



City of Garden Grove Proposal to Provide On-Call Geotechnical Services

December 5, 2019

Submitted by:

GMU 23241 Arroyo Vista Rancho Santa Margarita, CA 92688 949-888-6513 GMU Proposal No. P-19198



December 5, 2019

Mr. Mark Uphus, P.E Senior Civil Engineer **CITY OF GARDEN GROVE** 11222 Acacia Parkway P.O. Box 3070 Garden Grove, CA 92842

GMU Proposal P-19198

Subject:	Proposal to Provide	On-Call	Geotechnical	Services,	City	of	Garden
	Grove, California						

Reference: "Request for Proposal for On-Call Geotechnical Services", distributed November 14, 2019.

Dear Mr. Uphus:

GMU is pleased to submit our proposal to provide On-Call Geotechnical Services. With over 50 years of experience in the Southern California area and as a small business enterprise (SBE), GMU is able to reliability, efficiently, and effectively provide the scope of work described in the referenced RFP. GMU possesses extensive experience in the design and construction of numerous public works projects including geotechnical/pavement evaluation & design, laboratory testing, and construction observation/testing services.

GMU currently serves as a Geotechnical/Pavement Engineering Consultant and provides services for the Cities of:

- Aliso Viejo
- Buena Park
- Chino Hills
- Dana Point
- Irvine
- Laguna Hills
- Laguna Niguel

- Lake Forest
- La Habra Heights
- Newport Beach
- Mission Viejo
- Orange
- Rancho Santa Margarita

- San Juan Capistrano
- Santa Fe Springs
- Torrance
- Westminster

We also provide on-call services for the County of Orange and the County of Los Angeles.

Our website, www.gmugeo.com, offers a virtual tour of GMU and an overview of some of GMU's projects.

We appreciate the opportunity to provide this proposal and look forward to future opportunities to work with the City of Garden Grove. Please do not hesitate to call if you have any questions regarding this proposal.

Submitted,

GMU

Gregory Silver, M.Sc., PE, GE President / CEO Principal Engineer gsilver@gmugeo.com (c) 949-633-0617

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Introduction

GMU is a Small Business Enterprise (SBE) with over 50 years of experience. Previously known as GMU Geotechnical, Inc., GMU has established a reputation for reliability, innovation, accuracy, efficiency, and excellent service, resulting in reduced cost, reduced scheduling man-hours spent on or project coordination, and reduced risk for our clients. These clients choose to maintain long-term relationships with us because of the benefits of our reputation and experience. Our clients include City, County, and other public agencies in addition to private owners, developers, and contractors. Shareholders of GMU consists of three (3) engineers or geologist that are active in the daily operation of the company, including performing and managing geotechnical and pavement design or construction projects.



GMU is a full-service geotechnical engineering firm offering a variety of geotechnical engineering services as well as a list of specialty services that complement our geotechnical engineering capabilities, outlined as follows:

• Geotechnical Engineering and Engineering Geology

- 5 Registered Geotechnical Engineers and 4 Certified Engineering Geologists, supported by numerous Senior Staff and Staff Engineers and Geologists
- Experience ranging from Master Planned Communities to Landslides to Bridges and Public Works Structures to Roadways to High Rise Structures.
- Structural Engineering for Retaining Structures and Shoring
 - Structural and geo-structural designs for: conventional retaining walls, soil nail walls, soldier pile walls, and MSE walls
- Soils and Materials Laboratory Testing
 - Certified by: County of Orange, Caltrans, AASHTO/AMRL, DSA
- Geotechnical (Soils) Inspection / Special Inspection
 - Geotechnical Engineering technicians dedicated to Public Works-related projects with experience ranging from 10 to 25 years and Caltrans Certified.

- Full range of special inspection capabilities (see Statement of Services)
- o Most geotechnical inspectors possess dual special inspection capabilities

• Pavement Engineering

- Pavement Engineering group led by Roger Schlierkamp, M.Sc., PE, Director of Pavement Engineering
- Dave Atkinson with over 20 years of pavement experience in Orange County



• Construction Management and Monitoring

- Group led by Mike Moscrop, PE, GE, Vice President
- Includes: Construction vibration monitoring, construction monitoring, and construction management advisory
- 0 *30*+ year history with monitoring hillside land movement.
- Forensic Engineering and Expert Witness Consultation
 - 30+ year history of providing forensic engineering and expert witness consultations.
- Geotechnical Instrumentation

GMU is an award-winning firm recognized by ASCE, CELSOC, and CalGeo. Please see our website (<u>www.gmugeo.com/awards</u>) for a summary.

General City/Municipality Experience

GMU and its staff have a long history providing services to Cities and various municipalities throughout Southern California.

Select List of Current City/Municipality Work

- <u>County of Los Angeles</u> On-call pavement engineering as well as pavement inspection and testing.
- <u>County of Orange</u> Consistently ranked either the top or one of the top three geotechnical firms in Orange County
- <u>City of Mission Viejo</u> *Providing pavement design and construction observation/testing services, along with geotechnical reviews.*
- <u>City of Laguna Niguel</u> *City's geotechnical consultant for over 20 years*

- <u>City of Lake Forest</u> City QA/QC services and consultation on public works projects
- <u>City of Buena Park</u> *Public works projects*.
- <u>City of Rancho Santa Margarita</u> *City Geotechnical and Pavement Engineering Consultant since 2005 for both reviews and public works projects.*
- <u>City of Dana Point</u> *Public works projects and pavement engineering/testing.*
- <u>City of Aliso Viejo</u> *Public works projects and pavement engineering/testing.*
- <u>City of Laguna Hills</u> *City geotechnical consultant providing public works design consulting.*
- <u>City of Chino Hills</u> *City geotechnical services providing both plan check and design level services as well as inspection services.*
- <u>City of Newport Beach</u> *City geotechnical consultant providing: geotechnical design, pavement engineering, pavement testing and inspections, forensic/expert witness consulting, and QA/QC services for major public works projects.*

Scope of Services

GMU understands that the City of Garden Grove is seeking various professional consulting services.

A brief overview of our proposed services is summarized as follows. All work is supervised by a registered geotechnical engineer, civil engineer, and/or a registered engineering geologist, depending on the work being performed.

Our duties will be performed in a manner that promotes the cost-effective execution and progress during construction projects.

Clear invoicing will be submitted and will include the following information:

- Project name and identification number;
- Purchase order number;
- Invoice date and work dates; and
- Work performed.

Construction Observation and Testing Services

During construction, GMU's Senior Engineering Technicians (Soil Technicians) will perform field observations and testing of materials being constructed. Soil technicians performing observation, testing, and sampling are certified by Caltrans.

Geotechnical support will be provided during the full-depth reclamation and cement treatment process, including performing the City of Garden Grove's Block Cracking Mitigation Procedures.

Plant technicians will perform asphalt concrete plant inspections and materials sampling to verify conformance of the material with the mix design.

Proper field safety practices and procedures will be maintained, especially when working near streets and intersections.

A sample list of certifications for certain technicians that we expect to perform work for this oncall is presented in **Appendix D**.

Geotechnical Engineering for Public Works Projects

GMU currently provides services to the Cities of Laguna Niguel, Laguna Hills, Dana Point, Rancho Santa Margarita, Irvine, Newport Beach, Mission Viejo, Buena Park, Aliso Viejo, Westminster, Torrance, Santa Fe Springs, La Habra Heights, Chino Hills, and more which have included geotechnical investigation, design, and report services for vertical, horizontal, and underground City capital improvement projects.

These projects range from civic center complexes and pedestrian bridges to lift stations with supporting underground utility pipelines. Evaluations include the review of existing geotechnical maps and reports, initial investigation, lab testing, geotechnical analysis, and report preparation with recommendations for grading, earthwork, settlement, surface and subsurface drainage, foundation/column/slab design, slope stability, pavement design, trench backfill, retaining wall design, environmental concerns, removal of unsuitable materials and more.

Throughout the design process, GMU will review project plans and specifications with consideration of geotechnical issues, such as suitability of existing soils and materials testing.

Pavement Engineering - Rehabilitation and Design

GMU offers specialized technical expertise and experience in performing pavement evaluations and developing *cost-effective* pavement repair recommendations. GMU's typical approach to pavement evaluation generally consist of the following procedures:

- Visual Pavement Surface Condition Assessment Identification of pavement distress types, severity levels, and extent in order to assess deterioration mechanisms and develop pavement repair recommendations in response. GPS-referenced photographs are taken to show representative and/or select pavement surface conditions.
- Field Exploration Investigate and analyze existing pavement conditions through performing pavement corings, soil borings, and sampling. Samples will be logged, including location, depth, material type(s) encountered, visual soil classification, thickness, and more.

Falling weight deflectometer (deflection) testing and ground-penetrating radar (GPR) testing can also be performed to evaluate the existing pavement structural condition and

thicknesses of the various pavement layers (AC / AB thicknesses) on a continuous basis. Deflection testing is typically performed through Dynatest and GPR testing through Foundation Mechanics (Jils), companies that we have relationships with and have utilized on many past projects. The data collected from these subconsultants are reviewed and analyzed by GMU.

Prior to performing field exploration, GMU will obtain necessary permits. Coring and/or boring locations will be marked in the field and Underground Service Alert (Dig Alert) will be notified. Traffic control plans, if required, will be prepared and submitted to the City for review and approval.

- Laboratory Testing: Laboratory testing will be performed in our Caltrans-certified pavement and soils materials laboratory to evaluate various engineering properties of the collected materials, including R-value, moisture content, in-place density, maximum density and optimum moisture, direct shear, consolidation, sulfate content, soil classification (Atterberg Limits and particle size), mix design development tests, and other tests that may be needed to evaluate or characterize the collected materials.
- Engineering Analysis Perform pavement engineering analysis of new and existing pavements in accordance with the California Highway Design Manual or mechanistic empirical methods. GMU will consider construction cost, production rate, and even greenhouse gas emissions in our analysis.
- **Pavement Report** Pavement report will present a summary of our work, findings, conclusions, and recommendations, including:
 - Scaled plans showing coring or boring locations, project limits, and project location;
 - Summary of pavement surface condition assessment (pavement distress types, severity levels, and extent);
 - Results of deflection and GPR testing data, if collected;
 - Logs of subsurface exploration (boring logs or AC coring summary tables);
 - Results of laboratory testing;
 - Summary of analysis methodology and procedures;
 - Pavement repair recommendations including replacement structural section thicknesses, overlay thickness, and/or rehabilitation repair strategy. Typically, at least two repair recommendations are provided (10- and 20-year design lives utilizing traffic indices assumed or provided to us).
 - When overlay recommendations are provided (or other recommendations that may change the surface elevations), there will be consideration given to street profile, cross section, and/or surface drainage.

GMU possesses extensive experience in developing cost-effective pavement repair recommendations, including the following:

- Cold in-place (CIR) or cold central plant recycled (CCPR) asphalt concrete (AC) pavement;
- Cement stabilized pulverized base (CSPB) as part of the pavement structural section;
- Cement- or lime-stabilized soils (CSS or LSB) for subgrade stabilization and/or as part of the pavement structural section;
- Fiber-reinforced asphalt concrete (FRAC) to improve reflective cracking resistance and/or reduce required AC thickness;
- Rubberized hot-mix asphalt (RHMA or ARHM overlays);
- Geogrid/geotextiles to reduce required aggregate base thickness or to stabilize subgrade conditions; and more.

The procedures described above and our extensive experience in design and construction of these strategies allow us to recommend cost-effective alternative pavement repair strategies. The final report will be signed and stamped by a California registered geotechnical engineer.

Geotechnical and Pavement Laboratory Testing Services

GMU's County of Orange, Caltrans, AMRL, and AASHTO-certified laboratory can provide testing of various construction, soils, and pavement materials of construction or design projects in accordance with the procedures, policies, regulations, requirements, and formats of the given test method. Laboratory testing will be performed to test various construction materials for specification compliances purposes. Additionally, laboratory testing can be performed to evaluate various engineering properties for geotechnical and/or pavement design or investigation projects. A select list of laboratory tests performed by GMU includes:

- Asphalt binder content
- Testing for backfill material, aggregate base, sand bedding, etc.
- Compaction Testing
- Core density
- Hveem Stability
- Wet track abrasion
- R-value
- Maximum dry density and optimum moisture content

- Corrosion series
- Mix moisture content
- Durability index
- Direct shear
- Atterberg Limits
- Consolidation
- Permeability
- Concrete compressive strength
- Sand Equivalent

Structural Engineering for Retaining Structures and Shoring

GMU provides full design and construction observation services for many types of retaining walls, including MSE walls, soil nail walls, and tieback walls, as well as conventional block

walls. Design services include geotechnical and structural calculations and development of plans for bidding.

Offering structural and geotechnical engineering design services in-house allows GMU to develop cost-effective retaining wall design services and eliminates the discontinuity often faced when structural and geotechnical services are performed by separate companies.

Review and/or Forensic Investigations of Retaining Walls/Slope Failures

We have provided forensic investigations, engineering services, and third-party review services related to large landslides, retaining wall stability, settlement and subsidence, and many other projects. Slope failures, including landslides, and retaining wall instability has occurred in several of the Cities we consult to, and GMU has provided review and/or forensic investigation for these projects. Select GMU personnel are experienced in deposition and court testimony.

The typical turnaround time varies depending on the size, complexity and demands of the particular project. GMU will coordinate with the City at the start of the project to discuss a timeline that will meet the City's deadlines.

Review of Slope and Drainage Conditions As Needed

Our geotechnical engineers and geologists are experienced in analyzing both the static and dynamic stability of existing and proposed slopes, and developing recommendations to stabilize slopes. Analyses are performed using appropriate stability methods and state-of-the-art computer software. Dynamic analytical methods range from pseudo-static analyses to slope deformation analyses.

In addition, our professional staff are experienced in evaluating existing and proposed drainage conditions for adequacy, and are adept at providing recommendations to improve existing drainage conditions as well as planned improvements.

The typical turnaround time varies depending on the size, complexity and demands of the particular project. GMU will coordinate with the City at the start of the project to discuss a timeline that will meet the City's deadlines.

Geologic and Geotechnical Site Reconnaissance

Our geotechnical engineers and geologists are experienced in providing site reconnaissance for a variety of projects, including capital improvement projects and emergency situations.

Independent Review of Geologic Hazard Areas

Our geologist and geotechnical engineers have extensive experience in detailed review of geologic/ geotechnical hazard areas of sites with special considerations such as liquefaction, compressible and collapsible soils, landslides, expansive soils, fill/bedrock transitions, and deep fills. GMU engineers and geologists can perform detailed and comprehensive liquefaction,

seismic settlement estimates, and both probabilistic and deterministic ground motion analyses. We utilize State of the art techniques implementing the latest technology (i.e., cone penetrometer testing, seismic refraction, in situ energy calibration for SPT testing, etc.). Probabilistic as well as deterministic based analyses can be performed. Our company is uniquely qualified in geotechnical studies and planning for hillside development. Our engineering geologists are very well trained in identifying landslides, assessing their impact on the development, and providing mitigating measures.

We provide both geologic and geotechnical site reconnaissance services to assist in preparing site evaluations, geotechnical analysis, and recommendations for project grading and design.

Wall Design Review

Whether for a capital improvement project or a private project as part of a permit review, GMU can provide review of retaining wall design for all types of walls, including CMU block retaining walls, MSE walls, etc. GMU also has extensive experience in designing retaining walls, particularly those with a geo-structural element.

Personnel

A diverse and wide range of qualified professionals will be assigned to this contract, ranging from principal engineers to engineering technicians. All services provided to the City of South El Monte will be overseen by GMU's President/CEO, **Mr. Gregory P. Silver**, who is both a licensed Civil and Geotechnical Engineer with over 34 years of experience and extensive work with numerous cities throughout Southern California.

Gregory P. Silver, MSc, PE has extensive experience since 1989 working for numerous Cities serving in the capacity as the City's Geotechnical Engineer. A sampling of these Cities includes Laguna Niguel, Chino Hills, Mission Viejo, Newport Beach, Dana Point, Malibu, Moorpark, Rancho Palos Verdes, Vista, Agoura Hills, Palos Verdes Estates, and Hidden Hills. Mr. Silver's experience within these municipalities includes review work, policy establishment, geotechnical design for City projects, management of inspection and testing for public works projects, landslide disaster response, coordination with FEMA and other state and federal agencies, and legal/forensic representation.

Roger Schlierkamp, MSc, PE, has over 10 years of diversified pavement engineering experience and is the Director of Pavement Engineering at GMU Geotechnical, Inc. For this contract, Mr. Schlierkamp will provide pavement engineering services, including pavement evaluations, design, observation, testing, inspection and mix design development. Mr. Schlierkamp has provided pavement engineering services for Caltrans, Orange County, Los Angeles County, numerous local municipalities, and more.





Please refer to Appendix A for complete resumes of key staff.

Staffing and Availability

GMU's team will consist of a diverse range of staff, ranging from Geotechnical Engineers to Engineering Geologists. All services for the City will be provided by GMU employees who *are registered professionals*. These services will be overseen by **Mr. Greg Silver**, a licensed Civil and Geotechnical Engineer with over 34 years of experience and extensive work with numerous cities throughout Southern California. Additional professional support will be provided by **Mr. Roger Schlierkamp** as noted below. Both Mr. Silver and Mr. Schlierkamp possess extensive

experience managing design services projects on a variety of small to large public works projects. They will manage GMU's crew of professional staff, and lab technicians to deliver the geotechnical and pavement engineering services needed on each project. The staff organization chart below illustrates the staff that will be utilized for the City of South El Monte and their availability. Resumes for GMU's management team are provided in Appendix A. Note that additional qualified personnel are also available and additional resumes will be provided if needed.

STAFF ORGANIZATIONAL CHART

Years with GMU/Total years of experience are denoted in parenthesis

Project Executive / Primary Contact

<u>GREG SILVER, M.Sc., PE, GE (21/34)</u> President/CEO Principal Engineer Project Executive Available 75% of the time

Pavement Engineering ROGER SCHLIERKAMP, M.Sc., PE (4/9)

Pavement Engineering Director Project Manager Available 75% of the time

Geotechnical Engineering

NADIM SUNNA, M.Sc., PE (3/8) Senior Engineer Project Manager Available 90% of the time

References

COUNTY OF LOS ANGELES – (2015-present)

Mr. Yonah Halpern

Phone: (626) 458-1731 email: <u>YHALPERN@dpw.lacounty.gov</u> Address: 1537 Alcazar St, Alhambra, CA 90033

• Pavement Engineering Design

COUNTY OF ORANGE – (2017-present)

Mr. Vinh Tran – Senior Civil Engineer Phone: (714) 955-0210 email: <u>vinh.tran@ocpw.ocgov.com</u> Address: 601 North Ross Street, Santa Ana, CA 92701

- Geotechnical Investigations
- Construction Observation and Testing

CITY OF ALISO VIEJO - (2011-present)

Mr. Shaun Pelletier – City Engineer/Director of Public Works Phone: (949) 425-2533 email: <u>spelletier@cityofalisoviejo.com</u> Address: 12 Journey #100, Aliso Viejo, CA 92656

- Geotechnical Investigations
- Geotechnical Monitoring

CITY OF CHINO HILLS – (2002-present)

Mr. Winston Ward - Assistant Community Development Director, Building Official Phone: (909) 364-2781 or (949) 248-3574 email: <u>wward@chinohills.org</u> Address: 14000 City Center Drive, Chino Hills, CA 91709

- Geotechnical Review/Plan Checking
- Geotechnical Investigations for Landslides, Civic Center, Parks, Roadways, Pipelines
- Construction Inspection and Oversight
- Pavement Engineering, Observation, and Testing
- Special Inspection

CITY OF NEWPORT BEACH – (2009-present)

Mr. David Webb – Deputy Public Works Director/City Engineer Phone: (949) 644-3328 email: <u>dawebb@city.newport-beach.ca.us</u> Address: 100 Civic Center Dr., Newport Beach, Ca 92660

- Construction Inspection and Oversight
- Pavement Design, Observation, and Testing
- Geotechnical Investigations for Parks, Reservoirs, Roadways, Slopes
- Forensic/Expert Witness

Additional references are available upon request.

Project Profiles

Select project profiles are presented within Appendix B.

Proposed Fee

Our current fee schedule for each position classification required to provide the services described in the scope of work and all reimbursable fees and expenses is provided in **Appendix** C.

Appendix A Key Staff Resumes



GREGORY SILVER, M.SC., PE, GE President/CEO



PROFESSION

Geotechnical Engineer Civil Engineer

REGISTRATIONS

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

EDUCATION

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

PROFESSIONAL EXPERIENCE

<u>GMU Geotechnical, Inc.</u> (1997-Present) President, Principal Engineer, Rancho Santa Margarita, California <u>Bing Yen & Associates, Inc.</u> (1988-1997) Project Engineer to Associate/Manager of Municipal Services, Irvine, California <u>G.C. Masterman & Associates, Inc.</u> (1984-1986) Technician to Project Engineer Van Nuys, California

PROFESSIONAL AFFILIATIONS

ASCE – Member CalGeo – Past President ACEC – Member

SUMMARY OF EXPERIENCE & QUALIFICATIONS

Mr. Silver has over 30 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 25 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 President and Principal Engineer of GMU. Mr. Silver is a past president of CalGeo - a 100 member firm statewide organization. Selected types of projects representative of Mr. Silver's experience are listed below:

- Commercial Development Projects
- High-rise Structures
- Landslides
- Residential Development Projects/Master Planned Communities
- Major Roadways
- Bridges
- Water Resource Projects
- Dewatering Projects
- Miscellaneous Public Works Projects
- Government/Civic Centers
- Sportsparks
- Mechanically Stabilized Earth (MSE) Walls
- Soil Nail Walls
- Geotechnical Instrumentation
- Tie-back Slope Reinforcement
- Pavement Engineering and Design
- City Geotechnical Engineer/Consultant
- Legal Consultation
- Special Studies

GEOTECHNICAL ENGINEERING

COMMERCIAL DEVELOPMENT PROJECTS:

- <u>20/40 Pacifica Office Towers</u> Irvine, California, Lead Geotechnical Engineer Two high-rise office buildings and one 5 story parking structure. Design involved foundation systems consisting of driven piles and geopiers.
- <u>520 Newport Center Drive Office Tower</u> Newport Beach, California: Principal-in-charge one 20-story high-rise office building and adjacent 6-story parking structure. Design involved mat and spread footing foundation design and analyses, shoring design, and permanent retaining wall design
- <u>650 Newport Center Drive Office Tower</u> Newport Beach, California: Principal-in-charge one 20-story high-rise office building and two adjacent multi-story parking structures with up to 2-story subterranean sections. Design included mat foundation design, spread footing design, shoring design, and permanent retaining wall design.
- <u>200 Spectrum Center Drive Office Tower</u> Irvine, California- Principal-in-charge 21 story office building and one adjacent 6 story parking structures. Design included driven pile foundation design, spread footing design, shoring design, and permanent retaining wall design.
- <u>400 Spectrum Center Drive Office Tower</u>– Irvine, California Principal-in-charge one 21 story office building and one adjacent 6-story parking structures with up to 2-story subterranean sections. Design included mat foundation design, spread footing design, shoring design, and permanent retaining wall design.
- <u>Irvine Spectrum Marriott Hotel Irvine, California</u> Irvine California Principal-in-charge – one 15 story hotel building with adjacent 2 story event center. Design included mat foundation design, spread footing design, and permanent retaining wall design.
- <u>Sand Canyon Business Park</u> Irvine, California: Principal-in-charge/Lead Geotechnical Engineer multi-story campus masonry block buildings on highly expansive soils with associated parking, walkways, etc. Geotechnical design included innovative partial mat/partial conventional slab to minimize expansive soil movements.
- <u>Discovery Business Center</u> Irvine, California: Principal-in-charge/Lead Geotechnical Engineer multi-story campus masonry block buildings on highly expansive soils with associated parking, walkways, etc. Geotechnical design included innovative partial mat/partial conventional slab to minimize expansive soil movements.
- <u>Capitol Group Office Campus</u> Irvine, California: Lead Geotechnical Engineer Large office campus on highly expansive soils. Project involved geopier and select soil replacement subgrade improvement strategies.

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

LANDSLIDES:

- <u>Brancato Landslide</u> 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.
- <u>Belmont Estates Horseshoe Landslide</u> 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.
- <u>Voyager Lane Landslide</u> 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.
- <u>Rambla Pacifico Landslide Stabilization</u> Malibu, California: Project Director on one million dollar landslide stabilization design. Involved working with FEMA and OES and within NEPA/CEQUA guidelines.
- <u>Calle Montecillo Roadway Stabilization</u> Agoura Hills, California: Project Director Evaluation and design of roadway slope stabilization. Design, plans, and specifications.
- <u>Big Rock Mesa Landslide Area</u> 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.
- <u>Montellano Landslide</u> Hacienda Heights, California: Project Manager/Engineer Pump tests, geotechnical monitoring, and long-term surface drainage improvement design with plans and specifications.
- <u>Mystic Hills Landslide</u> Laguna Beach, California: Project Geotechnical Engineer Third party geotechnical evaluation of the stability of an ancient landslide for the City of Laguna Beach.

- <u>Kanan Dume Road Landslide</u> Malibu, California: Project Director Monitoring, geotechnical evaluation, geological evaluation, remediation design for a 100-foot roadway embankment failure.
- <u>Via Estoril Landslide</u> Laguna Niguel, California Emergency response to large landslide which endangered numerous residential structures, emergency geotechnical recommendations, review of interim and final repairs.
- <u>South Facing Slope Landslide</u> 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.
- <u>Tract 33410 Slope Failures</u> 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:

- <u>Santaluz</u> City of San Diego, California. Principal Geotechnical Engineering Oversight Project direction and oversight for complex geotechnical engineering issues including: hard rock, blasting, rock fills and utility over-excavation.
- <u>Sendero Development</u> County of Orange, California: Principal Geotechnical Engineering Oversight Project direction and oversight for complex geotechnical engineering issues including: time delayed settlement and resulting solutions involving surcharge and wick drain design and debris flow evaluation and mitigation and slope stability.
- <u>Banning Ranch Development</u> 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.
- <u>Ladera Ranch Planned-Community Development</u> Rancho Mission Viejo Company, County of Orange, California: Project Engineer Geotechnical investigation and design for portions of major master planned community.
- <u>Crystal Cove Development</u> Newport Coast/County of Orange, California: Principal Oversight of geotechnical engineering for mass grading, public works improvements, and residential development.
- <u>Talega Planned-Community Development</u> San Clemente, California: Principal Oversight of geotechnical engineering for mass grading, public works improvements, and residential development.
- <u>Rancho Santa Margarita Planned-Community Development</u> 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.

- <u>Edgewater Development</u> Chino, California: Project Director Geotechnical investigation and design for large residential development area with recreational lake network.
- <u>Planning Area 19A Feasibility Study</u> Irvine, California: Project Engineer Geotechnical investigation to advise on planning-related issues for roadway and general development in a marsh/soft clay site environment.
- <u>Various Foundation Investigations 1984-88</u> Single-family residences, large tracts, commercial/industrial structures and high-rise buildings throughout Los Angeles County.

MAJOR ROADWAYS:

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

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

- <u>Las Flores Bridge</u> Malibu, California: Project Engineer/Manager Evaluation of bridge design and alternatives for the City of Malibu.
- <u>Crown Valley Parkway Bridge</u> 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.
- <u>Oso Parkway Pedestrian Bridge</u> County of Orange, California: Project Engineer Geotechnical design for 65-foot span pedestrian bridge.
- <u>"A" Street Bridge at Barranca Parkway</u> Irvine, California: Project Engineer/Manager Geotechnical investigation and design for new bridge over San Diego Creek.
- <u>"Los Angeles Avenue Bridge"</u> Moorpark, California: Project Engineer/Manager Geotechnical assessment of proposed bridge expansion and retrofit. Development of preliminary design recommendations.
- <u>Tustin Avenue Bridge Widening</u> Anaheim, California: Principal Geotechnical Engineering oversight for widening project of existing bridge.
- <u>Washington Boulevard Bridge</u> Los Angeles County, California: Project Engineer Geotechnical investigation and design for seismic retrofit of existing bridge.

WATER RESOURCE PROJECTS:

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

• <u>San Diego Creek Channel Improvements</u> - Irvine, California: Project Manager/Engineer - Geotechnical investigation for proposed channel improvements consisting of soil cement and "keystone" geogrid-type revetments.

MISCELLANEOUS PUBLIC WORKS PROJECTS:

- <u>Marina Park</u> City of Newport Beach Geotechnical Project Manager of geotechnical and Materials Inspections. Project involved stone columns for liquefaction remediation, concrete sheet pile walls with tie-backs and specialty foundation design
- <u>City of Laguna Niguel Metrolink Station</u> Laguna Niguel, California: Principal Geotechnical Engineering oversight for a regional OCTA-funded commuter rail station.
- <u>BRM Storm Drain Replacement Project</u> Malibu, California: Project Manager/Engineer Evaluation of storm drain pipe design in landslide and erosion prone area following destruction of system by fire.
- <u>Metro-Rail Vibration Testing</u> Los Angeles, California: Project Engineer Geotechnical exploration and input for vibration study.
- <u>Big Rock Mesa Dewatering Well Project</u> 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.
- <u>Montellano Winterization</u> Hacienda Heights, California: Project Engineer/Manager Design and construction oversight of long-term, multi-year landslide winterization.
- <u>Pavement Evaluation</u> Pomona, California: Project Manager/Engineer Pavement evaluation for 4000 lineal feet of distressed pavement.

GOVERNMENT/CIVIC CENTERS:

- <u>Chino Hills Government Center Complex</u> 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.
- <u>Vista Civic Center</u> Vista, California: Project Director Development of final geotechnical design recommendations for Vista Civic Center.
- <u>Laguna Niguel Civic Center</u> Laguna Niguel, California: Lead Geotechnical Engineer Geotechnical design oversight for investigation and design recommendation development.

SPORTSPARKS:

• <u>La Paz Sportspark</u> – Laguna Niguel, California: Project Director – Geotechnical design for sportspark complex with synthetic fields. Infiltration design of subsurface field drainage system.

- <u>Chino Hills Sportspark</u> Chino Hills, California: Project Director Geotechnical investigation and design for large sportspark complex with numerous synthetic fields.
- <u>Long Beach Sportspark</u> 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.
- <u>Jarupa Water Park</u> Jarupa, California: Project Director Geotechnical investigation and design for multi-acre water park facility.

GEOTECHNICAL INSTRUMENTATION:

- <u>Ladera Residential Development</u> County of Orange, California: Principal Geotechnical Engineering Oversight of "real time" monitoring system for electrical towers above temporary slopes during grading.
- <u>La Paz Road</u> 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.
- <u>Crystal Cove</u> Newport Coast, California: Project Director Long-term evaluation of surface and subsurface survey network and slope inclinometers to evaluate deep fill/fill slope performance.
- <u>Oceanside Dewatering</u> Oceanside, California: Project Engineer Construction overview and monitoring of dewatering tunnel, horizontal drain, and tie-back installation.
- <u>Port of Los Angeles, Pier 300 Expansion</u> POLA, California: Project Manager/Engineer Design, installation, and monitoring of specialty geotechnical instrumentation for port expansion.
- <u>Big Rock Mesa</u> 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.
- <u>Calle del Barco</u> Malibu, California: Project Manager/Engineer Managed monitoring and dewatering district consisting of dewatering wells, horizontal drains, slope inclinometers, piezometers, and crack gauges.
- <u>Malibu Road</u> Malibu, California: Project Manager/Engineer Managed monitoring and dewatering district consisting of piezometers, horizontal drains, and crack gauges.

- <u>Latigo Canyon</u> Malibu, California: Project Manager/Engineer Managed monitoring and dewatering district consisting of slope inclinometers, piezometers, horizontal drains, dewatering wells, and crack gauges.
- <u>Rambla Pacifico Landslide</u> Malibu, California: Project Engineer Installation and monitoring of slope inclinometers and multi-stage pneumatic piezometers.
- <u>La Conchita Landslide</u> Ventura County, California: Project Engineer/Manager Design, installation, and monitoring of a system of slope inclinometers and multi-stage piezometers.
- <u>Hope Church</u> 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.

DEWATERING DESIGN & MANAGEMENT PROJECTS:

- <u>Dewatering Remediation</u> Coto de Caza, California: Project Engineer/Manager Hydrogeologic modeling and Modeling design of dewatering cut-off trench to lower groundwater below home foundations.
- <u>Dewatering District Oversight (Big Rock, Latigo Canyon, Malibu Road)</u>, Malibu, California: Project Engineer/Manager – Work included: dewatering district management, hydrogeologic modeling, well design and maintenance, horizontal drain design as well as maintenance and monitoring.
- <u>Montellano Landslide Dewatering</u> Hacienda Heights, California: Project Engineer/Manager – Pump tests, dewatering wells design and construction, design and construction oversight of horizontal drains.

CITY GEOTECHNICAL ENGINEER/CONSULTANT:

- <u>City of Mission Viejo</u> (2016 Present) Review of geotechnical reports, general geotechnical consultation, Public works project design and geotechnical and materials inspection.
- <u>City of Laguna Niguel</u> (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.
- <u>City of Newport Beach</u> (2009-Present): Public Works projects including street rehabilitation, construction observations and testing, marina construction, and legal consultation.
- <u>City of Chino Hills (1992-97 & 2002-Present)</u>: Review of geotechnical reports, preparation of guidelines for report submittal and grading procedure requirements, public works projects, and general geotechnical consultation.
- <u>City of Dana Point</u> (2001-2014; 2015-Present): Review of complex geotechnical projects, emergency and litigation consultation, and public works projects.

- <u>City of Vista</u> (2000-2005): Review of geotechnical reports and general geotechnical consultation.
- <u>City of Rancho Palos Verdes</u> (2004-2006): Alternate member of Geotechnical Appeals Board.
- <u>City of Malibu</u> (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.
- <u>City of Moorpark</u> (1995-97): Review of geotechnical reports, preparation of guidelines, policy and standards for report submittal.
- <u>City of Agoura Hills</u> (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.
- <u>City of Palos Verdes Estates</u> (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.
- <u>City of Hidden Hills</u> (1992-97): Review of geotechnical reports, preparation of guidelines, policy and standards for report submittal.
- <u>Additional Geotechnical Consultation to Cities</u>: Cities of Lake Forest, La Habra Heights, and Laguna Beach.

PAVEMENT ENGINEERING AND DESIGN

- <u>City of Irvine Public Works Department</u> Irvine, California (2012-2014). Principal-in-Charge. Various projects including: Irvine Center Drive, Campus Drive, Jamboree Boulevard, and Jeffrey Road pavement rehabilitations.
- <u>Irvine Industrial Company</u> Cities of Irvine and Lake Forest, California (1997-2010). Principal-in-Charge. Various projects including: Irvine Center Drive, Lake Forest Drive, Bake Parkway, Portola Parkway, and Sand Canyon Boulevard street widening and overlays.
- <u>City of Dana Point</u> _ Dana Point, California (2002-2014). Principal-in-Charge. Various projects including: Street of the Golden Lantern, Stonehill Drive, Del Obispo Street, Camino Capistrano, Pacific Coast Highway, Del Prado overlays, and miscellaneous residential street overlays and slurry seals.
- <u>City of Aliso Viejo</u> Aliso Viejo, California (2012-2014). Principal-in-Charge. Various projects including: Aliso Creek Road, Pacific Park Drive, Moulton Parkway, Oso Parkway, La Paz Road overlays.
- <u>City of Laguna Niguel</u> Laguna Niguel, California (2002-2014). Principal-in-Charge. Various projects including: Street of the Golden Lantern, Camino del Avion, Niguel Road,

Cabot Road, Paseo de las Colinas, Camino Capistrano, Aliso Creek Road, La Paz Road rehabilitation and overlays, and miscellaneous residential street overlays and slurry seals.

- <u>City of Newport Beach</u> Newport Beach, California (2009-2014). Principal-in-Charge. Various projects including: Newport Center Drive, Balboa Avenue, River Avenue, Mesa Drive, Bayside Drive overlays, and miscellaneous residential street overlays and slurry seals.
- <u>City of Rancho Santa Margarita</u> Rancho Santa Margarita, California (2011-2014). Principal-in-Charge. Various projects including: Santa Margarita Parkway, Antonio Parkway, Robinson Ranch Road overlays and slurry seals (2006-2014); and miscellaneous residential street overlays and slurry seals.
- <u>City of Laguna Niguel</u> Laguna Niguel, California (2002-2014). Principal-in-Charge. Various projects including: Street of the Golden Lantern, Camino del Avion, Niguel Road, Cabot Road, Paseo de las Colinas, Camino Capistrano, Aliso Creek Road, La Paz Road rehabilitation and overlays, and miscellaneous residential street overlays and slurry seals.
- <u>County of Orange Ortega Highway Widening</u> San Juan Capistrano, California (2009-2011). Principal-in-Charge. Pavement design for Phase 1 widening of Ortega Highway from the City of San Juan Capistrano border to Antonio Parkway. Design involved pavement rehabilitation of existing roadway and widening of both roadway shoulders.

GEO-STRUCTURAL ENGINEERING

MECHANICALLY STABILIZED EARTH (MSE) WALLS:

- <u>The Irvine Company Development Areas 2C4 and 5</u> 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.
- <u>Ladera Development</u> 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 was accepted to the ASCE GEO-DENVER 2000 Conference.
- <u>Distressed "Keystone" Wall Evaluations</u> 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.
- <u>Crystal Cove Access Road</u> 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.

- <u>Spectrum 5 Commercial Development Area</u> Irvine, California: Design and construction oversight for over 1700 lineal feet of a "Loffel"-type MSE wall.
- <u>San Dimas Residential Development (Tract 52717)</u> San Dimas, California: Development of design plans and specifications for over 30 MSE walls incorporated into rough grading plans for a large residential development.

SOIL NAIL AND TIE-BACK WALLS/SLOPES:

- <u>China Cove Soil Nail Wall/Slope</u> Corona Del Mar, California: Structural and geotechnical design and construction oversight for soil nail wall and slope with "boulderscape" facing. Design done to mitigate long-term surficial failure problem and upgrade the look of a high profile slope.
- <u>Placentia Slope Stabilization</u> Placentia, California: Structural design for soil nail wall at the rear of several homes in residential development. Wall was designed to stabilize slope while minimizing space impacts in rear yard.
- <u>City of Orange HOA Tie-back Slope Stabilization</u> Orange, California: Structural and geotechnical design and construction oversight for tie-back slope stabilization project. Complete design plans and specifications were provided. Geotechnical and special inspections performed during construction. Services also included construction management.

MASONRY RETAINING WALLS:

- <u>Masonry Wall Design</u> Sendero Development of Rancho Mission Viejo, California: Complete geotechnical and structural design for masonry walls for level ground, toe-of-slope and top-of-slope conditions. Includes complete structural plans and details. Designs for miscellaneous structures such as pilasters, monuments also provided.
- <u>Masonry Wall Design</u> Esencia Development of Rancho Mission Viejo, California: Complete geotechnical and structural design for masonry walls for level ground, toe-of-slope and top-of-slope conditions. Includes complete structural plans and details. Designs for miscellaneous structures such as pilasters, monuments also provided.

CAISSON WALLS:

- <u>Palos Verdes Drive Roadway Stabilization</u> Palos Verdes Estates, California: Performed geotechnical and structural design and construction oversight for caisson tie-back wall to provide lateral support to a portion of Palos Verdes Drive North. Complete plans and specifications were developed.
- <u>Berquist Residence Caisson Supported Retaining Wall</u> Dana Point, California: Performed structural engineering for caisson supported top of slope retaining wall. Complete plans and specifications were developed.

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
- Settlement adjacent multi-story buildings.
- Concrete corrosion/sulfate damage
- MSE walls/retaining walls
- Dewatering/groundwater issues
- Public works failures
- Site drainage

SPECIAL STUDIES

<u>Residential Foundation Deterioration Study for the Cities of Lakewood, La Palma, and Cypress,</u> <u>California</u>: 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.

RECENT PROJECT AWARDS

The following project awards are for projects where Mr. Silver served a primary role in either the geotechnical engineering design or management of the project.

- <u>Project Awards APWA 2016</u>
 - o Marina Park
 - Oso Creek Multi-use Trail
 - o La Pata Extension
- <u>Geotechnical Project of the Year 2016 OC/LA ASCE</u>
 - Cow Camp Road Design Phases 1A & 1B
- Geotechnical/Structural Project of the Year Award 2015 OC/LA ASCE
 - 650 Newport Center Drive Office Tower and 670 Newport Center Drive Parking Structure
- <u>Airport and Ports Award OC ASCE 2015</u>
 - o Marina Park
- <u>Community Improvement Project Award OC ASCE 2015</u>
 - o PCH/Del Prado Bridge and Street Improvements
- Project Awards APWA 2014
 - o Chino Hills Community Center, Chino Hills
 - Belmont Temporary Pool, Long Beach
 - o Reata Park, San Juan Capistrano

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", Published in Stormwater Magazine 2007 and Stormwater Solutions Magazine 2008.
- 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".
- Silver, Gregory, Bates, Lisa, 2013, "Landslide Stabilization Using High Strength Aggregate-Cement Slurry", ASCE/Geo Institute 2013 Geo-Congress: Stability and Performance of Slopes and Embankments III, Geotechnical Special Publication No. 231.
- Bastani, A., Silver, G., Atkinson, D., 2014, "CPT Based Settlement Prediction Over California Soft Rock, CPT-14 – 3rd International Symposium on Cone Penetrometer Testing.
- Bastani, A., Silver G., 2017, "CPT Based Settlement Prediction Over California Soft Rock, Stiff Alluvium and Soft Alluvium Sites" – International Foundation Congress and Equipment Expo (IFCEE) 2018.

ROGER W. SCHLIERKAMP, M.SC., P.E.

Director of Pavement Engineering



PROFESSION

Civil Engineer

REGISTRATION

Registered Civil Engineer C81529 – State of California

EDUCATION

M.S. Civil Engineering (Pavement/Materials Engineering)– University of Nevada, Reno
B.S. Civil Engineering University of Nevada, Reno

PROFESSIONAL EXPERIENCE

<u>GMU Geotechnical, Inc.</u> (2014 – Present) Director of Pavement Engineering Rancho Santa Margarita, California

Twining, Inc. (2011 – 2014) Pavement Engineer Long Beach, California

<u>University of Nevada, Reno</u> (2009 – 2011) Graduate Researcher, Pavement / Materials Reno, Nevada

PROFESSIONAL AFFILIATIONS

- CalAPA
- ASCE Orange County -Engineers without Borders
- American Society of Civil Engineer APWA
- AGC
- American Public Works Association
- American Society of Civil Engineers
- Santiago Canyon College Part Time Instruction (Construction Materials)

SUMMARY OF EXPERIENCE & QUALIFICATIONS

Mr. Schlierkamp possesses over 10 years of experience in pavement engineering and construction related projects, such as pavement evaluation / design, pavement condition index construction testing/observation, studies, specification development, and mix design development projects. His experience includes working with a number of local agencies, private sector clients, civil engineering firms, paving contractors, and pavement material producers. He has also worked successfully as a Quality Control / Quality Assurance Manager and Pavement Engineer on a wide variety of projects. His engineering experience includes performing pavement evaluations, developing cost-effective pavement repair recommendations, performing pavement mix designs, and managing testing /observation services of pavement-focused construction projects. Mr. Schlierkamp's experience as a quality control manager provides him a thorough understanding of various pavement construction specifications. His proficiency in pavement both pavement design and construction allow him to support his clients in achieving quality and cost-effective pavement solutions. Mr. Schlierkamp's experience in pavement design and construction includes:

- Pavement engineering evaluation, structural analysis, design expert
- Pavement condition index assessments
- Non-destructive testing, including deflection testing & ground-penetrating radar (GPR) testing
- Pavement smoothness testing
- Pavement mix designs, including hot-mix asphalt (HMA), rubberized hot-mix asphalt (RHMA), warmmix asphalt (WMA) following Marshall, Hveem, and Superpave design methods, soil-stabilization, and cold recycled asphalt
- Pavement preservation strategies, including fog seals, slurry seals, scrub seals micro-surfacing seals, and chip seals
- Pavement rehabilitation strategies, such as rubberized pavement overlays, cold recycling, full-depth reclamation, cement/lime base and subgrade stabilization
- In-depth knowledge of various pavement construction specifications, including Caltrans, Greenbook, Airport, and Ports.
- Quality control / assurance laboratory testing expertise, including Hveem Stability, Hamburg Wheel Track, Moisture Susceptibility, Maximum Density, Wet Track Abrasion, and more.

Select Pavement Evaluation and Design Projects – Local Municipalities and Agencies

- City of Torrance, Plaza Del Amo at Western Mobility Enhancement Project, April 2019: Performed pavement evaluation / design of existing roadway as well as widened roadway.
- City of Dana Point, FY 18-19 Pavement Maintenance/Repair Project, Winter 2018-May 2019: Performed pavement surface condition assessments of various streets throughout City of Dana point, prioritized streets for maintenance/repair, recommended maintenance/repair strategies, reviewed/developed pavement-related specifications, oversaw quality assurance observation/testing services during construction phase.
- City of Newport Beach, Bonita Canyon Drive and Ford Road, March 2019 June 2019: Performed pavement evaluation consisting of pavement surface condition assessments, corings, deflection testing, lab testing, analysis, and development of pavement rehabilitation recommendations.
- City of Newport Beach, Bison Ave, San Joaquin Hills Road, San Nicolas, November 2018 May 2019: Performed pavement evaluation consisting of pavement surface condition assessments, corings, deflection testing, lab testing, analysis, and development of pavement rehabilitation recommendations.
- **City of Torrance, Crenshaw Blvd Rehabilitation Project, April 2019:** Performed pavement evaluation to develop pavement rehabilitation repair recommendations.
- **City of Lake Forest, 2015 to current:** Performed pavement evaluation for various pavement CIP projects, including Portola Parkway, Dimension Drive, Civic Center Drive, etc.
- City of Irvine, Jamboree Road (Michelle Dr to RR Tracks) Pavement Evaluation Project, November 2018: Performed pavement evaluation consisting of deflection testing, corings, surface condition assessment, laboratory testing, analysis, and development of pavement rehabilitation repair recommendations.
- City of Santa Fe Springs, Santa Fe Springs and Painter Avenue Pavement Reconstruction Project, October 2018: Performed pavement evaluation and developed pavement reconstruction repair recommendations, including full-depth reconstruction repair.
- City of Aliso Viejo, Glenwood Terrace Neighborhood Pavement Evaluation Project, January 2018: Performed pavement evaluation to develop rehabilitation repair recommendations for the residential neighborhood of Glenwood Terrace.
- City of Santa Fe Springs, "South Residential 1" Pavement Evaluation Project, October 2017: Performed pavement evaluation and developed pavement reconstruction repair recommendations, including full-depth reconstruction repair. Provided observation and testing services during construction phase (April 2019).
- **City of San Juan Capistrano 2017 Pavement Evaluation Project, April 2017:** AC pavement evaluation of different streets throughout City of San Juan Capistrano.
- City of San Juan Capistrano, Camino Capistrano, March 2017: AC pavement evaluation and rehabilitation design.
- City of Stanton Sunshine Village Tract, Concrete Alley, and Cerritos Ave, February 2017: AC and PCC pavement evaluation of neighborhood streets and alleys.
- Trabuco Canyon Water District, 2018 Aliso Creek Trail Pavement Repair Project

- Trabuco Canyon Water District, 2018 Mayfair and Raintree Pavement Repair Project
- Trabuco Canyon Water District Waste Water Treatment Plant Access Road Pavement Evaluation, April 2017: Pavement reconstruction design.
- Los Patrones Parkway, 2015-current: Pavement design of new alignment Los Patrones Parkway using cement-treated soil.
- San Gabriel Trench Pavement Value Engineering, Alameda Corridor East Construction Authority, California, August 2016: Developed alternative pavement recommendations using in-place materials.
- Ocean Boulevard and Poppy Avenue, Newport Beach, California, June 2016: PCC and AC pavement evaluation and reconstruction design.
- Crown Valley Parkway, Laguna Niguel, California, April 2016. AC pavement evaluation and rehabilitation design.
- Alicia Parkway Slurry Seal Investigation, Laguna Niguel, California, 2014: Slurry seal evaluation.
- Irvine Avenue, Newport Beach, California, November 2014: AC pavement evaluation and rehabilitation design.
- Pavement Reflective Cracking Investigation Project, Mission Viejo, California, August 2015.
- MacArthur Boulevard Rehabilitation, Newport Beach, California, September 2015: AC pavement evaluation and rehabilitation design.
- Palm Avenue Grade Separation Project, San Bernardino, California, July 2015: Pavement surface distress evaluation.
- Various Streets and Parking Lots, San Juan Capistrano, California, July 2015: AC pavement evaluation and reconstruction design of 7 sites.
- Metro Blue Line Artesia Park N Ride Parking Lot, Compton, California, October 2013: AC pavement evaluation and repair recommendations for recently constructed bus parking lot.
- Cherry Avenue and Myrtle Street, Long Beach, California, 2013: AC pavement evaluation and reconstruction design.
- San Antonio Street, Long Beach, California, 2013: PCC pavement evaluation reconstruction design.
- **190th Street, Torrance, California, 2013:** AC pavement evaluation and rehabilitation design.
- **Pickett Avenue, Garden Grove, California, 2012:** AC pavement evaluation and reconstruction design.
- Alondra Boulevard, Norwalk, California, 2011: AC pavement evaluation and rehabilitation design.

Select Quality Assurance Testing and Observation Projects

• City of Mission Viejo, FY 2019 Residential Slurry Seal Project (CIP 20838), August • October 2019: Quality assurance manager for pavement-related materials, including localized AC repairs and Type I rubberized polymer modified slurry seal.

- Felipe Road and Olympiad Road Pavement Rehabilitation Project (CIP 19837), City of Mission Viejo, June-July 2018: Localized AC repairs and ARHM overlay quality assurance observation & testing.
- **2018-19 Slurry Seal Project, City of Chino Hills, June-July 2019:** Type I emulsion aggregate slurry seal (EAS) quality assurance observation & testing.
- Las Flores Slurry Seal Project, City of Rancho Santa Margarita, June 2019: Type II emulsion aggregate slurry seal (EAS) quality assurance observation & testing.
- **2018-19 Residential Slurry Seal Project, City of Buena Park, June, 2019:** Type I Rubberized Emulsion Aggregate Slurry (REAS) quality assurance observation & testing.
- City of Newport Beach, MacArthur Blvd & University Pavement Rehabilitation Project, April to October 2019.
- City of Dana Point, FY 2018-19 Pavement Maintenance & Repair Project, April 2019.
- City of San Juan Capistrano, Del Obispo & Ortega Parking Lot Project, May-June 2019.
- City of Rancho Santa Margarita, FY 2018-19 Slurry Seal Project, January 2019.
- City of Mission Viejo, On-Call Encroachment Permit Inspection Projects, 2017 to current: as-needed, various EP projects.
- City of Newport Beach, Marguerite Avenue and Hospital Road Pavement Rehabilitation Project, November 2018.
- City of Mission Viejo, FY 2018 Residential Slurry Seal and Overlay Project, October 2018.
- City of Aliso Viejo, Aliso Creek Road Pavement Rehabilitation Project, October 2018.
- City of Laguna Niguel, FY 2017-18 Arterial Pavement Rehabilitation Project, September 2018.
- City of Mission Viejo, Trabuco Road and Marguerite Parkway Pavement Rehabilitation Project, June 2018: Performed quality assurance observation/testing services to comply with Federally-funded project requirements.
- City of Mission Viejo, FY 2017 Residential Slurry Seal and Overlay Project, October 2017.
- Los Patrones Parkway (New Alignment), Rancho Mission Viejo, August 2017 to October 2019.
- City of Rancho Santa Margarita, FY 2017-18 Slurry Seal Project, June 2018.
- 2017 ARAM and ARHM Overlay, Laguna Niguel, California, November 2016.
- Aliso Viejo Parkway Pavement Rehabilitation Project, Aliso Viejo, California, July 2017.
- 2016 AC Repairs Project, Laguna Niguel, California, November 2016.
- Pacific Park Pavement Rehabilitation, Aliso Viejo, California, November 2016.
- Del Obispo Pavement Rehabilitation, Dana Point, California, October 2016.
- Chino Hills Parkway Pavement Repairs, Chino Hills, California October 2016.
- Susana Road Pavement Reconstruction, County of Los Angeles, Compton, California, October 2016: Cement treated base testing/observation.
- 2016 Various Locations Pavement Repairs Project, San Juan Capistrano, California, October 2016: AC, AB, subgrade, geogrid, cement-treated materials.

- Irvine Avenue Rehabilitation, Newport Beach, California, Fall/Winter 2016-17: AC, base, subgrade, concrete materials.
- 2016 Residential AC Repairs and Slurry Seal Projects, Mission Viejo, California, September 2016: AC, base, subgrade, slurry seal, tack, and pavement interlayer materials testing/observation.
- Califia Neighborhood, Santa Margarita Water District, Mission Viejo, California, Summer 2016: AC trench paving.
- Annual Residential Slurry Seal, Newport Beach, California, Summer 2015.
- Palmia Neighborhood, Santa Margarita Water District, Mission Viejo, California, Summer 2016: AC trench paving.
- Saint Christopher Neighborhood, Laguna Niguel, California, August 2015.
- 2015-16 Annual Overlay, Rancho Santa Margarita, California, July 2016.
- Los Serranos Infrastructure Improvements, Chino Hills, California, April 2016.
- Peyton Widening, Chino Hills, California, February 2016.
- Reagan and Peterson Park Parking Lot Rehabilitation, Diamond Bar, California, October 2015.
- Del Prado Phase 2A, Dana Point, California August, 2015.
- 2014/15 Annual Overlay, Dana Point, California, April 2015.
- 2014/15 Annual Residential Overlay and Slurry Seal Projects, Rancho Santa Margarita, California, Summer 2015.
- **Trabuco / Monroe Intersection Improvements, Irvine, California, February 2015:** Federally funded project, observation/testing of pavement materials.
- Antonio Parkway Pavement Rehabilitation, Rancho Santa Margarita, Rancho Santa Margarita, California, July 2014: Observation/testing of pavement materials.
- Canwood Street Phase I Pavement Recycling, Agoura Hills, California (2013): Cold recycled AC materials observation/testing.
- Main Street, Garfield Avenue, and Springdale Street Pavement Rehabilitation, Huntington Beach, California, 2013.
- Escalona Road Pavement Rehabilitation, La Mirada, California, 2012.
- Willow Street Rehabilitation, Long Beach, California, 2011.
- Wilcox Avenue Pavement Rehabilitation, Cudahy, California, 2011.

Select Private Street/Parking Lot Pavement Engineering and Evaluations

- Irvine Company Office Properties (ICOP), Parking Lot Maintenance and Repair Projects, 2018 to present: Performing pavement evaluation, bid document preparation, bid solicitation, construction management advisory, and construction observation/testing services for 15+ parking lots maintained by ICOP for FY 2018-19 and FY 20 projects.
- Crystal Cove, Irvine Company, Newport Coast, Newport Beach, California, 2016 2018.
- UCI Lot 36 Bus Parking Lot, Irvine, California, October 2016.
- UCI California Avenue Parking Lot Study, Irvine, California, March 2016.
- Alcoa Parking Lot Pavement Evaluation, Alcoa Fastening Systems, Industry, California, February 2015.
- Covey Project, AC Cap Pavement Evaluation, Buena Park, California, January 2016.
- Edwards Life Sciences Parking Lot, Irvine, California, January 2016.
- Class I Bike Trail, Rancho Mission Viejo, Orange County, California, 2015.
- Pepperdine University Pavement Evaluation, Malibu, California, 2013.
- Koll Center Newport Parking Lots, CBRE, Newport Beach, California, 2013.

Select Pavement Mix Designs

- Cement Stabilized Pulverized Base Mix Design Development, Leffingwell Road Street Rehabilitation Project, City of La Mirada: Developed cement-treatment mix design consisting of existing asphalt concrete, agg. base, and subgrade materials to satisfy Greenbook CSPB mix design requirements.
- Cement Stabilized Pulverized Base Mix Design Development, Painter Avenue and Santa Fe Springs Road Pavement Reconstruction Projects, City of La Santa Fe Springs: Developed two cement-treatment mix designs consisting of existing of subgrade materials to satisfy Greenbook CSPB mix design requirements.
- Cement Stabilized Pulverized Base Mix Design Development, "Residential 1" Pavement Reconstruction Projects, City of La Santa Fe Springs: Developed two cement-treatment mix designs consisting of existing of subgrade materials to satisfy Greenbook CSPB mix design requirements.
- 2018 Greenbook (2018 spec) All American Asphalt, Corona, California, December 2016: Developed AC Hveem mix designs for ¹/₂" and ³/₄" mixtures.
- 2016 Greenbook (2015 spec) All American Asphalt, Corona, California, December 2016.
- Runway 6R-24L Extension Project, Soil-Cement Mix Design, LAX, February 2016.
- Runway 7L-25R Safety Area Improvements, Soil-Cement Mix Design, LAX October 2016.
- Plum Canyon Road Soil-Cement Mix Design, Santa Clarita, California, August 2016.
- 2014 Greenbook (2012 spec) All American Asphalt, Corona, California, December 2014.
- Soil-Cement Mix Design for Corporate Yard Facility, Buena Park, California December 2014.
- Cold Recycled Asphalt Concrete and Soil-Cement Mix Designs, County of Los Angeles, California, 2011-2014.
- Thermal Club Racetrack Marshall Mix Design, Skanska, La Quinta, California, 2013.
- As-Needed Mix Designs, Granite Construction Company, Santa Barbara and Bakersfield, California, 2011 2013.
- Greenbook Mix Designs, All American Asphalt, San Fernando, California, 2012.
- Caltrans Route 405 RHMA Superpave Mix Design, Torrance, California, 2012.
- As-Needed Mix Designs, Griffith Company, Bakersfield, California, 2014.
- Pickett Avenue, Garden Grove, Garden Grove, California, 2012.

Select Quality Control Testing/Observation Projects

- Route 5, CT 12-0F96C4 Widening, Flatiron Corporation, 2015-2016.
- Route 405 Sepulveda Pass Widening, Kiewit Construction, Los Angeles, California, 2012-2013.
- Route 5 CT 07-121844 and 07-21594, Security Paving, Los Angeles, California, 2014.
- Route 710 CT 07-202144, Shimmick Construction, Long Beach, California, 2014.
- Route 65 CT 06-0E0604, Granite Construction, Bakersfield, California, 2011.
- Route 405 CT 07-3Y9404, All American Asphalt, Torrance, California, 2012.

Select Airport and Port Pavement Projects

- Los Angeles World Airports, LAWA Utilities & LAMP Enabling Projects, 2017 to present: Providing pavement evaluation and repair recommendations for various parking lots.
- Runway 6R-24L Extension Project, LAX, February 2016.
- Runway 7L-25R Safety Area Improvements, LAX October 2016.
- Port of Long Beach Pier E Wharf Phase 1 Stage 2, Long Beach, California, 2014.
- Taxilane J Improvements, Long Beach Airport, Long Beach, California, 2014.
- Naval Air Weapons Station Runway 14/32, Hal Hays Construction, China Lake, California, 2013.

Select Pavement/Geotechnical Projects

- Phase 1 Trail Improvements, Southern California Edison Corridor, Buena Park, October 2016: Decomposed granite path recommendations for vehicular loads, concrete flatwork, and concrete pavement design.
- UCI Lot 36 Bus Yard, Irvine, California October 2016: Evaluation of existing parking lot for use as bus parking lot area, retaining wall geotechnical design, pole foundation geotechnical design, and concrete flatwork.
- Jamboree and Main Intersection Widening, Irvine, California, February 2016: Design of new pavements for widening and retaining wall geotechnical design.
- Cerritos Avenue Sidewalk Gap Closure, Anaheim, California, July 2016: Pavement design, concrete flatwork design, and free standing wall geotechnical design recommendations.

Select Homeowner Association Pavement Projects

- 2019 Northridge Country Community Association Pavement Reconstruction Project, July 2019 October 2019: Prepared plans, specs, & estimates for pavement full-depth reclamation with cement treatment reconstruction for the 2019 phase of work.
- Columbus Grove HOA, Tustin/Irvine, August September 2019: Evaluation of pavement seal coat distresses on recently applied seal coating and developing pavement repair recommendations.
- **Rancho Capistrano HOA, July-September 2019:** Pavement management plan study of all streets within HOA.

- 2019 Newport Coast Community Association Costal Canyon Parking Lot Improvement Projects, February to present: Performed pavement evaluation and prepared plans, specs, & estimates to improve various parking lots managed by Newport Coast Community Association.
- San Joaquin Hills HOA, FY 2019 Pavement Maintenance and Repair Project
- Ladera Ranch Maintenance Corporation (LARMAC), Orange County, CA 2017 to current: Providing as-needed pavement engineering and construction support services for streets & parking lots maintained by LARMAC.
- Bay Harbour HOA, 2016 Pavement Rehabilitation Project and 2018 Pavement Reserve Budget Advisory Services, Long Beach, CA.
- Crystal Cove HOA Pavement Rehabilitation Project, Newport Coast, California, December 2016 to current: Providing pavement maintenance/repair budget advisory, maintenance/repair design, and construction support services for each year's pavement project.
- 2017 Pelican Hill HOA Pavement Rehabilitation Project, Newport Coast, California, January 2017 to current: Providing pavement maintenance/repair budget advisory, maintenance/repair design, and construction support services for each year's pavement project.
- 2017 Casta Del Sol HOA Pavement Rehabilitation Project, Mission Viejo, California, July 2017 to present.
- 2017 Pacifica HOA Pavement Rehabilitation Project, San Clemente, California, Summer 2016.
- Ritz Cove HOA Vehicular Paver Design and Construction Monitoring, Dana Point, California, July 2015.
- 2014 Niguel Shores HOA Seal Coating Project, Dana Point, California, 2014.
- 2015-16 Pavement Rehabilitation Project, Montego HOA, Rancho San Clemente, California, Summer 2016.
- 2016 Pavement Rehabilitation Project, Bay Harbour HOA, Long Beach, California, Summer 2016.
- 2016 Pavement Reconstruction Project, Northridge County Community Association (Porter Ranch), Northridge, California, April 2016.

Litigation and Expert Witness Testimony Projects

• Can be provided on an as-requested basis due to the nature of these types of projects.



PROFESSION

Civil Engineer

REGISTRATIONS

Registered Civil Engineer – State of California

Qualified SWPPP Practitioner

EDUCATION

<u>M.S. Civil Engineering</u> (emphasis in geotechnical engineering) California State University -Fullerton

<u>B.S. Civil Engineering</u> California State University -Fullerton

PROFESSIONAL HISTORY

<u>GMU Geotechnical, Inc.</u> (June 2016-Present) Senior Engineer, Rancho Santa Margarita, California

Twining Consulting, Inc. (2011-2016) Project Engineer/Manager, Irvine, California

SUMMARY OF EXPERIENCE & QUALIFICATIONS

Mr. Sunna has over nine years of experience within the geotechnical engineering and material testing and inspection industry. His experience began in the field of geotechnical observation and testing, which is a vital component in developing site-specific, value-engineering geotechnical subsurface investigation programs that are tailored to provide clients with cost-effective geotechnical recommendations. He has implemented this strategy while working with private developers and government agencies. In addition, Mr. Sunna has extensive experience in providing project management and oversight during construction of various types of projects, ranging from street improvements to high rise buildings. His understanding and knowledge of the building code is vital in ensuring that projects are constructed per plans, specifications and the California Building Code. The following are some of his technical abilities and selected projects:

- Slope Stability Analysis
- Liquefaction Analysis
- Seismic Hazard Analysis
- Settlement Analysis
- Shallow and Deep Foundation Recommendations
- Pile Analysis and Design
- Storm Water Infiltration Analysis
- Pavement Evaluation Design
- Shoring Recommendations
- Soil Laboratory Data Evaluation
- AutoCAD Drafting

GEOTECHNICAL ENGINEERING

COMMERCIAL PROJECT EXPERIENCE

September 2019 – Colyear Brea Warehouse Building: Performed geotechnical investigation, laboratory testing, and engineering analysis for design and construction of two-story house building that is approximately 30 feet in height and covers approximately 64,000 square-feet of foot print.

June 2019 – VANS Orange County Headquarter Expansion: Performed geotechnical investigation, laboratory testing, and engineering analysis for design and construction of 3-story office building and 3-story parking structure. Due to the heavy loads and highly-compressible site soils, a shallow foundation system supported on rammed aggregate piers was recommended.

March 2019 – EF International Language Campus – New Dormitory Buildings and Site Improvements, Costa Mesa, California: Performed geotechnical investigation, laboratory testing, and engineering analysis for design and construction of two 2-story and one 3-story dorm buildings. Due to the highly expansive and wet/soft subgrade soils within the site, soil-cement treatment was recommended as part of the overexcavation to stabilize the soil beneath the foundations and reduce the expansion potential.

January 2017 – 670 Mesquit Mixed-Use Development: Performed geotechnical investigation consisting of hollow-stem-auger borings and Cone Penetration Testing soundings, laboratory testing, and engineering analysis for design and construction of approximately 2,000,000 square feet of mixed-use structure. The structure is anticipated to be 360 feet in height and stepping down to a one-story structure, underlain by four-level of subterranean parking structure.

February 2016 – **Stadium Tower II, Anaheim, California:** Performed geotechnical investigation consisting of hollow-stem-auger borings and Cone Penetration Testing soundings, laboratory testing, and engineering analysis for design and construction of new 12-story office tower and new parking structure up to 7-story in height.

WATER RESOURCES / SEWER IMPROVEMENTS PROJECT EXPERIENCE

July 2019 – City of Torrance Del Amo 5 / Hawthorne Boulevard Sewer Relief: Performed a geotechnical investigation by drill hollow-stem-auger borings within the proposed alignment of the sewer relief. The project consists of performing pipe bursting method for upsizing the existing sewer line for a portion of the alignment while the remaining portion consist of an open-cut method. GMU evaluated the soil conditions, groundwater conditions, and prepared a geotechnical report with findings, conclusions, and recommendations.

June 2018 – **Los Angeles World Airport, Westchester Parkway Duct Bank:** Performed geotechnical investigation, laboratory testing, and engineering analysis for installation of new duct bank within Westchester Parkway. Prepared a geotechnical report with shoring recommendations, subgrade preparation, and backfill of trenches in accordance with the City of Los Angeles Bureau of Engineering Department.

June 2018 – Los Angeles World Airport, Jenny Avenue Recycled Water Pipeline Valve Removal: Performed geotechnical engineering analysis and prepared a geotechnical report that includes shoring recommendations, subgrade preparation recommendations, and trench backfill recommendations for removal of an existing pipeline valve beneath Jenny Avenue. The report was reviewed and approved by the City of Los Angeles Department of Building and Safety.

INSTITUTIONAL PROJECT EXPERIENCE

February 2019 – **St. Margaret's Episcopal School, Maintenance Building and Retaining Wall, San Juan Capistrano, California:** Performed geotechnical investigation, laboratory testing, engineering analysis, and prepared a geotechnical report for design and construction of 1-story maintenance building and retaining wall to support the cut that will take place within an existing slope to create room for the maintenance building.

July 2017 – City of Buena Park, Fire Station 63 Building Addition: Performed geotechnical investigation by advancing two Cone Penetration Testing (CPT) soundings within the limits of the proposed addition, obtained grab samples from the CPT, performed laboratory testing, performed engineering analysis including liquefaction analysis, and prepared a geotechnical report for design and construction of the proposed addition.

March 2017 – Chapman University, Panther Village 2, Orange, California: Performed geotechnical investigation, laboratory testing, engineering analysis, and prepared a geotechnical report for design and construction of approximately 100,000 square-feet, 3-story building over two-level of subterranean parking structure.

August 2014 – Chapman University, Center for Science and Technology, Orange, California: Performed geotechnical investigation, laboratory testing, engineering analysis, and prepared a geotechnical report for design and construction of approximately 100,000 square-feet, 3-story building over two-level of subterranean parking structure.

SPORTS PARK / FIELD TURFS PROJECT EXPERIENCE

October 2019 – San Diego Unified School, Correia Middle School Field Improvement, San Diego, California: Performed 3rd party review, observation and testing during installation of new synthetic turf within existing football field.

October 2019 – City of Newport Beach Grant Howald Park Rehabilitation, Newport Beach, California: Performed geotechnical investigation, laboratory testing, engineering analysis, and prepared a geotechnical report for design and construction of synthetic turf to replace the existing soccer field natural turf, and construction of new improvements such as new retaining walls, flatwork/hardscape, new asphalt concrete pavement, etc.

March 2018 – City of Chino Hills Grand Avenue Park Synthetic Turf Soccer Fields, Chino Hills, California: Performed geotechnical investigation, laboratory testing, engineering analysis,

and prepared a geotechnical report for design and construction of synthetic turf to replace the existing soccer field natural turf.

August 2017 – Orange Coast College Synthetic Turf Baseball Field, Costa Mesa, California: Performed geotechnical investigation, laboratory testing, engineering analysis, and prepared a geotechnical report for design and construction of replacement of the natural turf to artificial turf within existing baseball field.

PAVEMENT ENGINEERING

October 2019 – City of Torrance, Plaza Del Amo Street Improvement: Performed pavement evaluation and coring, laboratory testing, and analysis for improvement of a street that will be opened for public use.

June 2019 - City of Newport Beach, Bonita Canyon Drive and Ford Road: Performed pavement evaluation consisting of pavement surface condition assessments, corings, deflection testing, lab testing, analysis, and development of pavement rehabilitation recommendations.

May 2019 - City of Newport Beach, Bison Ave, San Joaquin Hills Road, San Nicolas: Performed pavement evaluation consisting of pavement surface condition assessments, corings, deflection testing, lab testing, analysis, and development of pavement rehabilitation recommendations.

April 2019 - City of Torrance, Crenshaw Blvd Rehabilitation Project: Performed pavement evaluation to develop pavement rehabilitation repair recommendations.

November 2018 - City of Irvine, Jamboree Road (Michelle Dr. to RR Tracks) Pavement Evaluation Project: Performed pavement evaluation consisting of deflection testing, corings, surface condition assessment, laboratory testing, analysis, and development of pavement rehabilitation repair recommendations.

May 2018 – Los Angeles World Airport, AVIS Relocation Improvements: Performed pavement evaluation for rehabilitation of existing parking lot. 5-, 10-, and 20-year design lives were developed as part of the rehabilitation recommendations.

April 2018 – Los Angeles World Airport, Hertz Holding Lot: Performed pavement engineering analysis for design and construction of a new parking lot within an existing vacant lot.

June 2013 – City of Long Beach, Cherry Avenue Rehabilitation (From Ocean Blvd. to PCH): Performed pavement evaluation consisting of coring and sampling of the subgrade soil, laboratory testing, pavement engineering analysis, and developed pavement rehabilitation recommendations.

April 2013 – City of Long Beach, Myrtle Avenue Rehabilitation (From Artesia Blvd. to 72nd Street): Performed pavement evaluation consisting of coring and sampling of the subgrade soil,

laboratory testing, pavement engineering analysis, and developed pavement rehabilitation recommendations.

CONSTRUCTION TESTING AND INSPECTION

October 2019 – City of Irvine, Culver and University Intersection Improvement: Provided project management and oversight during construction of new street widening and retaining wall. Provided engineering support and oversight and review of project dailies, coordination of special inspectors and technicians, budget oversight, and preparation of final reports.

September 2019 – City of Newport Beach Fire Station 5 & Branch Library, Newport Beach, California: Provided project management and oversight during construction of new fire station and branch library within the City of Newport Beach. Provided engineering support during grading of the building pad, engineering oversight and review of project dailies, coordination of special inspectors and technicians, budget oversight, and preparation of final reports.

September 2018 – City of San Juan Capistrano Del Obispo Street Widening: Provided project management and oversight during construction of new street widening and retaining wall. Provided engineering support and oversight and review of project dailies, coordination of special inspectors and technicians, budget oversight, and preparation of final reports.

April 2017 - **Wilshire-Crescent Heights, City of Los Angeles:** Provided project management and oversight during construction of new 18-story high rise building in the City of Los Angeles that will house 158 apartments over 7,000 square feet of retail space and 423 parking spaces. The concrete structure is seated on a mat slab and consisted of post-tensioned concrete decks. Provided engineering support and oversight and review of project dailies, coordination of special inspectors and technicians, budget oversight, and preparation of final reports.

August 2016 – 3033 Wilshire Apartments, City of Los Angeles: Provided project management and oversight during construction of new 23-story high rise building in the City of Los Angeles that will house 190 luxury apartments over 5,500 square feet of retail and parking structure. The structure is architecturally designed with a patterned skirt that wraps the parking levels that will appear everchanging pattern as you move towards and around the building. The concrete structure is seated on a mat slab and consisted of post-tensioned concrete decks. Provided engineering support and oversight and review of project dailies, coordination of special inspectors and technicians, budget oversight, and preparation of final reports.

July 2016 – **TEN50 Grand Condos, City of Los Angeles:** Provided project management and oversight during construction of new 25-story high rise building in the City of Los Angeles that will house luxury condos over a parking structure. The structure is architecturally designed glass as the primary skin element and the protruding decks changing size as they move up the building, creating a fluid appearance across the facade. The concrete structure is seated on a mat slab and consisted of post-tensioned concrete decks. Provided engineering support and oversight and review of project dailies, coordination of special inspectors and technicians, budget oversight, and preparation of final reports. Due to the amount of glass on this building, extensive amount of water intrusion testing was performed to ensure that leakage will not occur.

Appendix B Select Project Profiles



Appendix B Select Project Profiles





2015 Residential Streets Rehabilitation

City of Garden Grove

This project consisted of evaluating pavements within a residential neighborhood approximately 0.5 by 0.5 square miles in Garden Grove, California (500,000 square feet or 6 to 7 lane miles of AC). The majority of the streets exhibited medium- to high-severity alligator cracking. Some streets displayed less severe distresses.

A pavement evaluation was performed to identify potential causes of the pavement deterioration. Pavement corings were performed to identify the in-place pavement structural layers and to collect samples for laboratory testing. Collected samples were returned to GMU's laboratory for in-house evaluation for various engineering properties (R-value, in-place moisture/density, soil classification, sulfate content, etc.). Pavement engineering analysis was performed to develop cost-effective pavement repair recommendations.

Repair recommendations consisted of performing full-depth reclamation (FDR) with cement treatment for the majority of the street segments within the project limits. This recommendation is estimated to save the City approximately 40 percent in construction costs versus conventional methods. These savings are derived from using in-place materials as part of the new pavement section, rather than exporting waste materials and importing new aggregate base and AC.

Highlights

- Estimated 40 percent construction cost savings
- Pavement coring
- In-house laboratory testing
- Full-depth reclamation

Date

June 2015

GMU Key Staff

 Roger Schlierkamp, MSc, PE, Director of Pavement Engineering

Reference(s)

Bob Moungey,Public Works Supervisor



Photo 2: Representative pavement surface condition within residential community, Garden Grove, California.



Cold Recycled Pavement and Cement Treatment Mix Designs

County of Los Angeles

Roger Schlierkamp, MSc, PE has successfully completed many cold recycled asphalt concrete (AC) mix design projects in Los Angeles County.

Existing AC materials were collected from the roadway and tested for various engineering properties. Testing included gradation, asphalt binder content, bulk specific gravity (density), air voids, Marshall Stability, and raveling test. These results were analyzed and mix design recommendations were provided, including gradation and emulsion content for over 20 projects located throughout the County of Los Angeles.

In addition to developing cold recycled AC mix designs, cement-stabilized pulverized base (CSPB) mix designs were also developed. CSPB construction involves pulverizing the existing AC, AB, and subgrade materials, treating it with cement, and grading/recompacting it for reuse as part of the pavement structural section.

Roger has also supported LA County on various pavement rehabilitation design projects. The scope of work included: pavement surface condition assessments, field exploration (corings), laboratory testing, and development of pavement repair recommendations with focus on reuse of existing materials when appropriate.

Highlights

- Mix design development and laboratory testing services
- Cold in-place recycled asphalt concrete (CIRACP)
- Cold central-plant recycled asphalt concrete (CCPRAC)
- Cement-Stabilized Pulverized Base (CSPB)
- Pavement evaluation services

Date

2011 - 2014

GMU Key Staff

 Roger Schlierkamp, MSc, PE, Director of Pavement Engineering

Reference(s)

- Greg Kelley, Assistant Deputy Director, Geotechnical and Materials Engineering, gkelley@dpw.lacounty.gov, (626) 458-4911
- Van Truong, Civil Engineer, Geotechnical and Materials Engineering, vtruong@dpw.lacounty.gov, (626) 458-7950



Photo 1: Pavement corings being performed on Del Amo Boulevard for subsurface investigation and for sampling in-place materials for mix design development.



Runway 6R-24L Soil-Cement Mix Design

Los Angeles International Airport (LAX)

GMU developed a soil-cement mix design for the LAX Runway 6R-24L Extension project. The runway was being extended to accommodate larger aircrafts. During construction of the runway extension, delays and additional costs were incurred to address exposed soft and pumping subgrade conditions.

In lieu of removing and replacing unstable areas, GMU proposed an alternative solution to address the unstable conditions. Cement-treatment of the subgrade soils was recommended to stabilize the soils and create a firm platform for the construction of the runway extension.

GMU developed a soil-cement mix design following Federal Aviation Administration's Construction Specifications. Laboratory tests were performed to develop a soil-cement mix design by GMU.

Highlights

- LAX Runway 6R-24L Extension
- Soil-cement mix design
- Cost-effective solution to addressing unstable soils

Date

January 2015 - Present

GMU Key Staff

Roger Schlierkamp, MSc, PE, **Director of Pavement** Engineering

Reference(s)

Lew Morris, **Coffman Specialties**



Photo 1: LAX Runway 6R-24L Extension Project



Painter Ave & Santa Fe Springs Rd Pavement Evaluation

City of Santa Fe Springs

GMU performed a pavement evaluation of Painter Avenue from Florence Avenue to Lakeland Road and Santa Fe Springs Road from Los Nietos Road to railroad crossing in the City of Santa Fe Springs. The approximate total area of AC pavements evaluated is 316,000 square feet.

GMU performed ten (10) pavement corings, laboratory testing, and pavement engineering analysis. Asphalt concrete (AC) and aggregate base (AB) thicknesses measured was 3.5 to 6.5 inches and 6 to 10 inches thick, respectively. Subgrade soils consisted of lean clays (CL), fat clays (CH) with R-value test results between 11 and 19.

Based on our field investigation and evaluation, we concluded that the primary cause of the pavement deterioration is due to aging and traffic loading exceeding the original design. In addition, the existing pavement was structurally inadequate for the current traffic conditions based on the tested R-values. Complete reconstruction of the roadways was recommended utilizing full-depth reclamation with cement treatment strategy, helping reduce construction costs.

Highlights

- Pavement evaluation
- AC Corings
- Laboratory Testing
- Structural Thickness Analysis
- Full-Depth Reclamation
- Cement Stabilized Pulverized Base Mix Design

Date

October 2018

GMU Key Staff

 Roger W. Schlierkamp, M.Sc., P.E., Director of Pavement Engineering

Reference(s)

- Noe Negrete, City Engineer City of Santa Fe Springs
- Anissa Voyiatzes, Civil Engineer Psomas



Photo 1: Coring Location C-10, medium- to high-severity alligator cracking, Santa Fe Springs Road, Santa Fe Springs, California



Los Patrones Parkway Pavement Design Project

Rancho Mission Viejo

This project involved developing pavement designs for the 5-mile long Los Patrones Parkway project in Orange County, California. This new roadway is aligned to link the Route 241 Freeway to future Cow Camp Road. GMU performed pavement engineering analysis and developed pavement design recommendations for the approximately 2 million square feet of proposed new pavement construction.

Alternative design recommendations were compared with conventional methods, including soil-cement treatment, geogrid, full-depth asphalt concrete, and composite asphalt concrete with aggregate base. Each option was also evaluated for construction cost, construction scheduling, and the estimated number of trucks required to transport materials.

Based on this analysis, the preferred recommendation was the soil-cement option as it resulted in an estimated \$6 million savings or nearly 40 percent savings over the conventional method. The number of estimated trucks necessary to transport materials is also reduced and the construction schedule is to be maintained.

Highlights

- Developed design that is estimated to save \$6 million in construction (40%) vs conventional methods
- Evaluated constructability
- Designed using in-place materials

Date

January 2015

GMU Key Staff

- Roger Schlierkamp, MSc, PE, Director of Pavement Engineering
- Aron Taylor, MS, PG, CEG Vice President

Reference(s)

Gene Strojek



Photo 1: Los Patrones Parkway





Photo 2: Conventional vs. Cement Treated vs. Geogrid Construction

Appendix C Fee Schedule





2019 SCHEDULE OF CHARGES

PROFESSIONAL SERVICES

Document Preparation and Project Services CAD, GIS, and Geo-BIM Design Staff Engineer or Geologist	\$ 95.00/hour\$ 115.00/hour\$ 145.00/hour
Senior Staff Engineer or Geologist	\$ 175.00/hour
Project Engineer or Geologist	\$ 195.00/hour
Senior Engineer or Geologist	\$ 230.00/hour
Associate Engineer or Geologist	\$ 240.00/hour
Principal/Director	\$ 265.00/hour

FIELD INSPECTION & TESTING SERVICES

Staff Er	ngineering Technician	\$ 105.00/hour*
•	Services provided under direct supervision of a Senior Engineering Technician	
Senior I	Engineering Technician	\$ 115.00/hour*
•	Inspections for soils/grading, asphalt, concrete, batch plants, piles/caissons, etc.	
•	Certifications by ACI, ICC, Caltrans, local jurisdictions, etc.	
Register	red Special Inspector (No 4 hour minimum)	\$ 115.00/hour*
•	Certifications by ACI, ICC, Caltrans, local jurisdictions, etc.	
•	Reinforced concrete, Post-Tension, Masonry, Welding, Bolting, Fireproofing	
Instrum	entation Engineer	\$ 145.00/hour
•	Slope inclinometer and Piezometer monitoring	·
•	Manometer for floor-level surveys	
•	Stormwater Turbidity & pH meter	
•	Groundwater Monitoring - pressure transducer, datalogger, water chemistry meter,	etc.
•	Pipeline video camera for drains, wells, etc.	
Enginee	ering Seismological Technician (includes 3-channel seismograph)	\$ 145.00/hour
•	Blast vibration monitoring	·
•	Construction vibration & noise monitoring (pile driving, drilling, demolition, etc.)	
*Notes:		
(1)	Rates include vehicle, nuclear density gauge, and equipment for testing, inspection, and sam	pling.
(2)	No 4-hour minimum charges apply.	
(3)	Overtime is charged at 1.5 times the base rate. Overtime is defined as time worked on the pr	roject
	in excess of 8 hours per day and all time on Saturdays, Sundays, and holidays.	
(4)	Prevailing Wage hourly surcharge for Technicians and Inspectors per	
	California Labor Code §1720, et seq.	\$ 22.00/hour
LABORA'	FORY TESTING SERVICES	

Laboratory Testing	\$ 117.00/hour
(For special materials testing and laboratory costs on a per-test basis, see GMU's Laborator	ry Fee Schedule)

OTHER CHARGES

Outside Services Reimbursables & Reprographics Cost + 15% Cost

Appendix D Certifications



American Association of State Highway and Transportation Officials AASHTO Accreditation Program Certificate of Accreditation

This is to signify that

GMU Geotechnical, Inc.

in Rancho Santa Margarita, California

has demonstrated proficiency for the testing of construction materials and has conformed to the minimum requirements established in AASHTO R 18 set forth by the AASHTO Highway Subcommittee on Materials (HSOM).

The scope of accreditation can be viewed on the AAP Directory of Accredited Laboratories on www.amrl.net.

Bud Wright, Executive Director



Moe Jamshidi, AASHTO HSOM Chair



SIAD TL-0113: CALTRANS ACCREDITATION LABORATORY INSPECTION REPORT

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CALTRANS ACCREDITATION LABORATORY INSPECTION REPORT

Expiration Date: 2020-03-06 **Inspected By:** Ashley Shaw IA No.: 68 Phone: 949-279-8731 **RSP #: 104** File: Material Category 500 Laboratory: GMU Geotechnical Inc. Address: 23241 Arroyo Vista Rancho Santa Margarita CA, 92688 Lab QC Mgr.: Mike Moscrop E-mail: mmoscrop@gmugeo.com Telephone: 949-888-6513 Fax #.: 949-888-1380

A certified Independent Assurance (IA) visited this laboratory on (Date) 6 March 2019

Only the equipment to be used on Caltrans Construction projects and/or local construction projects on the National Highway System was checked for qualification. At the time of Caltrans Accreditation, this laboratory had all necessary equipment to perform the test methods indicated below.

Testing personnel shall be Caltrans Qualified and possess a current Caltrans Certification Form TL-0111 or AASHTO Proficiency Form TL-0115 prior to performing any sampling or testing.

CT 105	CT 106	CT 125 ADMIX	CT 125 AGG	CT 125 BIT
CT 125 GEN	CT 125 HMA	CT 125 PCC	CT 201	CT 202
CT 204	CT 205	CT 206	CT 207	CT 209
CT 216	CT 217	CT 226	CT 227	CT 231
CT 301	CT 304	CT 308	CT 309	CT 366
CT 375	CT 382	CT 504	CT 518	CT 533
CT 539	CT 540	CT 541	CT 556	CT 557

A visual check was performed and documents provided as necessary for the following items:

Facility Safety Manual Laboratory Procedures Manual Laboratory Quality Control Manual Proper test equipment

Copies of current applicable test procedures Calibration and service documentation Calibration stickers affied to test equipment (dated within the 12 months)

On <u>3/6/19</u>, this laboratory was Caltrans Qualified by:

Ashley R Shaw (Printed name of IA person)



Please verify lab accreditation by visiting SIAD website: https://sia.dot.ca.gov/ Page 1/1

Printed on: 1/25/2019 1:58:20 PM

To verify most current certification status go to: https://www.caleprocure.ca.gov



SB

Office of Small Business & DVBE Services Certification ID: 59914 Email Address: jneff@gmugeo.com Legal Business Name: **Business Web Page:** GMU GEOTECHNICAL, INC. http://www.gmugeo.com Doing Business As (DBA) Name 1: **Business Phone Number:** GMU GEOTECHNICAL, INC. 949/888-6513 Doing Business As (DBA) Name 2: **Business Fax Number:** 949/888-1380 Address: 23241 ARROYO VISTA **Business Types:** RANCHO SANTA MARGARITA Service CA 92688-2611 **Certification Type** Status From То Approved 01/25/2019 01/31/2021 Stay informed! KEEP YOUR CERTIFICATION PROFILE UPDATED! -LOG IN at CaleProcure.CA.GOV Questions? Email: OSDSHELP@DGS.CA.GOV

Call OSDS Main Number: 916-375-4940 707 3rd Street, 1-400, West Sacramento, CA 95605

CA

CALIFORNIA DEPARTMENT OF TRANSPORTATION

Presents this CERTIFICATE to

Lucie Anderson

who is certified to perform the following tests:

Test Method	Expiration Date	IA Responsible	Associated Laboratory
CT 125 ADMIX	2021-09-06	Afsaneh Ostovar	Lab 1
CT 125 AGG	2022-09-06	Afsaneh Ostovar	Lab 1
CT 125 BIT	2021-09-06	Afsaneh Ostovar	Lab 1
CT 125 GEN	2021-09-06	Afsaneh Ostovar	Lab 1
CT 125 HMA	2022-09-06	Afsaneh Ostovar	Lab 1
CT 125 PCC	2021-09-06	Afsaneh Ostovar	Lab 1
CT 231	2021-09-06	Afsaneh Ostovar	Lab 1
CT 375	2021-09-06	Afsaneh Ostovar	Lab 1

Lab 1: GMU Geotechnical Inc., 23241 Arroyo Vista, Rancho Santa Margarita

Certified Independent Assurance (IA) Date issued: <u>10/17/2019</u>

> Note: This certificate is valid as long as the Tester complies with applicable requirements in Caltrans' Independent Assurance Program Manual.





Professional Development Certificate

XXXXXXXXXXXXX



asphalt institute

Constructing Quality Asphalt Pavements

Awarded to

Lucie Anderson

For participating in 7.5 hours Profesional Development Hours conforming to the Institute's precepts of engineering, research and education.

Awarded this 28th day of February in the year 2019

ACADEMY

PRESIDENT ASPHALT INSTITUTE



CALIFORNIA DEPARTMENT OF TRANSPORTATION

Presents this CERTIFICATE to

Jacques Brosseau

who is certified to perform the following tests:

Test Method CT 375 Expiration Date 2021-09-06

IA Responsible Afsaneh Ostovar Associated Laboratory Lab 1

Lab 1: GMU Geotechnical Inc., 23241 Arroyo Vista, Rancho Santa Margarita

Certified Independent Assurance (IA) Date issued: <u>10/17/2019</u>

> Note: This certificate is valid as long as the Tester complies with applicable requirements in Caltrans' Independent Assurance Program Manual.





CALIFORNIA DEPARTMENT OF TRANSPORTATION

Presents this CERTIFICATE to

John Villarraga

who is certified to perform the following tests:

Test Method	Expiration Date	IA Responsible	Associated Laboratory
CT 370	2020-09-06	Afsaneh Ostovar	(No lab)
CT 382	2021-09-06	Afsaneh Ostovar	Lab 1

Lab 1: GMU Geotechnical Inc., 23241 Arroyo Vista, Rancho Santa Margarita

No Lab: Laboratory associated with the tester is not accredited to perform the test method identified. Testers must be associated with an accredited laboratory.

Certified Independent Assurance (IA) Date issued: <u>10/17/2019</u>

> Note: This certificate is valid as long as the Tester complies with applicable requirements in Caltrans' Independent Assurance Program Manual.



CALIFORNIA DEPARTMENT OF TRANSPORTATION

Presents this CERTIFICATE to

Kossuth Cox

who is certified to perform the following tests:

Test Method	Expiration Date	IA Responsible	Associated Laboratory
CT 125 ADMIX	2021-09-06	Afsaneh Ostovar	Lab 1
CT 125 AGG	2022-09-06	Afsaneh Ostovar	Lab 1
CT 125 BIT	2021-09-06	Afsaneh Ostovar	Lab 1
CT 125 GEN	2021-09-06	Afsaneh Ostovar	Lab 1
CT 125 HMA	2022-09-06	Afsaneh Ostovar	Lab 1
CT 125 PCC	2021-09-06	Afsaneh Ostovar	Lab 1
CT 231	2021-09-06	Afsaneh Ostovar	Lab 1
CT 375	2021-09-06	Afsaneh Ostovar	Lab 1

Lab 1: GMU Geotechnical Inc., 23241 Arroyo Vista, Rancho Santa Margarita

Oertified Independent Assurance (IA) Date issued: <u>10/17/2019</u>

> Note: This certificate is valid as long as the Tester complies with applicable requirements in Caltrans' Independent Assurance Program Manual.



TL-0111 (REV. 06/00)

CALIFORNIA DEPARTMENT OF TRANSPORTATION

Presents this

CERTIFICATE OF PROFICIENCY



Royce Gould

(Print Name)

GMU Geotechnical

(Print Agency)

who is qualified to perform the following tests:

CTM 125-Sampling Agg., Soil & Lime	03/20
CTM 125-Sampling HMA	03/20
CTM 125-Sampling Bituminous Material	s 03/20
CTM 125-Sampling PCC	03/20
CTM 125-Sampling PCC Admixtures	03/20
CTM 231 - R. Compaction (Nuke)	03/20

Test Methods & Expirations

Test Methods & Expirations

nos

AFSANEH OSTOVAR I.A.# 096 Certified Independent Assurance (IA)

Date Issued: March 16, 2018

Note: This certificate is valid as long as the Tester complies with applicable requirements in Caltrans Independent Assurance Program Manual.

TL-0111 (REV. 06/00) CALIFORNIA DEPARTMENT OF TRANSPORTATION

Presents this

CERTIFICATE OF PROFICIENCY

to

Russel Price

(Print Name)

GMU Geotechnical

(Print Agency)

who is qualified to perform the following tests:

CTM 125-Sampling Agg., Soil & Lime	03/20
CTM 125-Sampling HMA	03/20
CTM 125-Sampling Bituminous Material	s 03/20
CTM 125-Sampling PCC	03/20
CTM 125-Sampling PCC Admixtures	03/20
CTM 231 - R. Compaction (Nuke)	03/20
	-

Test Methods & Expirations

Test Methods & Expirations

NO

AFSANEH OSTOVAR I.A.# 096 Certified Independent Assurance (IA)

Date Issued: March 16, 2018

Note: This certificate is valid as long as the Tester complies with applicable requirements in Caltrans Independent Assurance Program Manual.

TL-0111 (REV. 06/00)

CALIFORNIA DEPARTMENT OF TRANSPORTATION

Presents this

CERTIFICATE OF PROFICIENCY

to

Jade Sill

(Print Name)

GMU Geotechnical

who is qualified to perform the following tests:

CTM 125-General	03/20	
CTM 125-Sampling Agg., Soil & Lime	03/20	
CTM 231 - R. Compaction (Nuke)	03/20	
· · ·		
Test Methods & Expirations		Test Methods & Expirations
1		

I.A.# 096 **OSTOVAR** AFSAN Certified Independent Assurance (IA)

10

March 16, 2018 Date Issued:

Note: This certificate is valid as long as the Tester complies with applicable requirements in Caltrans Independent Assurance Program Manual.



CALIFORNIA DEPARTMENT OF TRANSPORTATION

Presents this CERTIFICATE to

John Strauss

who is certified to perform the following tests:

Test Method	Expiration Date	IA Responsible	Associated Laboratory
CT 504	2024-08-03	Sarbjit Grewal	Lab 1
CT 518	2024-08-03	Sarbjit Grewal	Lab 1
CT 539	2024-08-03	Sarbjit Grewal	Lab 1
CT 540	2024-08-03	Sarbjit Grewal	Lab 1
CT 543	2024-08-03	Sarbjit Grewal	(No lab)
CT 556	2024-08-03	Sarbjit Grewal	Lab 1
CT 557	2024-08-03	Sarbjit Grewal	Lab 1

Lab 1: GMU Geotechnical Inc., 23241 Arroyo Vista, Rancho Santa Margarita

No Lab: Laboratory associated with the tester is not accredited to perform the test method identified. Testers must be associated with an accredited laboratory.

Sarbjit Grewal I.A. 131

Certified Independent Assurance (IA) Date issued: <u>09/16/2019</u>

> Note: This certificate is valid as long as the Tester complies with applicable requirements in Caltrans' Independent Assurance Program Manual.



CALIFORNIA DEPARTMENT OF TRANSPORTATION

Presents this CERTIFICATE to

John Strauss

who is certified to perform the following tests:

Test Method CT 125 AGG CT 231 **Expiration Date** 2020-09-06 2020-09-06 IA Responsible Afsaneh Ostovar Afsaneh Ostovar Associated Laboratory Lab 1 Lab 1

Lab 1: GMU Geotechnical Inc., 23241 Arroyo Vista, Rancho Santa Margarita

Certified Independent Assurance (IA) Date issued: <u>10/17/2019</u>

> Note: This certificate is valid as long as the Tester complies with applicable requirements in Caltrans' Independent Assurance Program Manual.



CALIFORNIA DEPARTMENT OF TRANSPORTATION

Presents this CERTIFICATE to

Aaron Yett

who is certified to perform the following tests:

Test Method	Expiration Date	IA Responsible	Associated Laboratory
CT 125 AGG	2020-06-28	Afsaneh Ostovar	Lab 1
СТ 125 НМА	2020-06-28	Afsaneh Ostovar	Lab 1
CT 231	2020-06-28	Afsaneh Ostovar	Lab 1
CT 375	2020-06-28	Afsaneh Ostovar	Lab 1

Lab 1: GMU Geotechnical Inc., 23241 Arroyo Vista, Rancho Santa Margarita

ano

Certified Independent Assurance (IA) Date issued: <u>07/02/2019</u>

> Note: This certificate is valid as long as the Tester complies with applicable requirements in Caltrans' Independent Assurance Program Manual.

CALIFORNIA DEPARTMENT OF TRANSPORTATION

Presents this CERTIFICATE to

Ali Zalghout

who is certified to perform the following tests:

Test Method	Expiration Date	IA Responsible	Associated Laboratory			
CT 125 AGG	2020-09-06	Afsaneh Ostovar	Lab 1			
CT 125 GEN	2020-09-06	Afsaneh Ostovar	Lab 1			
СТ 125 НМА	2020-09-06	Afsaneh Ostovar	Lab 1			
CT 231	2020-09-06	Afsaneh Ostovar	Lab 1			
CT 375	2020-09-06	Afsaneh Ostovar	Lab 1			

Lab 1: GMU Geotechnical Inc., 23241 Arroyo Vista, Rancho Santa Margarita

Certified Independent Assurance (IA) Date issued: <u>10/17/2019</u>

> Note: This certificate is valid as long as the Tester complies with applicable requirements in Caltrans' Independent Assurance Program Manual.





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GMUGEOT-01

	E	K II	FICATE OF LIAI		SURAN	CE	10	/24/2019	
THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.									
IMPORTANT: If the certificate holde If SUBROGATION IS WAIVED, subje this certificate does not confer rights t	risa ctto othe	n AD the cert	DDITIONAL INSURED, the po terms and conditions of th ificate holder in lieu of sucl	olicy(ies) must ha le policy, certain h endorsement(s)	ave ADDITIO policies may	NAL INSURED provision require an endorsemer	nsorb nt.As	e endorsed. tatement on	
PRODUCER License # 0E67768			Ç	ONTACT Erica Wi	Ison				
IOA Insurance Services			P	NAME: PHONE (858) 754-0063 50233 FAX (619) 574-6288					
4370 La Jolla Village Drive								014 0200	
San Diego, CA 92122			<u>A</u>					NAIC #	
								13056	
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GMU Geotecnnical, Inc. 23241 Arroyo Vista									
Rancho Santa Margarita, CA	926	88							
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I HIS IS TO CERTIFY THAT THE POLICI INDICATED. NOTWITHSTANDING ANY F CERTIFICATE MAY BE ISSUED OR MAY EXCLUSIONS AND CONDITIONS OF SUCH	ES U REQU PER POLI	TAIN, CIES.	ENT, TERM OR CONDITION THE INSURANCE AFFORDE LIMITS SHOWN MAY HAVE BI	OF ANY CONTRA OF ANY CONTRA D BY THE POLIC EEN REDUCED BY	CT OR OTHE IES DESCRIE PAID CLAIMS	RED NAMED ABOVE FOR T R DOCUMENT WITH RESPI BED HEREIN IS SUBJECT T	ECT TO	WHICH THIS THE TERMS,	
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						MED EXP (Any one person)	\$	1 000 000	
				PERSONAL & ADV INJURY			\$	2 000 000	
GEN'L AGGREGATE LIMIT APPLIES PER:	GENERAL AGGREGAT		GENERAL AGGREGATE	\$	2,000,000				
						PRODUCTS - COMP/OP AGG	\$	0	
						COMBINED SINGLE LIMIT	\$	1.000.000	
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AUTOS ONLY AUTOS HIRED NON-OWNED AUTOS ONLY AUTOS ONLY						BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	\$		
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A UMBRELLA LIAB X OCCUR						EACH OCCURRENCE	\$	5,000,000	
X EXCESS LIAB CLAIMS-MADE			PSE0002541	11/1/2018	11/1/2019	AGGREGATE	\$	5,000,000	
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(Mandatory in NH)	N/ A					E.L. DISEASE - EA EMPLOYEE	\$	1,000,000	
If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - POLICY LIMIT	\$	1,000,000	
B Prof Liab/Clm Made			MCH591883118	12/31/2018	12/31/2019	Per Claim		2,000,000	
B Ded.: \$50K Per Claim			MCH591883118	12/31/2018	12/31/2019	Aggregate		2,000,000	
DESCRIPTION OF OPERATIONS / LOCATIONS / VEHIC Re: Groves at Orchard Hills Community As City of Garden Grove, it's officers, officials, attached endorsements as required by writ 30 Days Notice of Cancellation with 10 Days	LES (socia emp ten c s Not	ACORI Ition Ioyee ontra ice fo	D 101, Additional Remarks Schedule, es, agents and volunteers are loct. Insurance is Primary and or Non-Payment of Premium	may be attached if more Additional Insure Non-Contributory in accordance with	re space is requi eds with resp h the policy p	^{red)} ect to General and Auto L provisions.	-iability	[,] per the	

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE Kelly Howell

City of Garden Grove 11222 Acacia Parkway

Garden Grove, CA 92840

ACORD 25 (2016/03)

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.
THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

RLIPack[®] FOR PROFESSIONALS SCHEDULED ADDITIONAL INSURED ENDORSEMENT

This endorsement modifies insurance provided under the following:

BUSINESSOWNERS COVERAGE FORM – SECTION II – LIABILITY

Schedule

Name of Person(s) or Organization(s): City of Garden Grove, it's officers, officials, employees, agents and volunteers

- 1. SECTION II C. Who Is An Insured is amended to include as an additional insured the person or organization shown in the schedule above, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused in whole or in part by you or those acting on your behalf:
 - **a.** In the performance of your ongoing operations;
 - **b.** In connection with premises owned by or rented to you; or
 - **c.** In connection with "your work" and included within the "product-completed operations hazard".
- 2. The insurance provided to the additional insured by this endorsement is limited as follows:
 - This insurance does not apply to the rendering of or failure to render any "professional services".
 - b. This endorsement does not increase any of the limits of insurance stated in D. Liability And Medical Expenses Limits of Insurance.
- 3. The following is added to SECTION III H.2. Other Insurance – COMMON POLICY CONDITIONS (BUT APPLICABLE ONLY TO SECTION II – LIABILITY)

However, if you specifically agree in a contract or agreement that the insurance provided to an additional insured under this policy must apply on a primary basis, or a primary and non-contributory basis, this insurance is primary to other insurance that is available to such additional insured which covers such additional insured as a named insured, and we will not share with that other insurance, provided that:

- a. The "bodily injury" or "property damage" for which coverage is sought occurs after you have entered into that contract or agreement; or
- **b.** The "personal and advertising injury" for which coverage is sought arises out of an offense committed after you have entered into that contract or agreement.
- 4. The following is added to SECTION III K.2 Transfer of Rights of Recovery Against Others to Us – COMMON POLICY CONDITIONS (BUT APPLICABLE TO SECTION I – PROPERTY AND SECTION II – LIABILITY)

We waive any rights of recovery we may have against any person or organization because of payments we make for "bodily injury", "property damage" or "personal and advertising injury" arising out of "your work" performed by you, or on your behalf, under a contract or agreement with that person or organization. We waive these rights only where you have agreed to do so as part of a contract or agreement with such person or organization entered into by you before the "bodily injury" or "property damage" occurs, or the "personal and advertising injury" offense is committed.

ALL OTHER TERMS AND CONDITIONS OF THIS POLICY REMAIN UNCHANGED.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED INSURED FOR COVERED AUTOS LIABILITY COVERAGE

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM BUSINESS AUTO COVERAGE FORM MOTOR CARRIER COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by this endorsement.

This endorsement identifies person(s) or organization(s) who are "insureds" for Covered Autos Liability Coverage under the Who Is An Insured provision of the Coverage Form. This endorsement does not alter coverage provided in the Coverage Form.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Named Insured: GMU Geotechnical, Inc. Policy Number: PSA0002105

SCHEDULE

Name Of Person(s) Or Organization(s): City of Garden Grove, it's officers, officials, employees, agents and volunteers

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

Each person or organization shown in the Schedule is an "insured" for Covered Autos Liability Coverage, but only to the extent that person or organization qualifies as an "insured" under the Who Is An Insured provision contained in Paragraph **A.1.** of Section **II** – Covered Autos Liability Coverage in the Business Auto and Motor Carrier Coverage Forms and Paragraph **D.2.** of Section **I** – Covered Autos Coverages of the Auto Dealers Coverage Form. BUSINESS AUTO COVERAGE FORM

A. Broad Form Named Insured

The following is added to the SECTION II – LIABILITY Coverage, Paragraph A.1. Who is An Insured Provision:

Any business entity newly acquired or formed by you during the policy period, provided you own fifty percent (50%) or more of the business entity and the business entity is not separately insured for Business Auto Coverage. Coverage is extended up to a maximum of one hundred eighty (180) days following the acquisition or formation of the business entity.

This provision does not apply to any person or organization for which coverage is excluded by endorsement.

B. Employees As Insureds

The following is added to the **SECTION II** – **LIABILITY COVERAGE**, Paragraph **A.1. Who Is An Insured** Provision:

Any "employee" of yours is an "insured" while using a covered "auto" you don't own, hire or borrow in your business or your personal affairs.

C. Blanket Additional Insured

The following is added to the **SECTION II – LIABILITY COVERAGE**, Paragraph **A.1. Who Is An Insured** Provision:

Any person or organization that you are required to include as an additional insured on this coverage form in a contract or agreement that is executed by you before the "bodily injury" or "property damage" occurs is an "insured" for liability coverage, but only for damages to which this insurance applies and only to the extent that person or organization qualifies as an "insured" under the Who Is An Insured provision contained in **SECTION II** – **LIABILITY COVERAGE**.

The insurance provided to the additional insured will be on a primary and non-contributory basis to the additional insured's own business auto coverage if you are required to do so in a contract or agreement that is executed by you before the "bodily injury" or "property damage" occurs.

D. Blanket Waiver Of Subrogation

The following is added to the SECTION IV – BUSINESS AUTO CONDITIONS, A. Loss Conditions, 5. Transfer Of Rights Of Recovery Against Others To Us: We waive any right of recovery we may have against any person or organization to the extent required of you by a contract executed prior to any "accident" or "loss", provided that the "accident" or "loss" arises out of the operations contemplated by such contract. The waiver applies only to the person or organization designated in such contract.

E. Employee Hired Autos

1. The following is added to the **SECTION II** – LIABILITY COVERAGE, Paragraph A.1. Who Is An Insured Provision:

An "employee" of yours is an "insured" while operating an "auto" hired or rented under a contract or agreement in that "employee's" name, with your permission, while performing duties related to the conduct of your business.

2. Changes In General Conditions:

Paragraph **5.b.** of the **Other Insurance** Condition in the **BUSINESS AUTO CONDITIONS** is deleted and replaced with the following:

- b. For Hired Auto Physical Damage Coverage, the following are deemed to be covered "autos" you own:
 - (1) Any covered "auto" you lease, hire, rent or borrow; and
 - (2) Any covered "auto" hired or rented by your "employee" under a contract in that individual "employee's" name, with your permission, while performing duties related to the conduct of your business. However, any "auto" that is leased, hired, rented or borrowed with a driver is not a covered "auto".

F. Fellow Employee Coverage

SECTION II – LIABILITY COVERAGE, Exclusion B.5. does not apply if you have workers compensation insurance in-force covering all of your employees.

G. Auto Loan Lease Gap Coverage

SECTION III – PHYSICAL DAMAGE COVERAGE, C. Limit Of Insurance, is amended by the addition of the following:

In the event of a total "loss" to a covered "auto" shown in the Schedule of Declarations, we will pay any unpaid amount due on the lease or loan for a covered "auto", less: