

PROFESSIONAL SUMMARY

With over 20 years of engineering geology and soils engineering consulting experience throughout Arizona and California, Mr. Welke has done everything from laboratory testing to large scale public works projects. He has mentored and supervised geologic/engineering staff during exploration, construction, and report production on large and small scale projects. His diverse project experience has included consulting for various governmental agencies, infrastructure, commercial developments, transportation projects, and private sectors. Expertise include incorporating shallow and deep foundation design, third party review, earth retaining structure design, pavement design, landslide stabilization, rock rippability, rock fall hazard evaluation, earth and rock slope stability evaluation/stabilization, and forensic studies.

PROFESSIONAL REGISTRATIONS/ ACCOMPLISHMENTS

- 2011 Published Geologist, *Occupancy Categories for Structural Mitigation of Sympathetic Faults*, Environmental & Engineering Geoscience Journal, May Issue
- 2005 Certified Engineering Geologist, C.E.G., California No. 2378
- 2002 Registered Professional Engineer, P.E., California No. 63712
- 2001 Registered Professional Geologist, P.G., California No. 7341
- 1999 Registered Engineer-In-Training, E.I.T., Arizona No. 07958
- 1997 City of Los Angeles Deputy Grading Inspector
- 1989 Sigma Phi Epsilon Fraternity

EDUCATION

- 2006 Applied Rock Slope Engineering, Temecula, CA
- 2006 Deep Foundation Design, Los Angeles, CA
- 2002 Guidelines for Analyzing and Mitigation of Landslide Hazards in California, LA, CA
- 2001 Probabilistic Seismic Hazard Analysis, Los Angeles, CA
- 1998 National Highway Institute Certificate of Training, Subsurface Investigation, Phoenix, AZ
- 1995 Eng. Geology Graduate Course, California State University, Los Angeles, CA
- 1993 B.S. Geology, Ball State University, Muncie, IN
- 1993 A.A. Business, Ball State University, Muncie, IN

PROFESSIONAL HISTORY

- 2011 – Present CW Soils, President, Principal Geol./Eng., C.E.G., P.G., P.E., Murrieta, CA
- 2007 – 2011 Earth-Strata, Inc., V.P., Principal Geol./Eng., C.E.G., P.G., P.E., Murrieta, CA
- 2003 – 2007 LGC Inland, Inc., Assoc. Geol./Eng./Geol. Mgr., C.E.G., P.G., P.E., Murrieta, CA
- 2000 – 2003 Fugro West, Inc., Project Geol./Eng., P.G., P.E., Ventura, CA
- 1999 – 2000 Maxim Technologies, Inc., Staff Geologist, E.I.T., Chandler, AZ
- 1998 – 1999 Terrane Engineering Corporation, Staff Geologist, Tempe, AZ
- 1993 – 1998 The J. Byer Group, Inc., Staff Geologist, Glendale, CA

PROJECT EXPERIENCE

- **San Jacinto Police Department – City of San Jacinto, Riverside County, California.** Provided recommendations for the expansion of the existing San Jacinto Police Station. This essential facility required out of the box recommendations due to the 20 feet of loose sandy materials encountered below the existing structure. Compaction grouting was recommended in order to improve the soil conditions for both the existing structure and proposed addition while maintaining the integrity of the existing structure.
- **Mercedes Benz Dealerships – City of Temecula and City of Ontario, Riverside and San Bernardino Counties, California.** Project Manager/Engineer for geotechnical evaluations for the proposed auto dealerships. Mr. Welke was in charge of the preliminary geotechnical evaluation and percolation testing for the proposed auto dealership showrooms, offices, parking structures, and workshops.
- **City of San Marcos Capital Improvement Project, City of San Marcos, San Diego County, California.** The project consisted of a storm drain improvement along Chinaberry Lane, a new restroom facility for Buelow Park, and pavement design for Autumn Terrace Drive and Chinaberry Lane. Our analysis included percolation testing for the design of onsite infiltration systems. The suitability of excavation materials from trenching was evaluated as potential trench backfill material (SE) and building pad material (EI).
- **Richland Communities – Rubidoux Area, Riverside County, California.** Project manager and principal geologist for a 300 foot high vertical cliff slope stability and rock fall hazard evaluation for the proposed 500± home residential development planned for an abandoned rock quarry. The scope of work included a preliminary geotechnical investigation, repelling the cliff face for geologic mapping, rock coring and RQD testing, unconfined compression testing, kinematic analysis (stereo net) for likely planes of weakness, and detailed rock fall analysis. Some of the latest most sophisticated software and techniques were utilized to determine the rock strength and for the slope stability analysis. In addition, seismic refraction survey lines were effectively used to narrow down the depths of existing tailing/fills, which were on the order of 50 feet. Finally, appropriate cost effective building setbacks were established from the cliff face and potential rock fall hazards.
- **Target Department Store – Strategic Design, City of Lake Elsinore, Riverside County, California.** Co-project managed this geotechnically challenging site. The geotechnical challenges, which included very shallow groundwater and a combination of poorly consolidated young alluvial materials and well consolidated older materials under the same proposed structure. However, these challenges were overcome in a timely cost effective manner.

- **City of Chino Hills – Fieldstone Development, City of Chino Hills, San Bernardino County, California.** Project manager of quality analysis and quality control during rough grading operations for the City of Chino Hills on a 200± home residential project. The consultant of record overestimated the strength parameters of the earth materials, which lead to backcut failures as large as ¼ the total size of the project. Due to the real world conditions not matching the consultants calculations, I required the consultant of record to back calculate the earth material strengths based on the known failures. As a result, the consultant of record realized that the keyways had been under designed. The grading plans were revised to reflect the new keyway dimensions resulting in the City of Chino Hills, Fieldstone, and the general public getting a more adequately designed development. The developer incurred substantial delays and cost overruns due to the miscalculations of the consultant of record.
- **Lennar Communities – Heartland Project, City of Beaumont, Riverside County, California.** Project manager for the 417-acre residential, industrial, and commercial development. Project included extensive liquefaction analyses, slope stability analysis, and geologic mapping. The digital image of the USGS geologic map of the area was overlain onto the topographic map provided by the client to supplement and confirm geologic mapping of the site. Previous exploration data was also imported and overlain onto the topographic maps.
- **Curtis Development Corp., Residential Development, Moreno Valley Area, California.** Project manager for the 99-acre residential development that included a comprehensive fault study of the Claremont segment of the San Jacinto Fault. Contrary to expensive and prohibitive 40+ feet deep trenches suggested by Riverside County, Mr. Welke was able to confirm the projection of the fault between trenches using Cone Penetration Test soundings at a fraction of the cost to our client.
- **Los Angeles County, Rio Hondo Westside Slope Stabilization, Los Angeles County, California.** Project manager/team leader for comprehensive slope stability analyses of a two-mile segment of the Rio Hondo River. A combination of down hole logging, test pits, and hollow stem auger borings were utilized. The primary task included numerous probabilistic slope stability analyses, which provided the client with the ability to judge how probable the potential for failure was in addition to the traditional factors of safety. Key factors in our ability to provide the probabilistic analysis with confidence were careful logging utilizing the guidelines of ASTM 2488 and true classification of the earth materials by utilizing the guidelines of ASTM 2487. The following contract deliverables were submitted on time and on budget: Subsurface Exploration Plan, Geotechnical Report, Concept Design, and Final Design.
- **Caltrans I-15 Widening, San Diego, California.** Managed/supervised exploration and production for ten retaining walls. Provided project engineering analysis for proposed retaining walls and slope stability analysis. This substantial scope of work was completed as part of a statewide contract with Caltrans on time and on budget.

- **Point San Luis Light House Road, San Luis Obispo, California.** Performed geologic mapping and report preparation support to evaluate the projects feasibility. Due to the steep topography and the constant wave action, which gradually reduces the resisting forces at the toe of existing landslides, the site had numerous active landslides. As a result, our research, geologic mapping, and landslide identification were key factors in the project.
- **Port of Long Beach, Pier and Infrastructure Expansion, Los Angeles County, California.** Supervised subsurface exploration which consisted of cone penetration test soundings and drilling operations for the pier expansion at the Port of Long Beach. The testing included utilizing a drill rig anchored to a barge within the port to determine the engineering properties and classification of earth materials with regard to future port improvements. In addition, the cone penetration test soundings were utilized to evaluate the densification of the newly formed land.
- **Arizona Department of Transportation, Highway 191, Clifton to Morenci, Arizona.** This project consisted of constructing passing lanes, drainage channelization, and shoulder widening for the near vertical road cuts along Highway 191 from Clifton to Morenci, an area with relatively high topographic relief. Supervised the field exploration, which included extensive rock coring, provided recommendations for the proposed cut slopes, and preparation of the geotechnical engineering report.
- **Co-Brand Chevron/McDonalds Service Stations, Throughout Phoenix Metropolitan Area and Douglas, Arizona.** I provided foundation design, estimated foundation settlement, estimated expansion potential, and site specific grading recommendations.
- **Roosevelt Irrigation District Canal Bridge, Avondale, Arizona.** This project consisted of constructing a bridge over the Roosevelt Irrigation District Canal. I provided a combination of skin friction and end-bearing values for the challenging soil conditions to support the structure.
- **City of Phoenix 23rd Avenue Water and Sewer Alignment, Phoenix, Arizona.** This project consisted of providing water and sewer infrastructure for future expansion north of Phoenix. I was responsible for the field exploration and laboratory testing programs. I also participated in the geotechnical evaluation of the earth materials and geotechnical design.
- **Ventura County Public Works Agency, Skyline Reservoir and Pipeline, Ventura County, California.** Performed geologic mapping, down hole logging along with hollow stem auger logging, and report preparation to evaluate the projects feasibility. The project was geotechnically feasible and recommendations for the reservoir and pipeline were provided. Determined slope stability utilizing along bedding and cross bedding strength parameters.

- **Large-Scale Residential Estates, Throughout Los Angeles Metropolitan Area, California.** Provided shallow and deep foundation design, earth retaining structure design, landslide repair, earth and rock slope stability evaluation, and distress evaluation. Most of these projects included infill or remodels with tight property boundary constraints and slope stability analysis was often provided. Reports were typically reviewed by the City of Los Angeles for compliance with their rigid building codes. Some of the more elaborate projects included elevator shafts, large stepped retaining walls, and subterranean garages on challenging terrain. A fraction of the clientele are listed below:
 - Warren Beatty & Annette Benning (actors)
 - Oliver Stone (producer)
 - Kirkorian (billionaire)
 - Pauly Shore (comedian/actor)
 - Ian Ziering (actor)
 - Wes Craven (director)
 - Randy Newman (singer)
 - Marciano (Guess Jeans)
 - Mr. and Mrs. Mars (M&M/Mars)
 - Rebecca DeMornay (actress)
 - Steven Segal (actor)
 - Danny DeVito (actor)
- **Renck Community Center and Parking Lot Expansion in Hunt Park, City of Riverside, Riverside County, California.** Project engineering geologist for the geotechnical evaluation for the proposed Hunt Park Community Center improvements, which included a one-story structure with an attached gymnasium. The geotechnical evaluation utilized CPT soundings and groundwater monitoring wells to help formulate three alternative foundation recommendations, which was included as part of our scope of work.