

## Education

M.C.E Geotechnical Engineering, North Carolina State University 2005  
B.S. Geological Engineering, University of Arizona 1999

## Registrations

Professional Engineer: California, Texas, New York, New Jersey, Arizona, Pennsylvania  
Registered Geologist: Arizona

## Affiliations

American Society of Civil Engineering  
Urban Land Institute

## Experience Summary

Mr. Marcus brings to his role as Technical Director of Geotechnical Engineering at Partner Engineering and Science, Inc. (Partner), 20 years of experience in the engineering and construction industry, including work on commercial, industrial, residential, public works, transportation, energy, waste management, mining, state, federal, and Native American projects. Mr. Marcus has performed, coordinated, managed and/or otherwise participated in services in these areas which include: geotechnical evaluations and design; forensic studies; construction slope and vibration monitoring; materials testing; geophysical surveys; welding and structural inspections; non-destructive testing; environmental studies and remediation; civil and structural engineering design; land surveys; as well as planning and zoning reports.

## Management

Mr. Marcus has served as the national practice leader for the geotechnical group at Partner since January of 2015. In that time period, he has overseen a growth of 10x in billings from 2014 (about \$100,000 to about \$1M), and the group size has grown from one to four full-time employees, along with dozens of field engineering staff which are shared with other groups or sourced from our subcontractor and independent contractor force nationwide. In addition, he has overseen the creation of soils testing laboratories in Phoenix, Arizona and Torrance, California, while maintaining profitability during most of his tenure.

Mr. Marcus previously served as the director of engineering for a residential development company. His responsibilities included cash flow projections for \$500 million of construction and design budgets, due diligence oversight for purchases of new properties, quality control review and management of civil engineering disciplines, assistance to construction project managers, estimating, preparing RFPs, and award of construction contracts on residential development projects ranging from about \$10 to \$40 million.

In addition, Mr. Marcus previously served as construction service manager for a geotechnical engineering company, setting up a new laboratory and establishing a local practice in Tucson, Arizona. His responsibilities included business development, hiring and training team members, general oversight and quality control of the business, etc. During his roughly 2 year effort as manager, sales doubled as did the size of the staff.

## Geotechnical Engineering

Mr. Marcus has had exposure to a wide array of engineering and construction projects from a variety of perspectives. He has directly worked on projects in over 30 states and in several foreign countries. From a

geotechnical design perspective, he has participated in the design recommendations for: shallow and deep foundations; ground improvements; pavements; slabs-on-grade; mass grading; excavations; backfills; liners for lakes and canals; pipelines, soil cement and lime stabilization; above ground tanks; bridges; box culverts; and equipment pads. Techniques used have included drilling with augers, push rigs, air percussion, roto-sonic, mud-rotary, test pits, hand augers, dynamic cone penetrometers, and geophysical explorations such as seismic refraction, electrical resistivity, ground penetrating radar, and electromagnetic techniques. He has also employed these techniques, as well as manometer floor level surveys, to post-construction geotechnical explorations for distressed buildings, walls, slopes, and others.

### **Project Management/Consulting**

Mr. Marcus has also had a wide exposure to consulting during the course of construction such as blast and vibration monitoring, slope monitoring, special inspections and materials testing, and non-destructive testing. Inspections have included sub grade soil evaluations, concrete mix designs, reinforced concrete and masonry, structural welding and high strength bolts, EIFS, fiber reinforced polymers, spray-applied fireproofing, floor flatness, paint thickness and other various inspections.

From a construction management perspective, Mr. Marcus is familiar with construction contracting, estimating, preparing RFP's, reviewing and processing payment applications, quality control and value engineering of design drawings, conflict checking, scheduling, etc.

From a development perspective, he is familiar with the development of pro-forma models, cash-flow analysis, due-diligence studies, planning and zoning requirements, and managing the civil engineering design processes.

### **Project Experience**

#### **Commercial / Vertical Construction**

*Uptown Suites Hotels.* Provided the geotechnical design for several new hotel projects 3-7 stories in numerous states.

*Panera Bread.* Managed geotechnical evaluations and materials testing projects for dozens of Panera Bread Restaurants across the country.

*Tucson Medical Center.* Managed inspections and testing for a 6-story steel-framed surgery center addition, plus a 4-story precast concrete parking garage supported on deep foundations in Tucson, Arizona.

#### **Forensic**

*LA Fitness.* Performed geotechnical evaluation, floor level survey, site survey and visual distress survey for a commercial gym in the state of Ohio. The site was constructed over a deep fill in a drainage channel that had been dammed. Provided an opinion of causation, engineering repair drawings and recommendations for floor jacking, deep compaction grouting, and culvert upgrades.

*Jefferson Corporate Center.* Performed geotechnical evaluation, floor level survey, site survey and visual distress survey for a commercial office building in the state of Colorado. The site was constructed in an area of highly plastic clay and pyrite bearing shale. Provided an opinion of causation and engineering repair recommendations and cost estimates.

*Warehouse Facility.* Performed geotechnical evaluation, floor level survey, site survey and visual distress survey for a warehouse facility in the state of Pennsylvania. The site was constructed in an area previously used as a steel mill containing sulfur bearing slag. Provided an opinion of causation and engineering repair recommendations and cost estimates.

### **Renewables**

*Pocket Solar PV Farms.* Provided geotechnical evaluations for twelve 20 to 40-acre solar sites in Massachusetts, eight sites in Oregon, and several other sites across the country

*Solana Generating Station:* Provided geotechnical consulting and materials testing for 500MW solar generating station in Gila Bend, Arizona (largest in the country).

*Solar Shade Canopy Projects:* Provided geotechnical consulting for Tesla motors recharge sites (confidential locations) using solar shade canopy structures, California.

### **Energy and Power**

*Hang 2 Transmission Line.* Provided geotechnical consulting and materials testing for a new 115 Mile transmission line from Palo Verde Nuclear Generating station to Yuma, Arizona

*Palo Verde Nuclear Power Plant.* Provided geotechnical consulting, and materials testing services for several confidential projects, near Phoenix, Arizona.

*Coronado Generating Station.* Provided geotechnical consulting, and materials testing services for \$99M scrubbers and cast-in-place concrete chimneys (400-ft in height) in St. Johns, Arizona.

### **Communications**

*Wireless Phone Antenna Towers.* Provided geotechnical consulting for the installation of 12 new cell phone towers and equipment pads in the state of Texas, with heights ranging from 100 to 300 feet.

*Wireless Phone Antenna Towers:* Provided geotechnical consulting for the installation of new cell phone towers and equipment pads in the state of California, with heights ranging from 100 to 300 feet.

### **Water / Wastewater**

*Kingman Downtown Waste Water Treatment Plant.* Provided geotechnical evaluation, geophysical exploration, and materials testing services for a new waste water treatment plant, Kingman, Arizona

*Val Vista Transmission Line.* Provided geotechnical consulting and materials testing for retrofitting of a 2-mile section of 84-inch diameter wire-reinforced concrete pipe, Phoenix, Arizona.

*Cholla Generating Station.* Provided geotechnical evaluation and dam safety evaluation for cooling water pond, near Joseph City, Arizona.

### **Hydraulic / Dams**

*Gila River Indian Community Canals Reconstruction.* Performed geotechnical evaluation, consulting, and inspections for the reconstruction of more than 20 miles of agricultural irrigation canals in Pinal County,

Arizona.

*Black Canyon Fish Barrier.* Services included geotechnical and geophysical exploration, management and oversight of survey, hydraulic, hydrology, structural and civil engineering, near Silver City, New Mexico.

*Viewpoint Lake.* Performed boat-staged geotechnical and liner sampling in a man-made irrigation lake for a mixed use development, Sun City, Arizona

### **Waste Management**

*Marana Landfill.* Performed geotechnical evaluation and materials testing for construction of a new land fill and evaluation of daily cover materials, in Marana, Arizona.

*North Phoenix Transfer Station.* Performed non-destructive concrete quality testing including GPR and Impact Echo on the grade slab in two trash cells to evaluate thickness and rebar quality.

*Casa Grande Landfill.* Performed geotechnical evaluation and materials testing for a new scale-house facility in a previously used landfill area.

### **Environmental**

*Sanmina Brownfield Rehabilitation.* Provided geotechnical consulting and materials testing for shoring, excavation, and replacement of 10 to 30-foot deep excavations in a contaminated industrial site, in Phoenix, Arizona.

*Swissport Jet Fuel Storage Spill.* Provided geotechnical consulting and materials testing to clean up a jet fuel spill at Sky Harbor Airport, Phoenix, Arizona.

*Tanker Spills Clean-Up.* Provided geotechnical consulting for clean-up and replacement of contaminated soils for dozens of tanker spills, various locations in Arizona.

### **Transportation**

*Bay Area Rapid Transit (BART) 5-Story Parking Garage.* Provided geotechnical evaluation and field geotechnical oversight for the construction of a cast-in-place garage in Walnut Creek, California

*Highway 93 Bypass.* Provided field geotechnical oversight for the installation of drilled shafts in the Hassayampa River for a new highway bridge in Wickenburg, AZ

*Tucson International Airport Runway 11L.* Provided geotechnical evaluation and materials testing for replacement of runway pavement.

*Union Pacific Railroad Bridge Monitoring.* Provided continuous monitoring of inclinometers, as well as crack meters and tilt plates for the Union Pacific Rail Road Bridge over Highway 143 and the Phoenix Metro Light Rail 44<sup>th</sup> Street Switch project.

### **Federal**

*Mariposa Port of Entry.* Provided geotechnical consulting, slope monitoring and building monitoring in a

post-construction distress claim, Nogales, Arizona.

*Corps of Engineers Tucson Drainage.* Provided geotechnical consulting and materials testing for the construction of water retention upgrades in downtown Tucson associated with the Modern Street Car project.

*Fort Bragg Barracks.* Provided geotechnical evaluation for the construction of new barracks, Fort Bragg, North Carolina.

### **Education**

*University of North Carolina, Chapel Hill, Science Center.* Provided blast plan review and blast monitoring for basement foundation excavation below the new eight-story cast-in-place concrete building, as well as pre and post-construction surveys of 12 surrounding buildings.

*Charter Schools.* Provided geotechnical engineering and materials testing and inspections services on dozens of charter school projects in California and Arizona.

*Riverside Continuation High School.* Performed Department of the State Architect (DSA) fabrication shop inspections. Had a certified welding inspector on site at the fabrication shop to certify all shop welds, Riverside, California.

### **Residential**

*Core Campus Student Housing.* Provided geotechnical evaluations and field inspections for 10 locations of The Hub student housing developments, ranging from 5 to 21 stories above grade structures in six states.

*7-Story Multi-Use Project* Performed the geotechnical design for a new residential/office building development in downtown Los Angeles with planned three stories below-grade basement, in an area of shallow groundwater, seismic liquefaction hazard, and dense surrounding construction requiring support of excavation design.

*San Tan Heights Subdivision.* Developed multiple parcels totaling over 1,000 lots as a part of the subdivision, as well as a new Wal Mart pad, Sonic, and other commercial buildings. This included entitlement and contracting the construction of the lots, in Queen Creek, Arizona.

### **Mining**

*Sierrita Mine Shovel Shop.* Performed a geotechnical evaluation for construction of an equipment repair facility on mine overburden piles, Sahuarita, Arizona.

*Colstrip Coal Mine.* Performed noise prediction modeling for blasting operations, Colstrip, Montana.

*Elliot Road Quarry.* Performed blast monitoring and vibration modeling for blasting in the vicinity of large evaporation pond dams, near Phoenix, Arizona.

### **Speaking**

Mr. Marcus has provided geotechnical engineering lectures at several industry associations, which have

included:

*Construction Lender's Risk Management Conference, Phoenix, Arizona 2015.* Panel Moderator and Presenter on "Horror Stories in Construction" along with several industry leaders from Wells Fargo, Weitz Company, and Prudential.

*American Concrete Institute (ACI) Monthly meeting.* Lecture on installation and testing of drilled shafts (joint presentation with Case Foundation).

*Society of American Military Engineers (SAME).* Lecture regarding slope monitoring and the use of LIDAR.

### **Teaching**

In addition, Mr. Marcus provides frequent guest lectures at the University of Arizona and Arizona State University, and he teaches the Geotechnical section of the ASCE Professional Engineer Review Course. Guest lecture topics at the University level have included, but are not limited to:

- State Geology and Aggregate Sources
- Geotechnical Studies – What Construction Managers Need to Know
- Geotechnical Field Techniques
- Geotechnical Laboratory Testing
- Geologic Professionals in the Construction Industry

### **Contact**

mmarcus@partneresi.com