



PROFESSION

Civil Engineer

REGISTRATIONS

Registered Civil Engineer –
State of California

EDUCATION

M.S. Civil Engineering
(Geotechnical Engineering)–
University of California,
Los Angeles

B.S. Civil Engineering
University of Alabama,
Birmingham

**PROFESSIONAL
EXPERIENCE**

GMU Geotechnical, Inc.
(2015 – Present)
Senior Staff Engineer
Rancho Santa Margarita,
California

City of Arcadia – Public Works
(2014 – 2015)
Engineering Intern
Arcadia, California

SUMMARY OF EXPERIENCE & QUALIFICATIONS

Ms. Varni has progressively advanced her field experience, engineering analysis capabilities, and management experience since 2014 in a wide variety of projects including: residential associations, master planned communities, commercial developments, public works projects, landslide evaluation, and forensic investigations.

Ms. Varni’s engineering experience with GMU includes the following:

- Slope Stability Analysis
 - Landslide evaluation and mitigation
- Seismic Hazard Analysis
 - Liquefaction analysis
 - Seismic deformation analysis
 - Lateral spread analysis
 - Site response analysis (1-D nonlinear analysis)
- Pile Analysis and Design
 - Bridge foundation design
 - Monopole foundations
- Shallow Foundation Recommendations
- Static and Seismic Settlement Analysis
- Shoring Recommendations
- Pavement Evaluation
 - Pavement distress evaluation (Pavement Condition Index (PCI) assessments)
 - PAVER pavement condition and budgetary analysis
- Pavement design
 - Pavement management program reports
 - Pavement section design
 - Pavement rehabilitation strategies
- Geotechnical Report Preparation
- Laboratory Testing and Evaluation
- Site Investigations and Sampling
- AutoCAD Drafting

GEOTECHNICAL ENGINEERING

BRIDGES:

- Cow Camp Road Bridge – Rancho Mission Viejo, Orange County, CA (2014 – Current): The 80-foot-high bridge spans approximately 1,400 feet over Gobernadora Canyon. Geologic conditions are characterized by up to 80 feet of saturated alluvial soils with high liquefaction potential. Geotechnical studies for roadway and bridge foundation design addressed liquefaction issues such as seismic settlement, lateral spreading, flow failures, downdrag on columns, decreased lateral and vertical capacity, and potential ground improvement/liquefaction remediation. Foundation design included CIDH foundations up to 12 feet in diameter and 130 feet deep. Prepared type selection memos, preliminary foundation reports, and final foundation reports to support project design.

LANDSLIDE/SLOPE STABILITY INVESTIGATIONS:

- Sierra Road Landslide – San Jose, CA (2017 – Present): Detailed geotechnical engineering analysis of large, deep-seated landslide in the eastern foothills of San Jose including shear strength determination, static and pseudo-static analyses, seismic deformation analyses, and development of geotechnical mitigation schemes.
- Debris Flow Analysis, Dove Canyon Homeowners' Association – Dove Canyon, CA (2018): Calculations and analysis of debris flow hazards affecting residential development. Also assisted with design of detention facilities to mitigate debris flow hazard.

RESIDENTIAL DEVELOPMENT PROJECTS/MASTER PLANNED COMMUNITIES:

- Rancho Mission Viejo Planning Area 3, Rancho Mission Viejo – Rancho Mission Viejo, Orange County, CA (2018 - Present): Over 3,000-acre master-planned community within Rancho Mission Viejo. Geotechnical studies addressed remedial grading, slope stabilization, landslide mitigation, liquefaction remediation, settlement, and infiltration basins.
- Mariner's Cove Apartment Homes – San Diego, CA (2017 – 2019): 3-story apartment buildings with subterranean parking planned within a site bounded by a bay to the north and a slough to the east. Site susceptible to liquefaction, seismic settlement, and lateral spreading due to potential strong ground shakings. Provided liquefaction and lateral spreading mitigation recommendations.

PAVEMENT ENGINEERING AND DESIGN

- Cement Stabilized Pulverized Base Mix Design Development, "Residential 1" Pavement Reconstruction Projects – Santa Fe Springs, CA (2017): Developed two cement-treatment mix designs consisting of existing of subgrade materials to satisfy Greenbook CSPB mix design requirements.

- Casta Del Sol Homeowners' Association Pavement Rehabilitation Projects – Mission Viejo, CA (2017 – Present): Provided pavement evaluation and design services to develop a pavement improvement management plan for the entire community. Developed repair plans and specifications on a yearly basis for pavement improvement projects throughout the community. Provided construction oversight services during construction.

PUBLICATIONS:

Bastani, S. A., and Varni, A. A., 2018, “Development of Site-Specific Acceleration Response Spectra for a Liquefiable Bridge Site,” Published in Proceedings of the 43rd Annual Conference on Deep Foundations in Anaheim, California and was presented in 2019 Transportation Research Board Annual Meeting.