment: Hewlett-Packard Headquarters, Palo Alto, CA

Professional Affiliations and Honors

National Institute of Building Sciences

- Chair of Project Working Group (seven person control panel), Development of a Standardized Earthquake Loss Methodology (Hazus), National Institute of Building Sciences

Consortium of Universities for Research in Earthquake Engineering (CUREE)

- Board of Directors, 1994-present

Earthquake Engineering Research Institute (EERI)

- Board of Directors, 1990-93
- EERI, Chair of Monograph Committee, 1994-2008
- EERI, Chair of Learning From Earthquakes (LFE) Reconnaissance Program, 2005-present

Structural Engineers Association of Northern California

- President, 1987-88
- Board of Directors, 1979-81, 1987-89
- H.J. Brunnier Award, 2005

Structural Engineers Association of California

- Board of Directors, 1981-83, 1988-91
- Seismology Committee, 1976-79

Applied Technology Council (ATC)

- President, 1985-86
- Board of Directors, 1983-1987
- Award of Excellence, Extraordinary Achievement in Seismic Rehabilitation of Buildings, 1998

Gyimah Kasali, PhD, GE

Rutherford + Chekene
Executive Principal

Project Role
Geotechnical Engineering Advisor

Education
Ph.D., Civil Engineering; Degree of Engineer Civil Engineering; M.S., Civil Engineering; Stanford University

B.S., Civil Engineering, University of Science & Technology, Ghana

Dr. Kasali has been with R+C for 33 years and leads the geotechnical department. He brings a philosophy of strong communication and excellent customer service to all of his projects. These traits have resulted in long-term relationships with institutional and government clients.

Project Experience

California Department of General Services, State Building Seismic Program, CA—R+C has served as prime contractor with the State of California for the evaluation and the retrofit design of more than 12 buildings representing approximately $50 million in construction costs over 12 years. Dr. Kasali led the geotechnical team for evaluations and retrofits at San Quentin State Prison and the Caltrans District 1 Office in Eureka.

Judicial Council of California, Geotechnical Services for Existing Sites, CA—Site included Santa Cruz Government Center (courthouse), San Mateo County Courts (three court sites) and Turlock Courthouse. Dr. Kasali provided the fault hazard study, which resulted in relocation of the Criminal Court at Downtown San Diego.

Lucile Packard Children's Hospital Expansion, Palo Alto, CA—Dr. Kasali led the team as geotechnical engineer of record for the 521,000 sf expansion. Geotechnical challenges included rerouting utility lines, mitigating potential impacts of liquefiable soil and stabilizing the existing building foundation to allow for adjacent deep excavation. R+C developed geotechnical parameters for use in soil-structure interaction analysis to minimize seismic loads transmitted to the superstructure. R+C developed an extensive monitoring program to observe the effects of basement excavation on adjacent structures.

Seismic Vulnerability Evaluation, Moffett Field Naval Air Station, CA—The project screened 65 buildings of various types for seismic vulnerability. From the initial screening, 34 buildings were chosen for further study using NAVFAC Rapid Evaluation technique. R+C assigned priorities for detailed, individual analysis (Phase II) based on this study. During Phase II, R+C evaluated 17 buildings further and developed strengthening schemes.

Other Relevant Projects

- Tan Plaza Continental Apartments Seismic Strengthening, Palo Alto, CA
- UC Berkeley Units 1&2 Infill Housing, Berkeley, CA
- U.S. Coast Guard Unaccompanied Personnel Housing, Petaluma, CA
- BART Parking Structures Evaluations and Retrofits, San Francisco Bay Area, CA
- New Stanford Hospital, Stanford, CA
- Mount Umunhum Radar Tower Geotechnical Evaluation, CA
- San Francisco Sheriff's Facilities, Hall of Justice Addition, San Francisco, CA
- Fox California Theater Renovation, San Jose, CA
- SLAC National Accelerator Laboratory, Various Assignments, Menlo Park, CA
- Stanford University Main Quad Renovations, Stanford, CA
- Stanford University Stables Restoration, Stanford, CA
- Stanford University Welton Art Gallery Seismic Upgrade, Stanford, CA
- Stanford University Toyon Hall Seismic Strengthening, Stanford, CA
- UC San Francisco, Various Assignments: Landslide Mitigation, Slope Stability, New Building Design, Seismic Evaluation, Peer Review

Sharyl Rabinovici, PhD

Principal

Project Role
Public Policy and Community Engagement Consultant

Education
Ph.D., University of California, Berkeley Goldman School of Public Policy, Berkeley, CA

M.P.P., University of Chicago, Chicago, IL

B.S., Geologic & Environmental Sciences, Stanford University, CA

For over 15 years, Dr. Rabinovici has been doing risk assessment, policy analysis, and program design and evaluation related to earthquake safety, housing, and community wellbeing. She co-developed a new earthquake loss estimation method, conducted a best practices study related to community development finance and affordable housing, and directed multiple projects to interview and survey both residential and commercial property owners about their mitigation decisions. She has served on the Board of the EERI Northern California Chapter since 2012 and was active in advising the City of San Francisco on its Earthquake Safety Implementation Program from 2010 to 2013 as well as the Association of Bay Area Government's Hazards & Housing Safety Outreach Committee from 2008-2012.

Project Experience

California Earthquake Authority (CEA) South Napa Earthquake Housing Impact Study, Napa, CA—Ms. Rabinovici is the principal investigator for an online survey of 633 homeowners affected by the August 24, 2014 South Napa earthquake. The analysis and final report assesses factors associated with mitigation decisions, retrofit practices, structural performance, and other outcomes such as service disruption, tagging, and household recovery.

Applied Technology Council FEMA P-58 Stakeholder Guidance Project Development Team, Redwood City, CA—Using the findings of in-depth interviews with more than 20 large commercial and public building owners, Ms. Rabinovici is co-designing a strategy for FEMA to increase use of its P-58 seismic assessment methodology. The proposed set of method refinements and guidance materials are targeted to help owners and other design professionals advance their state of awareness and adoption of a performance-based mindset towards earthquake mitigation.

U.S. Resiliency Council, San Francisco, CA—Ms. Rabinovici is currently co-leading stakeholder engagement process and risk communication efforts for the U.S. Resilience Council's launch of a new building earthquake performance rating system and was recently elected to its Board of Directors.

Other Relevant Projects and Papers

- Bonowitz, D. and Rabinovici, S., 2013, "Soft-Story Risk Reduction: Lessons from the Berkeley Data," EERI Special Projects Report.
- Rabinovici, S., 2012, "Motivating Private Precaution with Public Programs: Insights from a Local Earthquake Mitigation Ordinance," PhD Dissertation, University of California, Berkeley.
- Bernknopf, R., Rabinovici, S., Wood, N. and Dinitz, L., 2006, "The Influence of Hazard Models on GIS-Based Regional Risk Assessments & Mitigation Policies," *Int. J. of Risk Assess. & Mngmt.*, 6(4/5/6): 369-387.
- Bernknopf, R.L., Dinitz, L., Rabinovici, S. and Evans, A., 2001, "A Portfolio Approach to Evaluating Natural Hazard Mitigation Policies: An Application to Lateral-Spread Ground Failure in Coastal CA," *Int. Geol. Rev*. 43(5): 424-440.

Hope A. Seligson

MMI Engineering
Associate

Project Role
GIS, Inventory, and Loss Estimation Consultant

Education
M.S., Stanford University, Stanford, California

B.S., Stanford University, Stanford, California

Ms. Seligson has more than 25 years of experience in the areas of natural hazard risk assessment, earthquake engineering, and regional loss and casualty estimation. In addition to having been part of the interdisciplinary team that developed the flood loss estimation methodology for Hazus, FEMA's National Multi-Hazard Risk Assessment Methodology and Software, she has used the Hazus earthquake model extensively in research and applications since 1997. In 2011, Ms. Seligson received the "Hazus User of the Year" (3rd quarter) award from FEMA.

Recently, Ms. Seligson supported FEMA in the development of updated inventory databases for Hazus, including updating the basis of the data from the 2000 census to the 2010 census. Ms. Seligson has written several guidelines focused on improving inventory databases for Hazus. She has developed numerous enhanced inventory databases specifically for use in Hazus. Enhanced inventory databases developed include regional building inventory data (Hazus' "General Building Stock" data) for various Counties in California (San Francisco, Los Angeles, San Bernardino, Riverside, Orange and San Luis Obispo), various building specific databases for use in the Hazus Advanced Engineering Building Module (AEBM), essential facilities (police stations, fire station, hospitals schools and emergency operations centers) databases and transportation infrastructure (bridges and roadways) data.

Project Experience

"Haywired" Earthquake Scenario – Hazus Analysis Of Aftershocks, San Francisco Bay Area, California—Hazus analyses of 16 aftershocks simulated for the "Haywired" earthquake scenario by the United States Geological Survey. Technical documentation of the aftershock assessments will be included in a forthcoming USGS Professional Paper.

Hazus Default Database Update Project, National—As part of the Atkins project team, providing guidance on methodology for the update of Hazus nationwide default demographics and building inventory databases for FEMA, including building square footage, replacement cost, and other distributions, using 2010 census and other data.

San Francisco's "Community Action Plan for Seismic Safety" (CAPSS) Project, San Francisco, California—Soft-story building inventory database development and execution of detailed Hazus loss estimates for four scenario earthquakes for Phase 2 of the CAPSS Project, conducted by the Applied Technology Council. Soft-story building database development efforts involved integrating building data from surveys conducted by the Department of Building Inspection with data provided by other departments, such as the Assessor, along with mapped seismic hazard and other data.

Hazus Analysis of High-Priority City-Owned Buildings for the City and County of San Francisco, San Francisco, California—To support mitigation, emergency planning, and recovery efforts, 82 city-owned buildings were analyzed using Hazus' AEBM to estimate impacts under four earthquake scenarios previously modeled.

Other Relevant Projects

- Losses Avoided as a Result of Adopting and Enforcing Hazard-Resistant Building Codes (for FEMA)
- Hazus Analysis of a Hosgri Fault Earthquake Scenario in Support of the Diablo Canyon Power Plant Earthquake Emergency Evacuation Study (for PG&E)

Vahid “Ben” Sabati, CPE

Vanir Construction Management
Director of Cost Management Services

Project Role
Cost Consulting - Principal

Education
M.S., Civil Engineering, Pahlavi University, Iran

Construction Management Courses, San Jose State University

Mr. Sabati holds a Master of Science degree in civil engineering and has over 27 years of construction experience. Mr. Sabati has provided condition assessment and has provided condition assessment, estimating services to various public and private sector clients that collectively total over $6 billion of construction cost.

His responsibilities have included a wide variety of condition assessment and cost-related activities, including take-off, pricing, budgeting, purchasing, constructability review, value engineering and bidding. He has provided cost estimating services for the California State Seismic Program, and has done extensive work with the California Department of Mental Health.

Project Experience

- Seismic Assessment of California Court Facilities - Stanley Mosk Courthouse, Sacramento, CA, Estimator.
- California Department of Mental Health, Patton State Hospital - Seismic Retrofit of Building H and J, Patton, CA, Estimator.
- County of LA - DPW - Harbor-UCLA Medical Center – Surgery/ER Addition & Seismic Retrofit, Torrance, CA, $360 Million, Estimator.
- California Court Building Seismic Assessment, San Diego East County Regional, San Diego, CA, Estimator.
- City of San Bernardino - California Theater - Seismic and Building Addition Integration Study, San Bernardino, CA, Estimator.
- County of Marin - Seismic Retrofit - Hall of Justice, Seismic Upgrade, Marin County, CA, $1.2 Million, Estimator.
- CSU East Bay Hayward - Library Seismic Retrofit, Hayward, CA, Estimator.
- CSU East Bay (Hayward) - Warren Hall Seismic Retrofit, Hayward, CA, Estimator.
- UC Davis - Bodega Bay Marine Lab Seismic Retrofit, Bodega Bay, CA, Estimator.
- UC Santa Cruz - Hahn Student Service - Seismic Retrofit, Santa Cruz, CA, Estimator.
- County of Mono, Facilities Condition Assessment, Bridgeport, CA.
- City of Tulsa, Public Library System, Replacement Report (Condition Assessment), Tulsa, OK.
- County of Imperial, Facilities Condition Assessment, El Centro, CA.
- County of San Luis Obispo, New Government Center, San Luis Obispo, CA.
- County of Santa Cruz, Public Improvements and Development Project, Santa Cruz, CA.
- County of Santa Cruz, Veterans Memorial Building Repair Project, Santa Cruz, CA.
- Mill Valley School District, Master Planning Services, CA.
- Town of Buckeye Government Facilities, Master Plan, Buckeye, AZ.
- Mount Diablo Unified School District, Renovation and Modernization Program, Concord, CA.
- Hayward Unified School District, Facilities Assessment and Cost Estimating

George Leighton, CPE

Vanir Construction Management
Associate

Project Role
Cost Consulting – Senior Estimator

Education
B.S., Mechanical Engineering, Cal Poly
San Luis Obispo, CA

Mr. Leighton is Vanir's lead condition assessment estimator, serving projects totaling over four million square feet. In his leading role, he has developed Vanir's Facility Survey Assessment Program based in Microsoft Access. He is a member of the American Society of Professional Estimators with a certification in general estimating.

Mr. Leighton is a professional estimator with more than 20 years of specialized experience in institutional and commercial construction. He has provided budgeting and cost estimating services to various public and private sector clients in the areas of criminal justice, education, commercial, institutional and municipal projects that collectively total over $3 billion of construction cost. He has taken the lead in maximizing the value of the BIM model estimating.

Project Experience

- California State Building Seismic Program, Division of the State Architect.
- California Department of Mental Health, Patton State Hospital - Seismic Retrofit of
- Building H and J, Patton, CA, Estimator.
- County of LA - DPW - Harbor-UCLA Medical Center – Surgery/ER Addition & Seismic Retrofit, Torrance, CA, $360 Million, Estimator.
- Judicial Council of California Court Building Seismic Assessment Program - San Diego East County Regional, San Diego, CA, Estimator.
- County of San Luis Obispo, County-wide Facility Condition Assessment, San Luis Obispo County, CA. Facility Condition Assessment of all county facilities totaling approximately 1.45 million square feet of building area across 200 County buildings.
- El Dorado County Conditions Assessment, Energy Assessment, and Sheriff Facility
- Master Plan, El Dorado County, CA
- City of Tulsa, Public Library System, Replacement Report (Condition Assessment), Tulsa, OK.
- County of Imperial, Facilities Condition Assessment, El Centro, CA.
- San Luis Coastal Unified School District, Master Plan and Modernization Program, San Luis Obispo, CA.
- William S. Hart Union High School District, Hart High School Modernization - Phase 1, (Condition Assessment), Santa Clarita, CA.
- County of Santa Cruz, Public Improvements and Development Project, Santa Cruz, CA.
- County of Santa Cruz, Veterans Memorial Building Repair Project, Santa Cruz, CA.
- Hayward Unified School District, Measure I Facilities Assessment and Cost Estimating
- Hayward Unified School District, Williams Settlement Condition Assessments Program
- New Haven Unified School District, Facilities Assessment and Cost Estimating
- Fremont Unified School District, Williams Settlement Condition Assessments Study
- Chino Valley Unified School District, Facilities Assessment and Cost Estimating