

Wayne Magnusen, PE, GE Principal Geotechnical Engineer



Wayne Magnusen, co-founder and Principal Engineer of A3GEO, Inc., is a California-registered Geotechnical and Civil Engineer with 25+ years of experience managing large-scale building and infrastructure projects, often leading multi-disciplinary teams comprised of engineers, geologists, and specialized experts to resolve complex issues involving difficult geology and/or geologic hazards. He leads A3GEO's business development efforts while managing complex projects for an exclusive set of public- and private-sector clients.

Wayne's project experience includes providing geotechnical recommendations for buildings, structural retrofits, utility and transportation infrastructure, liquefaction mitigation, landslide repairs and retaining walls. He has specialized expertise working collaboratively with owners, structural engineers and contractors to resolve complex design and construction-related issues.

Wayne currently provides on-call geotechnical services to agencies at the local, state and federal levels. Within A3GEO, he serves as a senior technical advisor and fulfills a primary QA/QC role.

CURRICULUM VITAE

Education

Bachelor of Science
Civil Engineering
University of California, Berkeley

Master of Science
Geotechnical Engineering
University of California, Berkeley

Registrations

Geotechnical Engineer, California
Civil Engineer, California

Professional Memberships

Earthquake Engineering Research
Institute (EERI)

American Society of Civil Engineers
(ASCE)

American Society of Foundation
Engineers (ASFE)

California Geotechnical Engineering
Association (CalGeo)

RELEVANT PROJECTS

La Conchita Slope Stabilization

Project Manager and leader of large multi-disciplinary project team assessing landslide hazards, risks and mitigation costs associated with 500-foot-high failing coastal bluffs. This study, conducted for the State of California, included a geotechnical and geologic investigation and development of plans and cost estimates for multiple mitigation scenarios. Key aspects of the project included laser aerial scanning (LiDAR), laboratory strength testing, downhole geophysics, earthquake ground motion analyses, evaluations of seismic slope stability and deformations, quantitative assessments of geologic risk.
[Ventura County, California](#)

Lawrence Berkeley National Laboratory General Purpose Laboratory

Lead geotechnical consultant and Project Manager for the GPL, LBNL's new state-of-the-art laboratory facility. Provided initial geotechnical consultation relating to multiple possible sites during the planning phase. As project manager, facilitated engineering geologic assessments of fault rupture and landslide hazard potential involving trenches and onsite borings. Following site selection, managed a design-level geotechnical investigation. Principal-in-Charge during the geotechnical review of the contract documents, and construction phases. [Berkeley, California](#)

Lawrence Berkeley National Laboratory Wilson Landslide Stabilization

Lead geotechnical consultant for the emergency stabilization of a 30-foot thick landslide intersecting a steep cut slope at LBNL's hillside campus. Managed a fast-track geotechnical investigation of a moving landslide and developed engineering recommendations for stabilization that included below-grade structural buttresses comprised of drilled piers and tiebacks. Assisted LBNL in preparing bid documents for the project, which was procured under a design-build contracting approach. Conducted design reviews and provided geotechnical observations and testing services in the design-build phase.
[Berkeley, California](#)

BART Warm Springs Extension

Geotechnical Project Manager for an approximately 5.4-mile-long extension of heavy BART from the Fremont Station south to Warm Springs. Project work included conducting a geotechnical field investigation and preparing a Geotechnical Data Report that includes borings, CPTs, seismic CPTs, piezometers and a compilation of existing data. The alignment crosses active strands of the Hayward fault at three locations and includes up to two new BART stations. Geotechnical analyses included conventional and GIS-based analyses of soil liquefaction, SSI analyses and racking curves for the subway section, probabilistic seismic hazard analyses, embankment stability and settlement analyses, and fault deformation analyses.
[Fremont, California](#)

Centennial Drive Bridge

Project manager for a multidisciplinary engineering and geologic study to evaluate hazards and risks associated with the Lawrence/Centennial Bridge. The bridge crosses an area of extremely complex geotechnical and geologic conditions at a skew angle and has experienced ongoing distress since it was constructed in 1963. Conducted historical research that revealed the bridge was constructed on deposits related to a landslide that occurred at the site in 1907. Prepared a comprehensive geotechnical, geotechnical and historical report that included mapped the lateral extent of unstable deposits, evaluated the causes and mechanisms of ongoing movements, presented several alternative mitigation scenarios, and provided geotechnical input to the University on seismic risk. [Berkeley, California](#)

University of California, Berkeley Helios Energy Research Facility West

Lead geotechnical consultant and Project Manager for UCB's Helios West project, a new five-story, 112,800-square-foot research building in downtown Berkeley. Responsible for the design-level geotechnical report and subsequent consultation during design and value engineering. [Berkeley, California](#)

BART Oakland Airport Connector
Geotechnical Project Manager for an approximately 3-mile-long connector between BART's Coliseum station and the Oakland Airport. This \$230 million project includes up to four new stations, a tunnel section, a maintenance facility and aerial and at-grade guideways. The geotechnical investigation for the project included borings, CPTs and a comprehensive review of existing available geotechnical data. Coordinated the engineering analyses and preparation of the Geotechnical Data and Evaluations Report. Geotechnical analyses conducted in support of conceptual designs included evaluating liquefaction potential, seismic settlement and lateral spreading effects. [Oakland, California](#)

Diablo Canyon Stabilization
Responsible for managing multiple geotechnical investigations addressing slope stability concerns along the 8-mile-long access road to the Diablo Canyon Nuclear Power Plant. Representative projects included (1) re-grading to stabilize bedrock landsliding within 120-foot-high bluffs, (2) constructing a cross-valley buttress fill to stabilize creekbank landsliding, and (3) realigning the access road away from areas of instability. Site characterization included detailed geologic mapping, test borings and geotechnical instrumentation to monitor slope movements and groundwater levels. Developed geotechnical design reports, grading plans and specifications for the stabilization projects and provided geotechnical consultation, observation and as-built plans during project implementation. [San Luis Obispo County, CA](#)

User Support Building (USB)
Lead geotechnical consultant and project manager for the USB, a state-of-the-art research facility. The USB is a three-story 30,000 gross square foot building that provides facilities for the precision component assembly of experimental equipment, two-story beamline equipment staging, a future beamline extension and office space. The site is underlain by fill placed during the 1940s. Conducted a design-level geotechnical investigation that included recommendations for a composite foundation system comprised of drilled pier foundations extending through old fill and footings on rock. Served as Geotechnical Engineer of record during construction. [Berkeley, California](#)

Centennial Drive Slope Repairs
Geotechnical project manager and consultant to the University of California, Berkeley (UCB) for slope stability concerns along Centennial Drive, which is located within Strawberry Canyon and is affected at multiple locations by creekbank erosion and landsliding. Responsible for the investigation and design of a section of the drive that failed following a series of heavy winter rains. For this fast-track project, he worked closely with University stakeholders to develop an aggressive project implementation plan. Also investigated and identified other locations along the drive that could pose a future slope stability concern. These preliminary evaluations are being used by the University to prioritize funding for future proactive engineering projects. [Berkeley, California](#)

University of California, San Francisco Central Utilities Plant (CUP)
Geotechnical Project Manager for the construction of a new CUP at UCSF's Parnassus campus. Conducted the design-level geotechnical investigation, evaluated site hazards and managed the geotechnical aspects of construction. Geotechnical aspects of the project included tiebacks to restrain a three-story retaining wall, high capacity spread footings on bedrock and drilled and grouted tiedown anchors. [San Francisco, California](#)

Next Generation Light Source Tunnel
Geotechnical project manager for the NGLS, a major new research facility envisioned for the Lawrence Berkeley National Laboratory (LBNL) hillside campus. Key project components include a 2,500-foot long mined tunnel, an array of mined and cut-and-cover branch tunnels, several deep vertical mined shafts, a laser cavern, and an experimental hall building. Initial task orders under this five to seven year assignment have included analyzing the feasibility of tunnel construction at four Bay Area sites; conducting geotechnical investigations involving borings, CPTs and downhole geophysics; consulting on settlement; ground support, dewatering, and constructability issues; performing finite element modeling of tunnel related settlement; and installing and reviewing data from settlement and vibration monitoring devices. The completed NGLS facility will house an instrument of considerable complexity and precision; settlement and vibration criteria for the project are substantially more stringent than for conventional underground construction. Geotechnical conditions at the sites analyzed include undocumented fill, alluvial deposits, liquefiable soils, landslide deposits and bedrock. Construction-phase considerations for the project include shoring, underpinning, dewatering, ground settlement, and vibrations. [Berkeley, California](#)

San Ramon Creek
Geotechnical project manager for a Contra Costa County project involving an approximately 2,500-foot-long segment of San Ramon Creek. Conducted a comprehensive geotechnical investigation involving borings, geologic mapping, and evaluations of slope stability and creekbank erosion. Provided geotechnical recommendations for a slope stabilization earthfill buttress and localized creekbank armoring using gabions and riprap. A principal consideration for the project was the County's desire to create an environmentally friendly and aesthetically pleasing creek improvement for this highly visible project located adjacent to a residential neighborhood. [Contra Costa County, California](#)

Alameda County Juvenile Justice Center
Project manager for the Alameda County Juvenile Justice Center, which is located at the base of the East Bay hills in close proximity to the active Hayward fault. At the request of the ACGSA, led a multidisciplinary team comprised of architects, engineers, geologists and land use consultants tasked with preparing bridging documents under a design-build project delivery approach. In the pre-design phase it was envisioned that \$170M project would initially have 420 beds, five juvenile courts, offices for courts administration, probation, public defender, and district attorney, plus associated support facilities (approximately 425,000 square feet of floor area). Future expansion of the facility could accommodate 450 to 540 beds and an additional juvenile court (up to 460,000 square feet total). Managed a geologic and geotechnical investigation that included evaluating surface fault rupture and landslide hazards for the massive complex of new buildings. Provided geotechnical recommendations for strong ground motions, static and seismic slope stability, retaining walls, foundations, and grading. [San Leandro, California](#)

Strawberry Creek and Northern Tributary
Lead geotechnical consultant to the University of California, Berkeley (UCB), for ongoing creekbank landsliding and erosion concerns along Strawberry Creek and its principal northern tributary, both of which are located within Strawberry Canyon. Prepared multiple geotechnical investigation and site evaluation reports relating to approximately 3,000 feet of unimproved creekbank and qualitatively evaluated relative risk at multiple sites with slope stability and/or erosion concerns. Mr. Magnusen prepared a geotechnical investigation report and geotechnical contract documents for an emergency design-build repair at one site affected by an exceptionally severe landslide. This repair involved the construction of a structural wall outside of the creek high flow line and was successfully implemented. [Berkeley, California](#)

Alameda County Government Center

Geotechnical project manager for a proposed new government center at a County-owned 40-acre site in Dublin. As envisioned in 2002, the government center would include a courthouse (15 adult courts), 250,000 square feet of County offices, parking facilities, related site improvements, and a new Juvenile Justice facility with 420 beds, juvenile courts, administration, and associated support facilities (approximately 400,000 square feet total). Managed a geotechnical investigation that included working closely with environmental staff to evaluate potential hazards from the site's previous use as a military facility (Camp Parks). Prepared a geotechnical investigation report addressing foundations, ground motions, grading and other geotechnical aspects of the project. [Dublin, California](#)

Lawrence Berkeley National Laboratory Berkeley Lab Laser Accelerator (BELLA)

Geotechnical Project Manager for the BELLA project, located inside of LBNL's Building 71. Responsible for conducting a design-level geotechnical investigation and consulting on landslide-related risks. Provided post-report consultation pertaining to the support of settlement-sensitive laser equipment and serves as Principal-in-Charge during the construction phase. [Berkeley, California](#)

Alvarez Road Retaining Wall Stabilization

An approximately 10-foot-tall retaining wall located on the south side of Alvarez Road opposite LBNL Building 55 had visibly deflected in the downslope direction and survey measurements had shown that the movement was ongoing. The wall was built atop a relatively steep (1.5H:V) unstable slope. A3GEO's scope included a field exploration consisting of the advancement of 2 borings and laboratory, development of remedial slope design alternatives and stabilizing the affected section of wall and adjusting storm drains and road grades within the area that had settled due to wall leaning. Drilled and grouted ground anchors (tiebacks) had been proposed as a possible means of providing additional wall restraint. [Berkeley, California](#)

Lawrence Berkeley National Laboratory Building 85 Seismic Strengthening

Lead geotechnical consultant and Project Manager responsible for the investigation, characterization and mitigation of landslide hazards at Building 85. Initial study included geologic mapping, borings, trenches, and geophysics to evaluate key geometric relationships between the landslide deposits and existing buildings. Subsequent phases included seismic ground motion and deformation analyses, conceptual mitigation designs, preliminary plans, and conceptual cost estimates. Design issues for the preferred conceptual design include evaluating landslide-related forces on a below-grade structural restraint system. [Berkeley, California](#)

Helios Energy Research Center

Lead geotechnical consultant and Project Manager for Helios, a joint project for the University of California and the Lawrence Berkeley National Laboratory. The \$150 million Helios project included a new 160,000 GSF building, site grading and access road development in an area of challenging hillside terrain. Responsibilities included reviewing existing subsurface data; drilling targeted test borings to explore geologic and geotechnical conditions; evaluating geologic hazards; and providing recommendations during costing, value engineering and alternate site evaluation. [Berkeley, California](#)

Route 262 /I-880 Interchange, BART/UPRR Undercrossing

Geotechnical project manager for a grade lowering project at the I-880/Route 262 Interchange in Fremont. Route 262, also known as Mission Boulevard, is a major northern California transportation link connecting the I-880 and I-680 freeways. Geotechnical aspects of the project include the construction of two new freeway ramps and the lowering of the road grade in order to provide adequate vertical clearance between two new railroad bridges. A notable geotechnical consideration for the project was the presence of a relatively high groundwater table. Conducted a two-phase investigation that included new pavement cores within the traveled way and shoulders, and borings beyond the pavement edge. The I-880/Route 262 Interchange is a State highway and all project deliverables were prepared in accordance with rigorous Caltrans guidelines. [Fremont, California](#)

Solar Energy Research Center (SERC)

Lead geotechnical consultant and Project Manager for SERC, a new 40,000 square foot LEED Silver energy research building. Responsible for preparing the design-level geotechnical investigation report for the project and consulting on geotechnical issues during the design phase. [Berkeley, California](#)

Switching Station #6 and Campus Power

Lead geotechnical consultant and Principal-in-Charge for the project that brings power to UCB's Memorial Stadium. Engineering aspects of the project include a new two-story switching station building and branched duct banks connecting the campus, switching station and stadium. The project is within the Hayward fault earthquake fault zone and project responsibilities included consulting on potential fault displacement hazards/risks. [Berkeley, California](#)

Geary Road Stabilization

Managed geotechnical investigations and prepared civil repair plans addressing storm damage along the western side of Calaveras Creek in southeastern Alameda County. Conducted a geotechnical investigation that included test borings and geologic mapping to evaluate stability at two sites, both of which are within the Calaveras fault zone. At one site, a composite soil/geocell structure was used in conjunction with rip-rap to reconstruct and vegetate a steep creekbank adjacent to and beneath an existing county road that had been damaged by landsliding. Managed the preparation of geotechnical design reports, grading plans and specifications for the stabilization projects and provided geotechnical consultation, observation and as-built plans during project implementation. [Alameda County, California](#)

Hills Fire Station Slope Stabilization

Geotechnical project manager for the design and implementation of slope stabilization measures behind a critical fire station facility. Developed and implemented a hill stabilization plan that involved excavating the existing uncompacted fill materials and constructing a new engineered reinforced fill embankment. Led a multi-disciplinary project team that included civil and structural subconsultants to prepare final plans and specifications for the stabilization design. The hill stabilization project was designed and implemented between February and October of 2004, a period of only 8 months. Bids from three pre-qualified contractors were opened less than three months after our team started work on this fast-track project. [Berkeley, California](#)

Animal Care Facility

Provided geotechnical recommendations for seismic design, foundations, slabs-on-grade, pavements, and mitigation of landslide-related hazards. Related follow-up work performed in conjunction with Dr. Jon Bray of the UC Berkeley faculty included utilizing the campus earthquake ground motions to evaluate slope stability and lateral forces on buried structures. [Berkeley, California](#)