

GREGORY SILVER, M.Sc., PE, GE

Vice President
Principal Engineer



PROFESSION

Geotechnical Engineer
Civil Engineer

REGISTRATIONS

Registered Civil Engineer –
State of California
Registered Geotechnical
Engineer - State of California
Registered Civil Engineer –
State of Nevada

EDUCATION

M.S. Civil Engineering –
California State University,
Long Beach
B.A. Geological Sciences –
University of California at
Santa Barbara

PROFESSIONAL EXPERIENCE

GMU Geotechnical, Inc.

(1997-Present)

Vice President, Principal Engineer,
Rancho Santa Margarita, California

Bing Yen & Associates, Inc.

(1988-1997)

Project Engineer to
Associate/Manager of Municipal
Services, Irvine, California

G.C. Masterman & Associates, Inc.

(1984-1986)

Technician to Project Engineer, Van
Nuys, California

PROFESSIONAL AFFILIATIONS

ASCE – Member
CalGeo – Past President

SUMMARY OF EXPERIENCE & QUALIFICATIONS

Mr. Silver has over 25 years of progressively responsible engineering and management experience in a wide variety of geotechnical engineering projects. He has worked successfully for and with industrial, residential, and commercial developers, master community planners, and governmental agencies. He has extensive experience in landslide evaluation and remediation design, geotechnical instrumentation, residential and commercial development, public works projects, municipality consultation, mechanically stabilized earth walls, and forensic projects. In addition, he has served as an expert witness in regards to numerous geotechnical issues over the last 20 years. Over the period of 1988 to 1997, Mr. Silver was City Geotechnical Engineer for numerous cities throughout Southern California. Currently, Mr. Silver serves as Vice President and Principal Engineer, and oversees the geotechnical engineering operations. Mr. Silver just completed his term as President of CalGeo, and currently serves on the Board of Directors. Selected projects representative of Mr. Silver's experience are listed below:

- Landslides
- Residential Development Projects/Master Planned Communities
- Commercial Development Projects
- Major Roadways
- Bridges
- Water Resource Projects
- Miscellaneous Public Works Projects
- Government/Civic Centers
- Sportsparks
- Mechanically Stabilized Earth (MSE) Walls
- Geotechnical Instrumentation
- City Geotechnical Engineer/Consultant
- Legal Consultation
- Special Studies

LANDSLIDES:

- < Brancato Landslide – San Jose, California: Lead Engineer – Detailed geotechnical engineering analysis of large, deep-seated landslide including shear strength determination, static and pseudo-static analyses, seismic deformation analyses, and development of geotechnical mitigation schemes.
- < Belmont Estates Horseshoe Landslide – Anaheim Hills, California: Lead Investigator – Comprehensive geological and geotechnical engineering evaluation of re-activated ancient landslide. Development of remediation scheme consisting of horizontal drains, buttress grading, and tie-backs.
- < Voyager Lane Landslide – Laguna Niguel, California: Lead Investigator – Detailed evaluation of long-term monitoring data leading to the development of an innovative long-term repair consisting of a horizontal drain system, a surface water infiltration mitigation system, and roadway stabilization and subgrade strengthening.
- < Rambla Pacifico Landslide Stabilization - Malibu, California: Project Director on one million dollar landslide stabilization design. Involved working with FEMA and OES and within NEPA/CEQUA guidelines.
- < Calle Montecillo Roadway Stabilization - Agoura Hills, California: Project Director - Evaluation and design of roadway slope stabilization. Design, plans, and specifications.
- < Big Rock Mesa Landslide Area - County of Los Angeles, California: Project Engineer - Large-scale geotechnical investigation and evaluation, deep dewatering and horizontal drain installation, pump tests, and geotechnical instrumentation and monitoring.
- < Montellano Landslide - Hacienda Heights, California: Project Manager/Engineer - Pump tests, geotechnical monitoring, and long-term surface drainage improvement design with plans and specifications.
- < Mystic Hills Landslide - Laguna Beach, California: Project Geotechnical Engineer - Third party geotechnical evaluation of the stability of an ancient landslide for the City of Laguna Beach.
- < Kanan Dume Road Landslide - Malibu, California: Project Director - Monitoring, geotechnical evaluation, geological evaluation, remediation design for a 100-foot roadway embankment failure.
- < Via Estoril Landslide – Laguna Niguel, California – Emergency response to large landslide which endangered numerous residential structures, emergency geotechnical recommendations, review of interim and final repairs.
- < South Facing Slope Landslide - Malibu, California: Project Director - Detailed geotechnical engineering evaluation of an ancient landslide. Investigation included specialty laboratory testing including ring shear testing and x-ray diffraction, two- and three-dimensional stability analyses, and parametric groundwater and seismic evaluation.

- < Tract 33410 Slope Failures - Agoura Hills, California: Project Director - Detailed geotechnical evaluation of one deep-seated and two surficial slope failures. Tasks included preparation of plans and specifications for repair and expert witness-related consultation.

RESIDENTIAL DEVELOPMENT PROJECTS/MASTER PLANNED COMMUNITIES:

- < Banning Ranch Development – Newport Beach, California: Project Director – Comprehensive geotechnical and fault evaluation study for proposed residential and hotel development. Fault investigation included thousands of lineal tests of fault trench through the Newport-Inglewood fault zone.
- < Ladera Ranch Planned-Community Development - Rancho Mission Viejo Company, County of Orange, California: Project Engineer - Geotechnical investigation and design for portions of major master planned community.
- < Crystal Cove Development – Newport Coast/County of Orange, California: Principal – Oversight of geotechnical engineering for mass grading, public works improvements, and residential development.
- < Talega Planned-Community Development – San Clemente, California: Principal – Oversight of geotechnical engineering for mass grading, public works improvements, and residential development.
- < Rancho Santa Margarita Planned-Community Development - Rancho Santa Margarita, California: Project Engineer/Manager - Geotechnical investigation, grading and foundation design, and construction observation for a number of planning areas in a major residential planned community development.
- < Edgewater Development – Chino, California: Project Director – Geotechnical investigation and design for large residential development area with recreational lake network.
- < Planning Area 19A Feasibility Study - Irvine, California: Project Engineer - Geotechnical investigation to advise on planning-related issues for roadway and general development in a marsh/soft clay site environment.
- < Various Foundation Investigations 1984-88 - Single-family residences, large tracts, commercial/industrial structures and high-rise buildings throughout Los Angeles County.

COMMERCIAL DEVELOPMENT PROJECTS:

- 20/40 Pacifica Office Towers – Irvine, California: Lead Geotechnical Engineer – Two high-rise office buildings and multi-story parking structure. Design involved foundation systems consisting of driven piles and geopiers.
- Capitol Group Office Campus – Irvine, California: Lead Geotechnical Engineer – Large office campus on highly expansive soils. Project involved geopier and select soil replacement subgrade improvement strategies.

- ▶ Spectrum 5, Spectrum 7, Spectrum 1 – Irvine, California: Principal Geotechnical Engineering oversight of investigation design and construction.
- ▶ Bridgepark Plaza, Mercantile East, Mercantile West, and Corporate Terrace – Ladera Ranch, California: Principal Geotechnical Engineering oversight of investigation design and construction.
- ▶ University Research Park Office Development - Irvine, California: Principal Geotechnical Engineering oversight of investigation design and construction.

MAJOR ROADWAYS:

- < Ortega Highway Widening – County of Orange/City of San Juan Capistrano: Lead Geotechnical Engineer – Geotechnical investigation and development of design recommendations in compliance with County and Caltrans standards.
- < City of Irvine/Irvine Industrial Company - Irvine Center Drive, Lake Forest Drive, and Sand Canyon Boulevard Street Widening - Irvine, California: Principal Geotechnical Engineering oversight of design and construction.
- < City of San Clemente/Talega Associates – Avenida Vista Hermosa, Avenida La Pata, Avenida Fresas, Avenida Saluda, and Avenida Talega – San Clemente, California: Principal Geotechnical Engineering oversight of design and construction.
- < La Pata Avenue Extension – County of Orange/City of San Juan Capistrano/City of San Clemente, California: Principal Geotechnical Engineering oversight and project management for planning, EIR and design.

BRIDGES:

- < Ortega Bridge Widening – County of Orange, California: Project Director – Geotechnical investigation and development of design recommendations for Caltrans bridge.
- < Cow Camp Bridges – County of Orange, California: Project Director – Geotechnical investigation and development of design recommendations for two bridges crossing complex geotechnical environs.
- < San Juan Creek Bridge Widening – County of Orange, California: Project Director – Geotechnical investigation, detailed geotechnical evaluation of seismic retrofit, and development of widening foundation recommendations.
- < Wildlife Crossing Bridge Widening – County of Orange/Ladera, California: Principal Geotechnical Engineer - Oversee widening project of existing bridge.
- < Las Flores Bridge - Malibu, California: Project Engineer/Manager - Evaluation of bridge design and alternatives for the City of Malibu.

- < Crown Valley Parkway Bridge – County of Orange, California: Lead Geotechnical Engineer for 238-meter-long, 27-meter-high bridge. Detailed geotechnical analysis for pile foundation design, abutment design, and geotechnical input to bedrock scour design.
- < Oso Parkway Pedestrian Bridge - County of Orange, California: Project Engineer - Geotechnical design for 65-foot span pedestrian bridge.
- < “A” Street Bridge at Barranca Parkway - Irvine, California: Project Engineer/Manager - Geotechnical investigation and design for new bridge over San Diego Creek.
- < “Los Angeles Avenue Bridge” - Moorpark, California: Project Engineer/Manager - Geotechnical assessment of proposed bridge expansion and retrofit. Development of preliminary design recommendations.
- < Tustin Avenue Bridge Widening – Anaheim, California: Principal Geotechnical Engineering oversight for widening project of existing bridge.
- < Washington Boulevard Bridge - Los Angeles County, California: Project Engineer - Geotechnical investigation and design for seismic retrofit of existing bridge.

WATER RESOURCE PROJECTS:

- < Horno Basin Detention Basin – County of Orange: Project Director – Geotechnical investigation and design for detention basin, spillway, bio-filtration system, and sub-drainage recapture system.
- < Oso Creek Geotechnical Scour Study – Mission Viejo, California: Project Director – Geotechnical evaluation of insitu geotechnical materials for scour evaluation and revetment study.
- < Various Water Lines, Sewer Lines, Talega Lift Station, South Ranch Lift Station, San Juan Creek Lift Station, and Ladera Zone 2 Reservoir, Talega Zone 1 Reservoir and Covenant Hills Reservoir and Lift Station for Santa Margarita Water District - Rancho Santa Margarita, Las Flores, Coto de Caza, and Ladera Ranch, California: Principal Geotechnical Engineering oversight.
- < Las Flores Canyon Sedimentation - Debris Flow Study - Malibu, California: Project Manager/Engineer - Geotechnical and geological input for hydraulic analyses.
- < Northwood Reservoir - Irvine, California: Project Geotechnical Engineer - Evaluation of foundation design and settlement potential for 4.5 MG reservoir.
- < Hicks Canyon Detention Basin - Irvine, California: Geotechnical Consultant - Geotechnical analysis and design for two large detention basins.
- < San Diego Creek Channel Improvements - Irvine, California: Project Manager/Engineer - Geotechnical investigation for proposed channel improvements consisting of soil cement and “keystone” geogrid-type revetments.

MISCELLANEOUS PUBLIC WORKS PROJECTS:

- < City of Laguna Niguel - Metrolink Station - Laguna Niguel, California: Principal Geotechnical Engineering oversight for a regional OCTA-funded commuter rail station.
- < BRM Storm Drain Replacement Project - Malibu, California: Project Manager/Engineer - Evaluation of storm drain pipe design in landslide and erosion prone area following destruction of system by fire.
- < Metro-Rail Vibration Testing - Los Angeles, California: Project Engineer - Geotechnical exploration and input for vibration study.
- < Big Rock Mesa Dewatering Well Project - Malibu, California: Project Engineer/Manager - Design, plan and specification preparation, installation and construction oversight for six dewatering wells to 350 feet and four horizontal drains.
- < Montellano Winterization - Hacienda Heights, California: Project Engineer/Manager - Design and construction oversight of long-term, multi-year landslide winterization.
- < Pavement Evaluation - Pomona, California: Project Manager/Engineer - Pavement evaluation for 4000 lineal feet of distressed pavement.

GOVERNMENT/CIVIC CENTERS:

- < Chino Hills Government Center Complex – Chino Hills, California: Project Director – Geotechnical investigation, development of recommendations and plans for multi-faceted government center consisting of multi-story government buildings and a four-story parking structure.
- < Vista Civic Center – Vista, California: Project Director – Development of final geotechnical design recommendations for Vista Civic Center.
- < Laguna Niguel Civic Center – Laguna Niguel, California: Lead Geotechnical Engineer - Geotechnical design oversight for investigation and design recommendation development.

SPORTSPARKS:

- < La Paz Sportspark – Laguna Niguel, California: Project Director – Geotechnical design for sportspark complex with synthetic fields. Infiltration design of subsurface field drainage system.
- < Chino Hills Sportspark – Chino Hills, California: Project Director – Geotechnical investigation and design for large sportspark complex with numerous synthetic fields.
- < Long Beach Sportspark – Long Beach, California: Project Director – Geotechnical investigation and design for planned regional sportspark in oil fields operation area. Developed unique design recommendations for proposed facilities to be placed on top of buried rubble and debris.

- < Jarupa Water Park – Jarupa, California: Project Director – Geotechnical investigation and design for multi-acre water park facility.

MECHANICALLY STABILIZED EARTH (MSE) WALLS:

- < The Irvine Company Development Areas 2C4 and 5 - County of Orange, Newport Coast, California: Design and construction oversight of numerous Loffel walls throughout the Newport Coast development area for The Irvine Company. Wall heights range up to 25 feet in height.
- < Ladera Development - County of Orange, California: Design and construction oversight of 50-foot-high “Loffel”-type MSE wall at the entrance to the Ladera Development in South Orange County. The wall was the highest wall permitted in the County of Orange to date. Due to the wall’s height, it involved an extensive design and review process. In addition, the wall was instrumented with slope inclinometers and an array of specially designed survey points integrated into the block facing. An abstract for a paper describing the wall design and instrumentation results has been accepted to the ASCE GEO-DENVER 2000 Conference.
- < Distressed “Keystone” Wall Evaluations – 1) Placentia, California: Forensic evaluation of distressed “Keystone” wall for Shea Homes, 2) Agoura Hills, California: Forensic evaluation of distress behind “Keystone” wall for Oaks Christian School, 3) Rancho Bernardo, California: Comprehensive forensic evaluation of severely distressed “Keystone” Wall at the Legacy/Toshiba development.
- < Crystal Cove Access Road - Orange County, California: Design of up to 40-foot-high “Loffel”-type MSE wall to support a major access road to a detention basin and recreation area. Special design considerations included: high seismic area, use of select backfill in both reinforced and retained zones, and erosion protection at the toe of the wall.
- < Spectrum 5 Commercial Development Area - Irvine, California: Design and construction oversight for over 1700 lineal feet of a “Loffel”-type MSE wall.
- < San Dimas Residential Development (Tract 52717) – San Dimas, California: Development of design plans and specifications for over 30 MSE walls incorporated into rough grading plans for a large residential development.

GEOTECHNICAL INSTRUMENTATION:

- < Ladera Residential Development – County of Orange, California: Principal Geotechnical Engineering Oversight of “real time” monitoring system for electrical towers above temporary slopes during grading.
- < La Paz Road – Laguna Niguel, California: Project Manager – Long-term monitoring of on-going slope movements. Monitoring program enables City of Laguna Niguel to incrementally and cost-effectively implement roadway stabilization project on an as-needed basis. Instrumentation includes slope inclinometers, multi-stage piezometers, and survey.

- < Crystal Cove – Newport Coast, California: Project Director – Long-term evaluation of surface and subsurface survey network and slope inclinometers to evaluate deep fill/fill slope performance.
- < Oceanside Dewatering - Oceanside, California: Project Engineer - Construction overview and monitoring of dewatering tunnel, horizontal drain, and tie-back installation.
- < Port of Los Angeles, Pier 300 Expansion - POLA, California: Project Manager/Engineer - Design, installation, and monitoring of specialty geotechnical instrumentation for port expansion.
- < Big Rock Mesa - Malibu, California: Project Manager/Engineer- Managed monitoring and dewatering district consisting of dewatering wells, horizontal drains, slope inclinometers, piezometers, multi-position extensometer, survey network, and groundwater discharge analysis.
- < Calle del Barco - Malibu, California: Project Manager/Engineer - Managed monitoring and dewatering district consisting of dewatering wells, horizontal drains, slope inclinometers, piezometers, and crack gauges.
- < Malibu Road - Malibu, California: Project Manager/Engineer - Managed monitoring and dewatering district consisting of piezometers, horizontal drains, and crack gauges.
- < Latigo Canyon - Malibu, California: Project Manager/Engineer - Managed monitoring and dewatering district consisting of slope inclinometers, piezometers, horizontal drains, dewatering wells, and crack gauges.
- < Rambla Pacifico Landslide - Malibu, California: Project Engineer - Installation and monitoring of slope inclinometers and multi-stage pneumatic piezometers.
- < La Conchita Landslide - Ventura County, California: Project Engineer/Manager - Design, installation, and monitoring of a system of slope inclinometers and multi-stage piezometers.
- < Hope Church - Rancho Bernardo, California: Project Engineer/Manager - Design, installation, and monitoring of complex monitoring array consisting of tiltmeters, survey network, slope inclinometers, and multi-stage pneumatic piezometers.

CITY GEOTECHNICAL ENGINEER/CONSULTANT:

- < City of Laguna Niguel (1997-Present): Review of geotechnical reports, preparation of guidelines, public works projects, geotechnical hazards analysis including testimony in front of state legislative committees, emergency response and legal consultation.
- < City of Dana Point (2001-Present): Review of complex geotechnical projects, emergency and litigation consultation, and public works projects.

- < City of Chino Hills (1992-97 & 2002-Present): Review of geotechnical reports, preparation of guidelines for report submittal and grading procedure requirements, public works projects, and general geotechnical consultation.
- < City of Vista (2000-2005): Review of geotechnical reports and general geotechnical consultation.
- < City of Rancho Palos Verdes (2004-Present): Alternate member of Geotechnical Appeals Board.
- < City of Malibu (1991-97): Review of geotechnical reports, preparation of guidelines, policy and standards for report submittal, public works projects, geotechnical hazards analysis, emergency response, planning evaluation, legal consultation.
- < City of Moorpark (1995-97): Review of geotechnical reports, preparation of guidelines, policy and standards for report submittal.
- < City of Agoura Hills (1988-97): Review of geotechnical reports, preparation of guidelines, policy and standards for report submittal, public works projects, geotechnical hazards analysis, emergency response, planning evaluation, legal consultation.
- < City of Palos Verdes Estates (1992-97): Review of geotechnical reports, preparation of guidelines, policy and standards for report submittal, public works projects, geotechnical hazards analysis, emergency response, planning evaluation, legal consultation.
- < City of Hidden Hills (1992-97): Review of geotechnical reports, preparation of guidelines, policy and standards for report submittal.
- < Additional Geotechnical Consultation to Cities: Cities of Lake Forest, La Habra Heights, and Laguna Beach.

LEGAL CONSULTATION:

Mr. Silver has provided geotechnical consultation for litigation on a wide variety of projects for over 20 years in the States of California and Nevada. He has been deposed numerous times and testified in court on a number of occasions. The type of litigation cases that Mr. Silver has been involved in include:

- Landslides
- Foundation distress due to expansive soils and settlement
- Concrete corrosion/sulfate damage
- MSE walls/retaining walls
- Groundwater problems
- Public works failures
- Site drainage

SPECIAL STUDIES:

- < Residential Foundation Deterioration Study for the Cities of Lakewood, La Palma, and Cypress, California: Staff Engineer - Regional evaluation of concrete corrosion performed for CDMG. Study included: analysis of soil and groundwater conditions, review of construction practice and code requirements and other geotechnical/geological contributing factors.

PUBLICATIONS:

- Sandri, D., Silver, G., Trazo, R., 2000, "Design, Construction, and Monitoring of a 14.9M High Geosynthetic Reinforced Segmental Retaining Wall in a Seismically Active Region", ASCE Geotechnical Special Publication (GSP) "Advances in Transportation and Geoenvironmental Systems using Geosynthetics".
- Silver, G., Van Thiel, D., 2006, "Permanent Deflection and Performance Study of Drivable Grass".
- Shlemon, Roy J., Davis, Paul, and Silver, Gregory, 2008, "Relative Activity of North Branch Splays (NBS) of the Newport-Inglewood Fault Zone, West Newport Oil Field, Newport Beach, California".