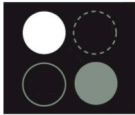
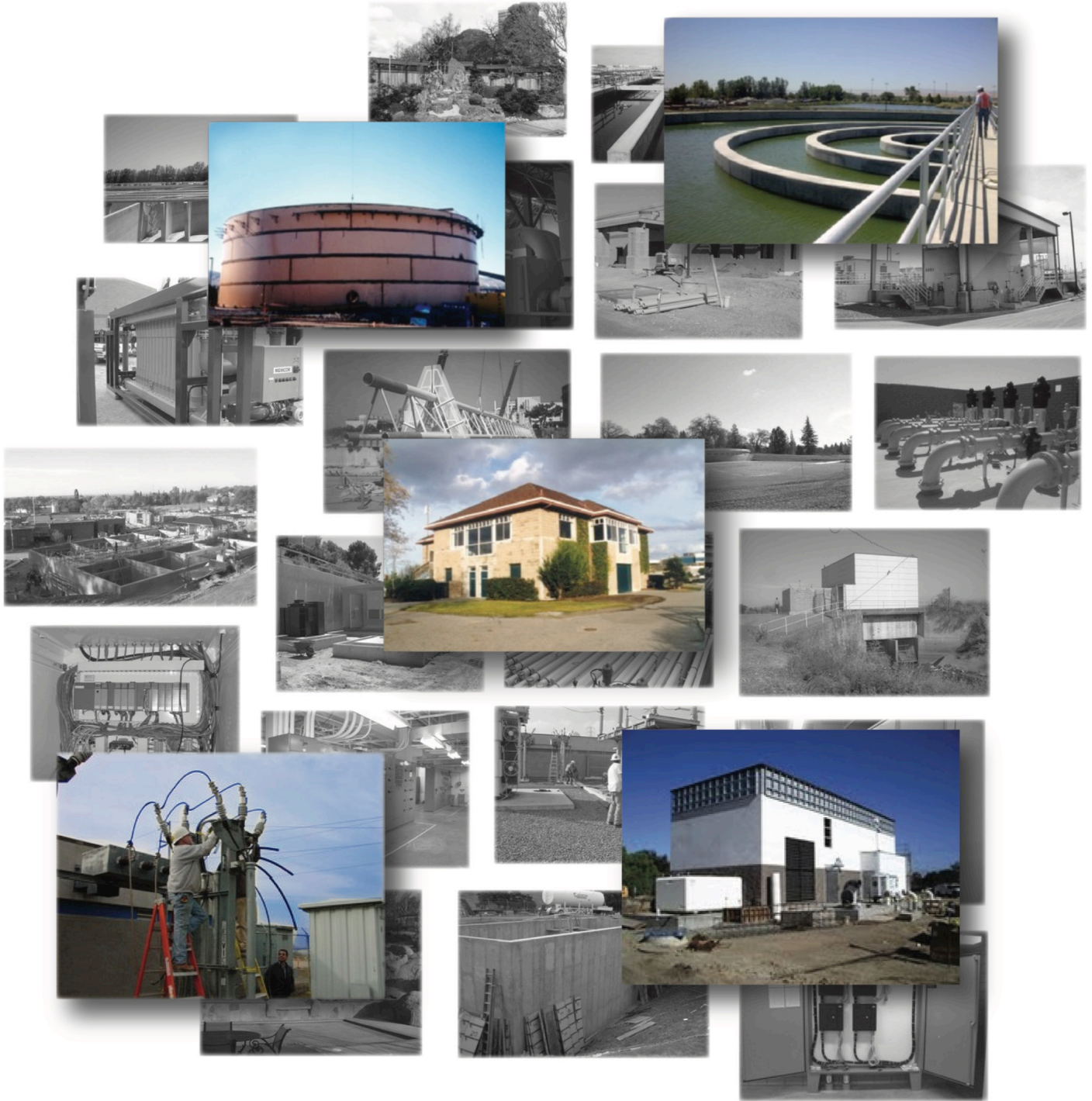


EXHIBIT 14-B



TJC and Associates, Inc.

Statement of Qualifications



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TJC and Associates, Inc.

TJC and Associates, Inc. (TJCAA), a small business enterprise, provides structural, instrumentation, controls, and electrical engineering services throughout the Western United States. Founded by Terence Cavanagh, S.E. and Gianna Zappettini, J.D. in 1998 and joined by Paul Giorsetto, P.E. in 2006, TJCAA provides comprehensive, multi-disciplinary design services for water and wastewater utilities and municipalities. Focusing on the engineering needs of this core industry allows us to provide excellent service to our clients, who benefit directly from our exceptional depth of experience. TJCAA's engineering services include evaluation, planning, design, and retrofit/upgrade design of structures, facilities, infrastructure, and systems. Our experienced group of engineers and support staff is prepared to perform these services directly or as integral members of project teams.

Our structural project experience, which is highlighted in the following sections and detailed in our Experience Bank at the end of this Statement of Qualifications (SOQ), includes the following:

- Water Treatment Plant (WTP) Structures
- Wastewater Treatment Plant (WWTP) Structures
- Ozone Treatment Facilities
- Reservoirs and Storage Tanks
- Pump Stations
- Chemical Storage and Containment Facilities
- Operations Centers/Laboratories
- Office Buildings
- Manufacturing Industrial Facilities
- Retail Buildings
- Recreational Facilities
- Off-Shore Platforms
- Outfall Structures
- Power Generation Facilities
- Chemical Processing Facilities

As the former principal and design function leader for an international environmental engineering design firm in California's Bay Area during the 1980s and 1990s, Terence Cavanagh, S.E., has delivered creative design solutions for municipalities and commercial/industrial clients for many years. He provides expertise in the design of water and wastewater treatment plants and seismic evaluation of existing structures, as well as in the design of ozone treatment and chemical containment facilities.

Statement of Qualifications - Engineering Services

Our instrumentation, controls, and electrical (ICE) project experience, which is summarized in this SOQ, includes these project types:

- Facility Electrical and Industrial Applications
- Medium- and Low-Voltage Distribution
- System Modeling, Analysis, and Utility Coordination
- Control System Master Planning
- Water and Wastewater Instrumentation and Control System Designs
- Remote Telemetry and SCADA
- Standby and Emergency Power Facilities
- Project Management and Alternative Delivery Methods

Paul Giorsetto, P.E., Principal, is registered in both Control Systems and Electrical Engineering and brings a wealth of experience in these design disciplines, as well as in project management, from his previous position as the regional engineering services manager and discipline leader for an international environmental engineering design firm.

TJCAA offers a responsive, flexible, multi-disciplinary design team with a proven record of excellence and of meeting our clients' needs. TJCAA operates from fully equipped and staffed design offices with the technological infrastructure necessary to perform seamlessly within a design team or as specialists providing specific expertise. Our staff can provide services either on site or as part of a distributed design group. We have consistently demonstrated our ability to develop solutions and approaches that match the needs, style, and requirements of our clients.



Water/Wastewater Treatment Facilities

TJCAA has extensive and varied experience in providing design and seismic analysis for water and wastewater treatment facilities. Our proven ability to work hard and meet schedule, along with our understanding of treatment processes, allows us to integrate smoothly with plant design teams to achieve maximum functionality and good structural fit. We have applied standard and innovative approaches to address a variety of design challenges for both small plants and facilities with capacities in excess of 100 million gallons per day (mgd).

Our recent plant design experience includes these projects:

- Santa Clara Valley Water District – Rinconada WTP Reliability Improvement Project
- Ironhouse Sanitary District – WWTP Expansion
- City of Brentwood – Surface Water Treatment Facility, Phase I
- Pajaro Valley Water Management Agency – Supplemental Wells
- Orange County Water District – Groundwater Replenishment System
- City of Folsom – Drinking Water Improvement Project (WTP Expansion)
- City of Brentwood – WWTP
- Delta Diablo – Recycled Water Facility
- Alameda County Water District – WTP #2
- Calleguas Water District – WTP
- Seattle Public Utilities – Tolt Water Filtration Plant
- Marin Municipal Water District – WTP Upgrades
- San Francisco Water District – San Andreas WTP Expansion, Phases 1 and 2
- City of Pittsburg – WTP Expansion
- City of Santa Cruz – WTP Improvements



In addition to the design of conventional water and wastewater facilities, TJCAA's experience includes the design of various support structures, including the plant operations center for Delta Diablo. This plant operations center included a two-story, 28,000-square-foot (sq. ft.), steel frame office building and a 12,000-sq. ft., tilt-up concrete shop and warehouse structure. As part of the South Truckee Meadows Water Treatment Facility design in Reno, Nevada, TJCAA designed single-story masonry block buildings: a 6,700-sq. ft. operations building and a 2,250-sq. ft. maintenance shop.

Ozone Treatment Facility Design

TJCAA personnel have also been involved in the design of ozone treatment facilities with combined capacities of over 1,500 mgd. This experience gives us a detailed working knowledge of the construction factors that are critical to the successful completion of an ozone treatment facility, including:

- Concrete mix design
- Forming systems
- Jointing
- Construction materials
- Coating systems

Our engineers' experience includes the structural design of the 120-mgd Tolt Water Filtration Plant in Seattle, WA. This Design-Build-Operate (DBO) project featured ozone, clearwell, flocculation and filtration basins, and chemical storage and operations facilities. Our ozone treatment facilities design experience also includes:

- Preliminary design for the Santa Clara Valley Water District Water Quality Regulation Compliance Project, Santa Teresa, Penitencia, and Rinconada WTPs, with a combined capacity of 210 mgd.
- Design for a new ozone generation building as part of the Reliability Improvement Project at Santa Clara Water District's Rinconada WTP.
- Design upgrades for Contra Costa Water District's Bollman WTP.
- Design of facilities for Alameda County Water District's new 30-mgd WTP #2.



Reservoirs and Pump Stations

TJCAA's services for reservoirs and pump stations include the following:

- Design of technically feasible, cost effective configurations
- Materials/life cycle analysis
- Alternatives analysis
- Seismic evaluation and retrofit design

TJCAA has evaluated, designed, and/or retrofitted numerous reservoirs and pump stations for clients throughout the western United States. We have designed cast-in-place concrete, prestressed, and welded steel reservoirs. Our reservoir design services are enhanced through our communications with tank manufacturers, which allow us to anticipate and address feasibility and construction issues.

Our experience includes design of the Zoe Pump Station structure as part of the Alameda Corridor project in Los Angeles. This 50-foot-deep concrete wetwell, with a masonry building, is not only subject to a high groundwater level, but also is in a residential area, a factor that necessitated specialized construction to limit impacts on adjoining neighbors. Our other project experience in this area includes the following:

- Cucamonga Valley Water District – 1630 East Recycled Water Pump Station
- Ironhouse Sanitary District – Ironhouse WWTP Expansion Project including UV/Effluent pump station
- Delta Diablo – Bridgehead Pump Station and Emergency Storage Basin
- City of Pleasanton – Vineyard Avenue Pump Station
- Dublin San Ramon Services District – Dougherty Valley Reservoir 200B
- Vallejo Sanitation and Flood Control District – Austin Creek Pump Station
- City of San Bruno – Cunningham Water Tank No. 1 and Glenview Water Tank No. 3 Structural Assessment
- City of Pacific Grove – Reconstruction of Wastewater Pump Station 12
- Sacramento County Airport System – Domestic Water Connection and Distribution System Piping Project
- Delta Diablo – Pittsburg 1 million gallon (MG) welded steel recycled water storage tank
- City of Pleasanton – McCloud Water Tank Assessment
- City of Burlingame – Donnelly welded steel tanks assessment and coating design



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- Monte Vista Water District – Aquifer Storage and Recovery, Well No. 30
- Dublin San Ramon Service District – Northern Dougherty Valley Zone 3 Potable Water Facilities Reservoir 300B and Pump Station 300C
- City of Livermore – Zone 1 Water System Improvements, Phase I
- Central Sanitation District – Lower Orinda Pump Station
- City of San Jose Environmental Services – South Bay Water Recycling Pump Stations 5 and 8/11
- City of Folsom, Drinking Water Improvement Project – design included prestressed concrete chlorine contact basin
- Vallejo Sanitation and Flood Control District – Pump station renovation/upgrade
- Central Contra Costa Sanitary District – Pump station renovation/upgrade
- Vopak Jet Fuel Storage Facility – Seismic Assessment of welded steel tank
- City of Brentwood – Brentwood WWTP
- Delta Diablo – Recycled Water facility (design of main plant basins)
- Pittsburg – WTP reservoir (5 MG and 1 MG prestressed concrete)
- Calleguas Water District – Storage reservoir (5 MG)
- Vallecitos Water District – Technical review of two storage reservoir designs (33 MG)
- City of Redlands – Prestressed concrete water storage reservoir (3.9 MG)
- City of Benicia – Reservoir Upgrade (2.3 MG)
- City of Corona – Water storage reservoir (4.7 MG)
- Seismic evaluation for the Environmental Impact Assessment of 10 welded steel reservoirs to store 211 MG of petroleum products for the Chinese Petroleum Corporation.





Chemical Storage Facilities

TJCAA's chemical storage facilities services include structural design as well as coating system option identification. Our experience in providing these services enables us to analyze facility configurations and identify critical issues early in the design process. Critical issues associated with chemical storage facilities may include the following:

- Coating systems
- Material selection
- Drainage requirements
- Equipment anchorage
- Access requirements

We will work with your process engineers to develop a design that addresses these critical issues and to select a layout that meets both your chemical and structural needs. Our attention to detail will increase functionality and safety over the life of the structure.

Examples of our chemical storage and containment facilities designs include the following:

- Ironhouse Sanitary District, Ironhouse WWTP Expansion Project – Chemical building
- City of Folsom, Drinking Water Improvement Project – Design included building for pretreatment chemical feeding
- Hill Brothers Chemical Company – Containment area
- Delta Diablo – Sodium bisulfate storage area
- Santa Teresa WTP – Sodium bisulfate storage area
- Rinconada WTP – Sodium hypochlorite storage facility
- Penitencia WTP – Sodium hypochlorite storage facility
- Contra Costa Water District – Storage containment facilities at the Bollman WTP
- Palo Alto Regional Water Quality Control Plant – Containment areas for sodium hypochlorite and sodium bisulfite tanks

Our attention to detail will increase functionality and safety over the life of the structure.



Seismic Evaluation and Mitigation

TJCAA is a highly qualified and experienced seismic evaluation and mitigation service provider. Our staff has completed numerous seismic evaluation projects in and around the Bay Area. We have a detailed understanding of the active earthquake faults in the area and we know their significance for each project site. Our seismic evaluation activities include the following:

- Analysis of existing structures
- Determination of the design level earthquake
- Evaluation of construction materials and methods
- Determination of appropriate lateral forces applied to structures

TJCAA provides value-added seismic evaluation services by incorporating the specific actual design level earthquake for a structure and assigning the appropriate lateral force, rather than using standard "code" level forces. Our seismic evaluation experience covers a variety of structure types and materials, subject to a wide range of lateral force intensities. This range of experience provides us with the ability to identify and address a structure's unique needs. TJCAA has provided structural and seismic evaluation for numerous projects, including the following:

- The Cunningham Water Tank No. 1, built in 1964, a 2-MG, welded carbon steel tank; and the Glenview Water Tank No. 3, built in 1950, a 2-MG, prestressed concrete tank in San Bruno, CA.
- Sunnyvale WWTP Advanced Flootation Tank, Sunnyvale, CA
- Lower Orinda Pump Station, Orinda, CA
- *Austin Creek Pump Station, Vallejo, California, a 1956 cast-in-place concrete pump station*
- Olympic City Club Renovation, San Francisco, CA (seismic evaluation and design)
- San Francisco Friends School, San Francisco, CA (seismic evaluation and design)
- North Point Wet Weather Facility, San Francisco, CA
- Ito Cariani Sausage Company, Hayward, CA
- McCloud Water Tank, built in 1953, a prestressed concrete tank
- Praxair Distribution Centre, Pittsburg, CA
- Vopak Jet Fuel Storage Facility, Wilmington, CA
- Existing structures with construction dates ranging from 1900-1960 for a commercial client in San Jose, CA
- Chemical containment facilities for a manufacturer in San Jose, CA
- WWTP on seismically active area for the Alameda County Water District (Seismic evaluation and design)
- Large diameter RCP pipeline for Calleguas Water District, CA (Structural evaluation of alternatives for crossing an active fault)

TJCAA provides value-added seismic evaluation services by incorporating the specific actual design level earthquake for a structure and assigning the appropriate lateral force, rather than using standard "code" level forces.

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- Fire Station for Ramona, CA
- Existing structures at the City of Buena Ventura WTP
- Circa 1920 terra cotta structure in Walnut Creek, CA
- Devil Canyon WTP in San Bernardino, on a site divided by the San Andreas Fault (Seismic evaluation and design)



Buildings and Structures

TJCAA's structural engineering services for office buildings include both design and the evaluation and selection of building systems and materials. Our experience demonstrates our capability to provide structural designs that coordinate with our clients' functional and aesthetic needs. We work with project architects to confirm that the structure is compatible with the architectural scheme and that it supports any special building features.

TJCAA personnel have provided these structural engineering services for the design and evaluation of office buildings and other structures throughout the Bay Area and California. We are familiar with all primary construction materials, including steel, wood, masonry and concrete. Our project experience includes the following:

- Concrete building 26 feet below grade and 1,720-sq. ft. masonry block building for Delta Diablo – Bridgehead Pump Station
- Analysis and structural design of temporary bridges to carry construction equipment for the Arroyo Seco Canyon Project.
- Single-story masonry block buildings: 6,700-sq. ft. operations building and 2,250-sq. ft. maintenance shop as part of the South Truckee Meadows Water Treatment Facility design in Reno, NV
- Monte Vista Water District, Montclair – Aquifer Storage and Recovery, Well No. 30
- Sacramento Regional County Sanitation District – Sacramento Regional WWTP; 2E/2F Substation Replacement Project
- Single-story, plant operations center as part of the Brentwood WWTP Expansion
- Manager's Office/Residence and multiple storage units for ABBA Self Storage, Concord
- Two-story, 40,000-sq. ft. plant operations center for Delta Diablo
- Two-story, 30,000-sq. ft. medical office building
- Two-story recreation facility for the City of Burlingame
- Structural framing system for architectural siding on a 17-story office building in Hawaii
- Three-story control building and two-story compressor building for the Hyperion WWTP in Los Angeles
- Foundation for Emergency Generators – Contra Costa Water District
- Six-story, 165,000-sq. ft. community college building for the Peralta Community College District
- Two-story, 35,000-sq. ft., steel-framed Science and Technology Center for the Dominican University of California
- Two-story, steel-framed Simulation Center building for the California Maritime Academy



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- Five new one-story, wood-framed buildings with wood shear walls and concrete spread footings: a Town Hall, Community Hall, Library, Maintenance Building, and Restroom Building for the Portola Valley Town Center
- Seismic evaluation and upgrades to existing structures, including: Target department stores; cold storage facilities; electronic facilities; an 85,000-sq. ft., three-story timber school building; and a ten-story, concrete building



Power Generation Facilities

TJCAA personnel have experience in the implementation of federally mandated regulations for nuclear power plants, including seismic two-over-one evaluations, evaluation of potential explosion-generated missile impacts, and implementation of the structural requirements of 10 CFR 50.65 (the maintenance rule).

TJCAA has assisted in the implementation of the structural aspects of 10 CFR 50.65 at several nuclear power plants:

- Pacific Gas and Electric's Diablo Canyon Power Plant, CA
- Nebraska Public Power District's Cooper Nuclear Station, NE
- New York Power Authorities' Indian Point Three, NY
- Texas Utility Electric's Comanche Peak Steam Electric Station, TX
- Entergy's Indian Point Two, NY
- Philadelphia Electric Company's Peachbottom Facility, PA

Seismic two-over-one piping evaluations:

- Nebraska Public Power District's Cooper Nuclear Station, NE
- Texas Utility Electric's Comanche Peak Steam Electric Station, TX

Explosion-generated projectile impact analysis:

- Portland Gas and Electric's Trojan Nuclear Facility, OR

Design of structures for power generation units associated with Water and Wastewater Treatment Facilities:

- Cal Water Services Company, RPVD PV-37 Energy Recovery Project, Rancho Palos Verdes, CA.
- Contra Costa Water District's Bisso Operations and Maintenance/Administration Buildings Emergency Generator Project, Concord, CA
- Dublin San Ramon Services District's Cogeneration Electrical Improvements Project, Pleasanton, CA



Facility Electrical and Industrial Applications

TJCAA's electrical design services build upon our extensive experience in facility and industrial applications, encompassing electrical power distribution; industrial motor control, with emphasis in the application of variable speed drives; lighting and energy efficient lighting control; fire alarms; communications; and data communications. Working across all disciplines, our staff supports the entire project's electrical power and application needs. Our proactive approach focuses our efforts on avoiding design problems, rather than on fixing them once they occur.

We have provided electrical facility designs for numerous West Coast projects.

- Santa Clara Valley Water District, Rinconada WTP Reliability Improvement Project: Electrical and I&C design for a \$180 million plant upgrade.
- Santa Clara Valley Water District, Pacheco Pump Station Adjustable Speed Drive Replacement: Designed replacement of twelve existing adjustable speed drives with newer technology drives, to operate existing 2,000-horsepower (hp) medium-voltage wound-rotor motors. Project work also included a SCADA system upgrade.
- Cucamonga Valley Water District, 1C, 2C, and 1630 Pump Stations: Pump station designs, including 480-V power distribution systems.
- Dublin San Ramon Services District, Cogeneration Electrical Improvements Project, including expansion of a WWTP electrical distribution and cogeneration facility.
- City of Malibu, Malibu Legacy Park Project: Electrical design services for a multi-benefit facility.
- Dublin San Ramon Services District, Zone 2 and 3 Pump Station Renovations: Design and construction services for electrical and mechanical renovations at four drinking water distribution pump stations.
- City of Calistoga, Kimball WTP Improvements: Detailed electrical design of a pressure filter-based treatment facility for the City's main WTP.
- City of Salem, Oregon, River Road Wet Weather Treatment Facility: Design for new high rate clarification and ultraviolet disinfection.
- Inland Empire Utilities Agency, Phase 2 Chino Basin Facilities Improvement Project: Predesign and design related to improvements at groundwater replenishment basins and water supply turnouts, conforming to MWD technical requirements and standards.
- Contra Costa Water District, Bisso O&M/Administration Buildings Emergency Generator Project: Design of a standby generator retrofit.
- City of Santa Cruz, Graham Hill WTP Electrical Improvements: Electrical design of upgrades to support process improvements.



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- Orange County Water District, Groundwater Replenishment System: Instrumentation & Control (I&C) and Electrical designs for ultimate 130-mgd water reclamation project.
- Metropolitan Water District, Skinner Oxidation Retrofit Program: Discipline task leader for ICE design elements on the extensive retrofit to MWD's 630-mgd Skinner WTP.
- City of Mountain View, Crittenden (stormwater) Pump Station, Sewage Pump Station, and Whisman (drinking water) Pump Station: Electrical and instrumentation design.
- City of Folsom, Folsom WTP Expansion: Electrical design of multiple phases of expansion for the existing WTP.
- United Water of Idaho, Columbia WTP: Design/build electrical and I&C design of ultrafiltration membrane treatment process.
- Contra Costa Water District, Treated Water Generators and Seismic Valves Project: Lead electrical engineer to add engine generators and seismic shutoff valves at treated water pump stations and reservoirs.
- Alameda County Water District, Brackish Water Treatment Facility: Electrical engineering for a major reverse osmosis desalination project.
- City of Santa Fe, New Mexico, Transfer Station: Electrical facility design for new solid waste transfer station.



Medium- and Low-Voltage Distribution

Medium- and low-voltage distribution represents the electrical backbone of a facility. Distribution of this nature typically features concrete-encased duct banks, substations, and transformers, and incorporates other infrastructure systems, such as communications, fiber optic cables, and other specialized systems. TJCAA's electrical engineering staff has 25 years of experience in distribution designs and infrastructure improvements. Services include: needs evaluation, design, expansion, site coordination, and utility coordination for distribution elements and facilities.

Our experience includes the following:

- Santa Clara Valley Water District, Rinconada WTP Reliability Improvement Project: Electrical and I&C design for a \$180 million plant upgrade, including 12-kV distribution.
- Santa Clara Valley Water District, Pacheco Pump Station Adjustable Speed Drive Replacement: Designed replacement of twelve existing adjustable speed drives with newer technology drives, to operate existing 2,000-hp medium-voltage wound-rotor motors. Project work also included a SCADA system upgrade.
- Cucamonga Valley Water District, 1C, 2C, and 1630 Pump Stations: Pump station designs, including 480-V power distribution systems ranging from 2,000-A to 3,000-A services with motor sizes of 100 hp to 400 hp.
- Dublin San Ramon Services District, Cogeneration Electrical Improvements Project, including expansion of a WWTP electrical distribution and cogeneration facility.
- Contra Costa Water District, Bisso O&M/Administration Buildings Emergency Generator Project: Design of a standby generator retrofit.
- Inland Empire Utilities Agency, 1630 East Recycled Water Pipeline Segment A Project: Design services for power, instrumentation, and SCADA work at the San Sevaine and Victoria Basin Turnouts.
- City of Santa Cruz, Graham Hill WTP Electrical Improvements: Electrical design of upgrades to support process improvements.
- City of Malibu, Malibu Legacy Park Project: Electrical design services for a multi-benefit facility.
- Dublin San Ramon Services District, Zone 2 and 3 Pump Station Renovations: Design and construction services for electrical and mechanical renovations at four drinking water distribution pump stations.
- Inland Empire Utilities Agency, Phase 2 Chino Basin Facilities Improvement Project: Predesign and design related to improvements at groundwater replenishment basins and water supply turnouts.



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- Metropolitan Water District, Skinner Oxidation Retrofit Program: Discipline task leader for the electrical and I&C design elements.
- City of Calistoga, Kimball WTP Improvements: Detailed electrical design of a pressure filter-based treatment facility for the City's main WTP.
- Orange County Water District, Groundwater Replenishment System: Modular design scheme with an ultimate buildout to 130 mgd.
- Contra Costa Water District, Bollman WTP Surface Water Quality (SWQ) Project: Plant upgrade to the 75-mgd surface WTP.
- Contra Costa Water District, Bollman Emergency Generator Design/Build Project and 5-kV Master Plan: Design/build contract to install two new 2-MW, trailer-mounted engine-generator sets.
- Contra Costa Water District – 5-kV Electrical System Upgrade Phases 1 and 2: Bollman plant 5-kV distribution renovation project.
- Seattle Public Utilities, Tolt WTP: Design/build of a grassroots 120-mgd treatment plant.
- Sultanate of Oman, Salalah WWTP: Lead electrical design for a new WWTP.
- National Park Service, Yosemite National Park Electrical Distribution Upgrade: Rehabilitation of the electrical distribution system.
- Alameda County Water District, Brackish Water Treatment Facility: New reverse osmosis desalination project.
- East Bay Municipal Utilities District, Walnut Creek WTP Upgrades: Electrical design services for major upgrades and capacity expansion.
- City San Buenaventura Wastewater Reclamation Facility (WWRF) Upgrades Project: Upgrades at the reclamation facility.
- Department of Defense, March Air Force Base Electrical Distribution Upgrades: Rehab and reconfiguration of the Base's overhead 12-kV electrical system under a design/build structure.



Modeling, Analysis, and Utility Coordination

TJCAA is a highly qualified firm in electrical system modeling, analysis, and evaluation. We also have extensive expertise in working directly with electric power utilities for coordinating new or upgraded service to facilities.

Our analytical and evaluation experience includes the spectrum of electrical analyses. Our experience ranges from performing routine load, wire size, and short circuit evaluations to utilizing sophisticated computer modeling tools and analyzing energy life cycle costs. Our specific experience in modeling and evaluating electrical systems includes the following:

- Electrical load flow studies
- Voltage drop verification
- Load studies
- Short circuit evaluations
- Electrical harmonic analyses
- Transient analyses
- Standby generator sizing
- Duct bank heating capacity calculations
- Title 24 lighting and energy evaluations
- Life Cycle energy cost analyses
- Utility rate studies
- Photovoltaic and alternative energy analyses

The ability to perform these analyses in house enables us to provide true value-added services to our clients by incorporating the electrical analysis results into the overall economics of the project. Examples of these critical economics include life cycle costs, utility energy and product rebates, regulatory rebates, efficiency, voltage selection, and utility rate analysis. Below are some examples of our experience in these areas.

- Metropolitan Water District, Skinner Oxidation Retrofit Program: Modeling and calculations of load flows, short circuit, duct bank heating calculations, generator sizing, voltage drop, and transient analysis.
- Dublin San Ramon Services District, Cogeneration Electrical Improvements Project: Coordination of facility improvements for power export capability to PG&E, new networked engine-generator controls, and upgrades to several 480-V and 21-kV switchgear.
- City of Malibu, Malibu Legacy Park Project: Electrical design services for a multi-benefit facility. Included analysis of existing loads at the Storm Water Treatment Facility to confirm available power in lieu of setting up a new utility service.
- Cucamonga Valley Water District, 1630 East Recycled Water Pump Station: Coordinated new electrical service and provided multi-discipline design services.
- Inland Empire Utilities Agency, Phase 2 Chino Basin Facilities Improvement Project: Predesign and design of improvements at groundwater replenishment basins and water supply turnouts, conforming to MWD technical requirements and standards.

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- Dublin San Ramon Services District, Zone 2 and 3 Pump Station Renovations: Design and construction services for electrical and mechanical renovations at four drinking water distribution pump stations.
- Inland Empire Utilities Agency, 1630 East Recycled Water Pipeline Segment A Project: Coordinated new Southern California Edison service at the San Sevaine Basin site.
- Orange County Water District, Groundwater Replenishment System: Comprehensive electrical system modeling including load flow, short circuit, coordination, and harmonic analysis. Performed extensive cost analysis of the system during the early design phases.
- Contra Costa Water District, Bollman WTP SWQ Project: Plant upgrade to a 75-mgd surface WTP. Improvements to double end the existing 115-kV/4.16-kV substation, including assisting the District in the acquisition of the PG&E substation.
- Contra Costa Water District, Bollman Emergency Generator Design/Build Project and 5-kV Master Plan: Project Manager on a design/build contract to install two new 2-MW, trailer-mounted, engine-generator sets.
- Contra Costa Water District – 5-kV Electrical System Upgrade Phase 1: Project Manager for the Bollman plant 5-kV distribution renovation project, including system modeling to the 480-V level.
- Sultanate of Oman, Salalah WWTP: Lead electrical design engineer for a new wastewater treatment facility. Required coordination for electrical service to the site with the Salalah Municipality.
- National Park Service, Yosemite National Park Electrical Distribution Upgrade: Modeling and selection of voltage levels, demand analysis, conductor material, and economic analyses.
- Alameda County Water District, Brackish Water Treatment Facility: Electrical analyses for load evaluations, voltage level payback analysis, short circuit, and voltage drop.
- East Bay Municipal Utilities District, Walnut Creek WTP Upgrades: Studies included generator sizing evaluations, load flows, short circuit, and reliability analyses.
- City San Buenaventura WWRF Upgrades project: System modeling included voltage drop, load flow, and short circuit analyses for the existing and new project work.
- City of Santa Cruz, Graham Hill WTP Expansion Power Study: Development of planning level report, including power analyses for process improvements at the facility.
- Coastside Water District Electrical System Study: Conceptual level power study and analysis for supporting planned process improvements.
- Metropolitan Water District, Diemer WTP Electrical Reliability Study: System analysis and report to evaluate the electrical reliability of the existing electrical system.





Control System Master Planning

TJCAA offers extensive support for planning level services in Control System applications. As documented in this Statement of Qualifications, TJCAA's experience includes detailed design with a wide variety of open and proprietary systems, software, and components. In the dynamic market of solid state controls, this ability to separate proven technologies from the "bleeding edge" adds value to any project planning process.

TJCAA's philosophy in control system master planning is to listen to and evaluate the needs of the client and provide solutions that are a fit with the staffing capabilities, budgets, and real data needs of all stakeholders. Further, with product life cycles measured in years, not decades, control system master planning must incorporate the need for periodic, fundamental changes to the control platform hardware and software with a minimum of impacts to the overall system infrastructure.

Our experience includes the following:

- Control components: remote telemetry units (RTU), programmable logic controllers (PLC), and distributed control systems (DCUs)
- Field level controllers and instrumentation fieldbuses (Foundation, Profibus, DeviceNet, etc.)
- Workstations and computer facility layouts
- Control system media (fiber, copper, wireless)
- Interface and data models to support asset management and information technology

Our project experience includes the following:

- Alameda County Water District, Treatment Plant 2 PLC Upgrade Project: Services for an upgrade of PLCs that control all processes in a 21-mgd WTP, including programming, bench testing, equipment commissioning, operational readiness testing, and functional acceptance testing.
- Union Sanitary District, Supervisory Control and Data Acquisition (SCADA) System Master Plan and Standards Development: SCADA Master Planning including reconnaissance, interviews with staff, development of potential projects (including costs), review and selection of projects, and projection of annual budget impacts.
- City of Folsom, WTP Control System Upgrade Design/Build: Control system upgrade performed under a design/build agreement.
- City of San Mateo, Wastewater Plant SCADA System Conceptual Master Plan: Master Plan providing a blueprint for development and phased implementation of in-plant SCADA.



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- City of San Bernardino, Vulnerability Assessment: Security vulnerability assessment for the City's SCADA and telemetry system.
- Santa Ana Watershed Project Authority, Telemetry Master Plan: Site inventories, technology review, and needs assessments.
- Mercer Island, Washington: Telemetry system strategic plan for the City's water and wastewater utilities.
- City of San Buenaventura WWRF, Control System Master Plan: Control system master plan consistent with the plant's existing system and long-term goals.



Water/Wastewater I&C System Designs

The TJCAA design staff has provided I&C designs for numerous facilities throughout the United States. Our experience includes production of detailed design documents (plans and specifications) for control systems based on industry and client-specific standards. Our services include the development of client standards for both project-wide and service-wide applications.

Our services include preparation of piping and instrumentation diagrams (P&IDs); application and selection of suitable instrumentation sensor technologies and wetted materials; development of comprehensive equipment and instrument tagging schemas, control system architectures and control component layouts; and implementation and execution of control system planning and standards.

TJCAA's experience includes several projects utilizing smart P&ID design tools resulting in project databases that are a dynamic element. Such databases are a foundation for the development of asset management tools for CMOM, GASB 34, and similar regulatory requirements. Our experience includes the following projects:

- Alameda County Water District, Treatment Plant 2 PLC Upgrade Project: Services for an upgrade of PLCs that control all processes in a 21-mgd WTP, including programming, bench testing, equipment commissioning, operational readiness testing, and functional acceptance testing.
- Santa Clara Valley Water District, Rinconada WTP Reliability Improvement Project: I&C design for a \$180 million plant upgrade incorporating a new distributed PLC architecture coordinated with construction phasing and new processes.
- City of Santa Cruz, Graham Hill WTP Control System Upgrade: Project Manager for the design/build upgrade, including vendor selection, system design, panel fabrication, coordination of subcontractors, installation, start-up, testing, training, and follow-up/warranty tasks.
- Cucamonga Valley Water District, 1C, 2C, and 1630 Pump Stations: Pump station designs, including District-wide tagging scheme, P&ID standards, and prep of the first P&IDs.
- Santa Clara Valley Water District, Pacheco Pump Station Adjustable Speed Drive Replacement: SCADA system upgrade, accompanying design for replacement of twelve existing adjustable speed drives with newer technology drives, to operate existing 2,000-hp medium-voltage wound-rotor motors.
- Dublin San Ramon Services District, Zone 2 and 3 Pump Station Renovations: Design and construction services for electrical and mechanical renovations at four drinking water distribution pump stations.
- City of Sunnyvale, Water Pollution Control Plant Digester 1 and 2 and Fats, Oils, and Grease (FOG) Facility: Provided the I&C system design for rehabilitation of two existing digesters and a new FOG disposal facility at the City of Sunnyvale's WWTP.



Statement of Qualifications - Engineering Services

Work included replacement of the existing OPTO 22-based control platform over to an existing Allen-Bradley based ControlLogix PLC.

- Orange County Water District, Groundwater Replenishment System: I&C design and operational features, including development of I&C design standards, smart P&IDs, fieldbus instrument technologies (Foundation Fieldbus and DeviceNet), and asset management tools.
- City of San Diego, Miramar WTP Expansion: I&C Task Leader for the plant expansion, with associated instrumentation and distributed control PLC configured in a redundant, hot-standby arrangement.
- Metropolitan Water District, Skinner Oxidation Retrofit Program: Discipline task leader for the electrical and I&C design elements on the retrofit of the 630-mgd WTP. Project included development of I&C design criteria, instrumentation, expansion of the existing DCS, and a new fiber optic communication backbone.
- City of Calistoga, Kimball WTP Improvements: Design of a pressure filter-based treatment facility for a WTP, including expansion of existing motor control systems, integration to the existing control system, and addition of multiple water quality monitoring instrumentation onto a centralized water quality monitoring panel.
- United Water of Idaho, Columbia WTP: Design/build electrical and I&C design of ultrafiltration membrane treatment process.
- Glendale Remediation Project: Design and construction of electrical and I&C project elements, including remote telemetry to off-site wells, interlocks to central treatment facility, programmable logic-based controls and instrumentation for liquid and vapor stripping technologies.
- Contra Costa Water District, Bollman WTP SWQ Project: Plant upgrade including smart P&IDs and a new DCS to replace the plant's original, relay-based control panel system.
- Seattle Public Utilities, Tolt WTP: Design/build of a grassroots 120-mgd treatment plant that included a distributed control approach, distributed sets of hot standby, redundant PLCs.
- City San Buenaventura WWRF Upgrades project: Lead electrical and I&C engineer for upgrades at the reclamation facility. The upgrade included a distributed PLC scheme consistent with existing City standards and master plans.
- City of San Francisco, WTP Design/Build Control System Upgrade: Major control system upgrades at the Harry Tracy WTP and Sunol WTP, which supply drinking water to the City of San Francisco. Project included new PLCs, computer workstations, and networking.
- City of Salem, Oregon, River Road Wet Weather Treatment Facility: New high rate clarification and ultraviolet disinfection; associated process instrumentation, smart P&IDs, and extensive interface work to allow installation of owner furnished DCS equipment.
- San Jose Water Company, Montevina WTP, Electrical Upgrades: Installation of upgraded PLC system configured in a remote input/output architecture to minimize new wiring complications.
- City of Livermore, Altamont Pump Station and Reservoir Improvements: Electrical and I&C design for rehabilitation of existing pump station to increase capacity and replace aging equipment.



Remote Telemetry and SCADA

TJCAA's services also include development of remote telemetry and SCADA systems. SCADA systems provide centralized monitoring and/or control within a plant or more widely dispersed sites, such as pump stations, reservoirs, booster stations, or pressure zones. In SCADA systems, data is transmitted via telemetry from individual sites to the centralized location.

The TJCAA design staff has extensive experience in SCADA and telemetry applications utilizing a variety of media, including licensed radio, spread spectrum radio, packet switching, other wireless (e.g., IEEE 802.11 wireless Ethernet), Cellular Data Packet Data, "plain-old-telephone," private wire, and fiber optics. Our design experience also includes applications of various system architectures and topologies, such as peer-to-peer, distributed control, store and forward, polling, and ring.



TJCAA's designers understand that there is no single approach that fits all SCADA applications. The job of the designer is to develop an approach that is a best fit with client technical sophistication, maintenance capability, data volume, control requirements, reliability, and required quality of data. Specific recent SCADA and telemetry projects include the following:

- Union Sanitary District, SCADA System Master Plan and Standards Development: SCADA Master Planning including reconnaissance, interviews with staff, development of potential projects (including costs), review and selection of projects, and projection of annual budget impacts.
- Alameda County Water District, Treatment Plant 2 PLC Upgrade Project: Services for an upgrade of PLCs that control all processes in a 21-mgd WTP, including programming, bench testing, equipment commissioning, operational readiness testing, and functional acceptance testing.
- Cucamonga Valley Water District, 1C, 2C, and 1630 Pump Stations: Pump station designs, including SCADA system design with Allen Bradley, MicroLogix systems with Ethernet radio communications to the District's central station.
- Contra Costa Water District, Bollman WTP SWQ Project: Plant upgrade for 75-mgd surface WTP, including a new DCS.
- Glendale Remediation Project: Multi-well and groundwater treatment facility. I&C elements including remote telemetry to off-site wells, interlocks to central treatment facility, programmable logic-based controls and instrumentation for liquid and vapor stripping technologies.
- Inland Empire Utilities Agency, Phase 2 Chino Basin Facilities Improvement Project. Design related to improvements at groundwater replenishment basins and water supply turnouts, including new electrical services, new SCADA sites, local "short haul" telemetry solar powered sub-networks, additional level and flow monitoring, and flow control gate structures.
- Dublin San Ramon Services District, Zone 2 and 3 Pump Station Renovations: Design and construction services for electrical and mechanical renovations at four drinking

water distribution pump stations, included interfacing to the District's existing radio-based SCADA system.

- Orange County Water District, Groundwater Replenishment System: Design task leader for I&C and Electrical disciplines for an ultimate buildout to 130 mgd. Project included smart P&IDs, fieldbus instrument technologies (Foundation Fieldbus and DeviceNet), asset management tools, and fiber optic links to off-site wells.
- Inland Empire Utilities Agency, 1630 East Recycled Water Pipeline Segment A Project: Included RTUs for flow monitoring and control of flow to recharge basins for groundwater aquifer replenishment.
- City of Mountain View, Turnouts Controls Design/Build: Project management for design/build project that included controls and SCADA interfaces for water purveyors' turnouts.
- City of Folsom, WTP Control System Upgrade Design/Build: Control system upgrade performed under a design/build agreement.
- United Water of Idaho, Columbia WTP: Design/build electrical and I&C design of ultrafiltration membrane treatment process.
- Seattle Public Utilities, Tolt WTP: Design/build of a grassroots 120-mgd treatment plant. A distributed control approach was used with distributed sets of hot standby, redundant PLCs.
- Delta Diablo, Discovery Bay Telemetry System: Radio-based telemetry system included design, replacement of RTUs, installation of central computers, system programming, and integration.
- City of San Francisco, WTP Design/Build Control System Upgrade: Design/build SCADA system modification project featuring extensive SCADA system and telemetry upgrades at the Harry Tracy WTP and Sunol WTP.
- City San Buenaventura WWRF Upgrades project: Lead electrical and I&C engineer for upgrades at the reclamation facility, including plant wide SCADA.
- City of Santa Cruz, Graham Hill WTP Control System Upgrade: Project Manager on the design/build SCADA system upgrade project, including vendor selection, system design, panel fabrication, coordination of subcontractors, installation, start-up, testing, training, and follow-up/warranty tasks.
- National Park Service, Yosemite National Park Drinking Water System: Lead I&C Design Engineer for new drinking water supply for the park with tank level/wells operation control scheme based on VHF radios, central station, and repeater.
- Contra Costa Water District, Randall-Bold WTP Design/Build DCS Upgrade: Project Manager for development of design/build procurement documents for replacement of the plant's DCS.



Standby and Emergency Power Facilities

TJCAA's project experience features numerous applications of standby and emergency power sources. Our experience includes standby-generators, alternative utility sources of supply, uninterruptible power supplies, and battery systems. Our design group has practical applied design experience in meeting reliability requirements based on the National Electrical Code (NFPA 70), EPA wastewater reliability guidelines, and local Fire Marshals.

Our design staff has a particularly high level of experience with standby generators. Our design group offers our clients the benefits of on-line installations that address physical constraints, fuel alternatives, local and state air quality constraints (California Regional Air Quality Management Districts in particular), and local noise ordinances. We have designed both portable and fixed units, and our designs range in capacity from 15 kW to over 2,000 kW.



Our experience in applying sizing criteria complements our knowledge of treatment processes and regulatory requirements, including raw and primary process streams, primary disinfection requirements, membrane sensitivity, ultraviolet systems, and restrike considerations. Our design staff uses these criteria to work collaboratively with the process and facility designers to identify the most appropriate level of standby capacity required. We apply our knowledge of electrical considerations (e.g., motor starting criteria, electrical harmonic controls, generator sizing calculations, and future loads) to develop a final, cost-effective installation. Installed standby power installations include the following:

- Santa Clara Valley Water District, Rinconada WTP Reliability Improvement Project: Electrical and I&C design for a \$180 million plant upgrade, including a new 3-MW diesel standby generator.
- Contra Costa Water District, Bisso O&M/Administration Buildings Emergency Generator Project: Design of a standby generator retrofit. The new 400-kW diesel generator was required to conform to EPA Tier 3 emission requirements.
- City of Mountain View, Crittenden Pump Station: Electrical and instrumentation design for storm water pump station near San Francisco Bay with on-site standby diesel generator.
- Dublin San Ramon Services District, Cogeneration Electrical Improvements Project: design of a WWTP cogeneration facility expansion to add a third cogeneration unit to the facility, resulting in a total internal generation capacity in excess of 2 MW.
- City of Mountain View, Whisman Pump Station: Project management for the electrical design for rehabilitation of the City's main drinking water pump station. The facility was at the City's corporation yard and required installation of a large standby generator for both pumping and corporation yard facility loads.
- Dublin San Ramon Services District, Zone 2 and 3 Pump Station Renovations: Design and construction services for electrical and mechanical renovations at four drinking water distribution pump stations.

Statement of Qualifications - Engineering Services

- Orange County Water District, Groundwater Replenishment System: Design incorporated dual utility services as the cost-effective alternative to large on-site power generation.
- Metropolitan Water District, Skinner Oxidation Retrofit Program: Discipline task leader for the electrical and I&C design on the retrofit to MWD's 630-mgd WTP. Facility included the addition of a 2-MW engine-generator set integrated into the facility's existing engine generator facility, doubling the plant's standby power capability.
- Contra Costa Water District, Bollman WTP SWQ Project: Plant upgrade project to the 75-mgd WTP, including improvements to double-end the existing 115-kV/4.16-kV substation, including assisting the District in the acquisition of the PG&E substation for enhanced reliability.
- Seattle Public Utilities, Tolt WTP: Design/build of a grassroots 120-mgd treatment plant with 100 percent standby generator capacity.
- Contra Costa Water District, Treated Water Generators and Seismic Valves Project: Prepared documents for owner procurement of several standby engine generators and subsequent equipment installation. Installations were in residential areas, requiring weatherproof and critical sound-attenuated enclosures.
- Diablo Water District, Generator Replacement Project: Project manager for the electrical design for procurement and installation of new on-site diesel engine generator for the District's central facility and Corporation yard.
- East Bay Municipal Utilities District, Walnut Creek WTP Upgrades: Lead electrical design engineer performing detailed electrical design services for a major plant expansion. Electrical upgrades include new 12-kV distribution, new 480-Volt distribution and standby generator.
- City of Salem, Oregon, River Road Wet Weather Treatment Facility: Electrical and I&C task leader for new high rate clarification and ultraviolet disinfection processes designed to treat high flows associated with storm events. Project included double ended, independent 12-kV utility for enhanced reliability.
- City of Livermore, Altamont Pump Station and Reservoir Improvements: Electrical and I&C design for rehabilitation of existing pump station. Design included new standby diesel engine generator in weatherproof and critical sound-attenuated enclosure.
- Contra Costa Water District, Bollman Emergency Generator Design/Build Project and 5-kV Master Plan: Project Management for a design/build contract with the District to install two new 2-MW trailer-mounted engine generator sets.
- City of Santa Cruz, Graham Hill WTP Electrical Improvements: Electrical design of upgrades to support process improvements, including a 1,500-kW standby engine-generator set.



Project Management and Alternative Delivery

In addition to its design skills, TJCAA's staff has exceptional experience in ICE project and task management. Further, our firm has specific and focused experience with completing projects using alternative delivery methods.

TJCAA's corporate infrastructure provides our ICE project and task managers with near "real-time" access to project financial and resource data to support the use of project management tools. In addition to technical excellence, we have found that sound project management, encompassing resource planning, schedule management, communications, coordination, and financial management, is a key element to the success of the project.



TJCAA's ICE staff also has significant experience with alternative project delivery options such as Construction Manager (CM) at risk, Design/CM at risk, design/build, and owner-furnished equipment in addition to our extensive experience with traditional design/bid/build delivery methods. Our design/build experience includes both execution of design/build projects and development of proposal level or partial design level documents that can be used as the basis for design/build proposals. Our staff has also assisted our clients with evaluation and selection of bidders in a design/build environment and we understand the details necessary to make the design/build approach a success.

Examples of our project management and alternative project delivery methods include the following:

- Contra Costa Water District, Bisso O&M/Administration Buildings Emergency Generator Project: Project Management for the design of a standby generator retrofit.
- Glendale Remediation Project: Multi-well and groundwater treatment facility performed under a "CM at Risk" arrangement.
- Dublin San Ramon Services District, Cogeneration Electrical Improvements Project: Project Management, design, and coordination of a WWTP expansion that included the electrical distribution system, cogeneration facility, and relocation of the 21-kV main service.
- United Water of Idaho, Columbia WTP: Design/build of an ultrafiltration membrane treatment process. This project required development of electrical and I&C documents at a level sufficient for construction permitting and to develop a guaranteed maximum price (Design/CM at Risk).
- Seattle Public Utilities, Tolt WTP: Design/build of a grassroots 120-mgd treatment plant that included ozonation, flocculation, filtration, chemical feed, solids handling, and on-site clearwell storage.
- Contra Costa Water District, Treated Water Generators and Seismic Valves Project: Prepared documents for owner procurement of several standby engine generators and subsequent equipment installation.

Statement of Qualifications - Engineering Services

- Cucamonga Valley Water District 1630 East Recycled Water Pump Station: Project Management for architectural, structural, building mechanical, electrical and I&C design disciplines for the new 3,000-sq. ft. CMU pump station building and facilities.
- Las Virgenes Municipal Water District, Tapia Water Reclamation Facility, Headworks Improvements Project: Prepared design/build bidding documents for upgrades to the Tapia WRF Headworks.
- Department of Defense, March Air Force Base Electrical Distribution Upgrades: Project Management for development of design/build documents to allow government to receive bids and award the design/build contract.
- Costa Water District, Bollman Emergency Generator Design/Build Project and 5-kV Master Plan: Project Management for a design/build contract to install two new 2-MW, trailer-mounted engine-generator sets.
- Contra Costa Water District, 5-kV Electrical System Upgrade Phases 1 and 2: Project Manager for the Bollman plant 5-kV distribution renovation projects.
- City of Folsom, WTP Control System Upgrade: Control system upgrade executed under a design/build approach, including design of control system architecture and interface to remote telemetry, fabrication and installation of PLC back panels, testing, training, and start-up.
- City of San Mateo, Wastewater Plant SCADA System Conceptual Master Plan: Project Management for development of a Master Plan to provide a blueprint for development and implementation of in-plant SCADA.
- Contra Costa Water District, Randall-Bold WTP Design/Build DCS Upgrade: Project Management for design/build replacement of the plant's DCS. Developed bid/proposal documents for the designer/builder, defined proposal evaluation method, facilitated project interviews, and participated in the selection of the design/build firm.
- City of Mountain View, Turnouts Controls Design/Build: Project management for design/build project that included controls and SCADA interfaces for the Escuela and Whisman Turnouts.
- City of San Francisco, WTP Control System Upgrade: Design/build SCADA system modification, featuring major system upgrades at the Harry Tracy WTP and Sunol WTP.
- City of Santa Cruz, Graham Hill WTP Control System Upgrade: Project Management for the design/build system upgrade project including vendor selection, system design, panel fabrication, subcontractor management, installation, start-up, testing, training, and follow up/warranty tasks.



TJCAA Key Personnel Resumes

Terence J. Cavanagh, S.E.

Terence Cavanagh is a registered structural and civil engineer specializing in structural design and seismic evaluation for a variety of facilities. Since 1983, he has evaluated and designed facilities such as water and wastewater treatment plants, chemical facilities, commercial and industrial buildings, and bridges. His in-depth experience allows him to anticipate and address potential design challenges effectively and to thoroughly evaluate the ability of a structure to withstand various stresses. Mr. Cavanagh is a proven project manager; he is able to address client requirements while ensuring the project stays on budget and schedule.

Richard K. Thow, S.E.

Richard Thow has worked in the structural design and seismic evaluation fields since 1986. He has designed and evaluated facilities including WTP structures, WWTP structures, chemical storage facilities, pump stations, and storage tanks/reservoirs. Mr. Thow's experience also comprises extensive evaluation and analysis for nuclear facilities, including regulatory interpretation and compliance, structural evaluation, and facility design and modification.

Daisy M. Yu, S.E., LEED AP

Daisy Yu has extensive experience in seismic evaluation and retrofit design and in the design of large, multi-story steel-framed structures. Her design experience also includes water and wastewater treatment facilities such as reinforced concrete reservoirs, reinforced masonry pump stations, and chemical storage facilities. As an accredited LEED professional, Ms. Yu is recognized as having a background and understanding of the principles that go into designing structures/buildings with a minimal impact on the environment, and that promote energy efficiency and a healthy environment for their occupants/users. Ms. Yu is not only an experienced structural engineer, but also a proven project manager.

Paul J. Giorsetto, P.E., LEED AP

Paul Giorsetto, TJCAA's Instrumentation, Control, and Electrical (ICE) services leader, has extensive design experience in the areas of electrical power distribution, electrical industrial applications, control systems, and instrumentation. He also has significant experience in construction services, as a resident engineer and inspector, and during facility start-up. He has acted as a project manager and electrical and/or discipline lead on large water and wastewater design projects. Mr. Giorsetto has also served as project manager on dedicated electrical and instrumentation and control design-build projects. He is also a LEED Accredited Professional. TJCAA clients seeking ICE design solutions will benefit from Mr. Giorsetto's extensive experience.

Michael J. Erwin, P.E.

Michael Erwin, who heads up TJCAA's Control Systems Programming group, has been building valuable experience since 1986 in the design, implementation, and management of electrical power, control, automation, and instrumentation systems. He performs electrical design engineering for water and wastewater treatment, collection, and distribution systems, and industrial facilities, focusing on instrumentation and control system design and programming. His specific experience includes development of power calculations,

protective device coordination, equipment specification, instrument selection, and control panel fabrication design; design of SCADA systems for in-plant and telemetry-based systems; and PLC programming. He has hands-on familiarity with a wide variety of PLC and SCADA hardware and software platforms. He gained his extensive experience not only as a consultant, but also as chief engineer and project manager for a Northern California systems integrator. With this understanding of the water/wastewater, control system, and construction industries, he provides a viewpoint that emphasizes constructability and an emphasis on systems that feature maximum operator usability and efficiency.

Elaine M. Tee, P.E.

Elaine Tee has experience including instrumentation, controls, and electrical design and fieldwork for municipal water/wastewater, industrial, commercial, and traffic applications. Her experience in design includes power distribution, P&ID development, motor controls, lighting, and cost estimating. Ms. Tee has also supervised and performed onsite facility inspections and has provided construction and field services for several water facilities and expansion projects. Her abilities as a designer provide support to our instrumentation, control, and electrical group, and her experience in the field further strengthens our team's "on the ground" insight.

Eileen A. Nakamura, P.E.

Eileen Nakamura is an electrical engineer with design experience in the areas of electrical power distribution, electrical industrial applications, control systems, and instrumentation. Her experience includes designs of medium- and low-voltage electrical distribution systems for water, wastewater, and industrial waste treatment facilities; plant instrumentation; and SCADA systems for in-plant and telemetry-based systems. She also has experience in construction services during facility start-up for design-build projects.

Jacqueline N. Okubo

Jacqui Okubo is an electrical designer in TJCAA's Instrumentation, Controls, and Electrical Group. She is a graduate of the University of California at Davis, where her work included photovoltaic component design and control system configuration using Labview. Ms. Okubo, who grew up in Kenya, gained professional experience through her work with a leading engineering consultancy firm in Nairobi, providing construction inspection and evaluation services. In support of our senior and staff engineers, she focuses on electrical industrial applications and control systems; developing design layouts for conduit, circuiting, and lighting plans; and preparing engineering calculations used for equipment sizing and specifications.



Terence J. Cavanagh, S.E.
Vice President

Experience

Mr. Cavanagh, a licensed engineer since 1985, is an expert in the design of water and wastewater treatment plant structures. He specializes in the structural design and seismic evaluation of facilities including water and wastewater treatment plants, reservoirs and storage tanks, pump stations, ozone treatment facilities, chemical storage and containment facilities, and operations centers/laboratories. He provides significant design expertise with all conventional building materials used for water and wastewater treatment facilities. Mr. Cavanagh's specific project experience includes the following:

Education

MS, Structural Engineering/Structural Mechanics; University of CA, Berkeley; 1984

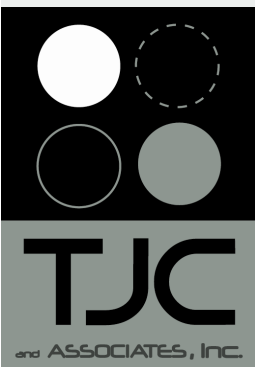
BS, Civil Engineering; University of CA, Berkeley; 1982

Professional Registrations

Structural: CA, HI, ID, IL, KY, NH, OR, UT, WA, WY

Civil: AL, AZ, AR, CA, CO, CT, DE, FL, GA, HI, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, ND, NE, NV, NH, NJ, NM, NY, NC, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WA, WI, WV, WY

- **Rinconada WTP Reliability Improvement Project; Santa Clara Valley Water District; Los Gatos, CA; Project Manager/Principal in Charge.** Structural design for a new ozone generation building, LOX facility, flocculation/ sedimentation basins, filters, washwater recovery facility, chlorine contact basin, and an elevated concrete platform to support electrical equipment. The structures are part of this major project to improve reliability at the Rinconada WTP, which is the main WTP serving the western service area for the District.
- **Bridge Condition Assessment and Temporary Structure Design; Pasadena Water and Power; Pasadena, CA; Project Manager/Principal in Charge.** Performed structural evaluations of three existing bridges and designed temporary structures to support movement of heavy construction equipment during the City of Pasadena's Arroyo Seco Canyon Project. The bridge designs included a repurposed flatbed railroad car and a field-fabricated, wide-flange steel beam bridge.
- **Pasadena Recycled Water Project-Phase I; Pasadena Water and Power; Pasadena, CA; Project Manager/Principal in Charge.** Provided structural design for an 11,000-sq. ft. CMU pump station with a concrete roof and two monorails for equipment movement. The design also included a 0.5-MG, rectangular, buried concrete reservoir; a horizontal, hydro-pneumatic tank; and a concrete foundation for a prefabricated FRP building that will provide shelter and secondary containment for stored chemicals.
- **Murray Reservoir Demolition and Murray Hydro-Pneumatic Zone Upgrades; Pasadena Water and Power; Pasadena, CA; Project Manager/Principal in Charge.** Provided a structural design for a CMU pump station and hydro-pneumatic tank to be located over a demolished in-ground reservoir.
- **Rinconada WTP Residuals Management Project; Santa Clara Valley Water District; Los Gatos, CA; Principal in Charge.** Responsible for the structural design of new gravity thickeners, a two-story concrete building housing new centrifuges and electrical equipment, and a steel-frame load-out structure.
- **Ironhouse WWTP Expansion; Oakley, CA; Structural Engineer of Record.** Responsible for the structural design of a 9-mgd expansion, including an influent pump station, headworks, anoxic/aeration basins, membrane bioreactors, backpulse tank, blower/electrical/generator/chemical building, UV/Effluent pump station, and a solids handling building.



- **Napa MST Recycled Water Project; Napa Sanitation District; Napa, CA; Principal in Charge.** Project includes structural design of a 40 x 60-foot concrete masonry pump station and electrical equipment room, as well as four pipe crossings over existing creeks.
- **Upper Llagas Creek Flood Protection Project; Santa Clara Valley Water District; Morgan Hill, CA; Principal in Charge.** Provided design engineering for wing walls and head walls for Upper Llagas Creek culverts and other conveyance structures at roads and bridge crossings.
- **West Antioch Creek Channel Improvement Project; City of Antioch, CA; Principal in Charge.** Provided design engineering for inlet and outlet head walls for four 50-foot-long, 14 x 7-foot box culverts, placed side by side at a flood channel road crossing.
- **Sewer Pipe Bridge Crossings; Central Contra Costa Sanitary District; Martinez, Orinda, Lafayette, Alamo, Danville, and San Ramon, CA; Principal in Charge.** Provided structural engineering support for condition assessment, modifications, and retrofits for 11 sewer pipe bridge crossing at sites throughout the Central Contra Costa Sanitary District. Pipe sizes ranged from 6 to 48 inches. Provided engineering support during construction.
- **Advanced Floatation Tank Replacement Project; City of Sunnyvale, CA; Principal in Charge.** This structural evaluation included field investigation of tank vulnerability to seismic events. The final design required sequencing considerations to maintain plant operations throughout the various tank retrofits, maintaining at least two tanks in operation at all times.
- **Wastewater and Recycled Water Facility Upgrade; Novato Sanitary District; Novato, CA; Principal in Charge.** Performed a structural analysis to verify that Digester No. 1 will meet code requirements. Evaluation included destructive testing, exterior inspection, and analysis. The project included an interior inspection and a peer review of the design for the digester's new aluminum roof.
- **Headworks Project; Sausalito-Marin City Sanitary District; Sausalito, CA; Project Manager.** Providing structural design for facility improvements as part of a WWTP expansion design on a highly constrained site adjacent to San Francisco Bay.
- **WWTP Expansion; Delta Diablo; Structural Engineer of Record.** Designed structural elements for a 12.2-mgd WWTP expansion to include a recycled water facility to service two power generation facilities. Design of this multimillion-dollar facility, which was completed within 6 months, included a 1.8-MG welded steel tank for recycled water storage. Mr. Cavanagh provided engineering services during construction.
- **C Street Pump Station; City of Petaluma, CA; Project Manager.** Performed a seismic assessment and refurbishment design for a 1960s pump station to accommodate new pumps, improve Code compliance, and address architectural aesthetics.
- **Bridgehead Emergency Storage Basin and Pump Station; Delta Diablo; Oakley, CA; Structural Engineer of Record.** Structural design of a sewage pumping station and a 1-MG cast-in-place emergency storage basin. Design included a concrete building 26 feet below grade and a two-story, 1,720-sq. ft. masonry block building with a metal truss built-up roof.
- **Bisso O&M/Administration Buildings Emergency Generator Project; Contra Costa Water District, Concord CA; Principal in Charge.** Provided foundation design for Emergency Generators.

- **Water Distribution Pipe Bridge; St. Helena Hospital; St. Helena, CA; Principal in Charge.** Provided structural engineering design and drafting for a new pipe bridge carrying 10-inch and 6-inch potable water pipelines. The bridge spanned 42 feet 6 inches of Brook Creek in St. Helena, California. Provided engineering support during construction.
- **Seismic Assessments; Columbus Foods; South San Francisco, Hayward, and Bayfront Sites, CA; Project Manager.** Directed assessments and retrofit recommendation development for California Accidental Release Program seismic evaluations.
- **Yountville Veterans Home; Title 22 Upgrades and Recycled Water Expansion Project; Principal Engineer.** Design of a partially buried, 24 x 50-foot cast-in-place concrete chlorine contact basin with redwood baffle walls.
- **McCloud Reservoir Assessment; City of Pleasanton, CA; Principal in Charge.** Directed an assessment of a 2-MG, prestressed cast-in-place concrete tank. Directed and provided quality assurance/quality control for development of retrofit recommendations.
- **Vineyard Avenue Pump Station; City of Pleasanton, CA; Principal Engineer.** Provided engineering and construction services for the design of a 2,176-sq. ft. concrete masonry unit pump station/electrical building on a constricted site with strict architectural/aesthetic requirements.
- **Surface Water Treatment Facility, Phase I; City of Brentwood, CA; Principal Engineer.** Provided engineering for the design of a WTP expansion. Specific elements of the project included a 30 x 35-foot, 35-foot-deep wet well and concrete masonry block electrical building.
- **Recycled Water Project; Delta Diablo, Pittsburg, CA; Project Manager.** Provided structural design and construction services for a 1-MG welded steel recycled water tank and supporting pump stations.
- **Storm Water Pump Station Refurbishment; Central Sanitation District; Orinda CA; Project Manager.** Prepared seismic evaluations and retrofit designs for the upgrade of the Lower Orinda Pump Station. Expansion of this circa 1950 pump station increased its capacity from 14 mgd up to 21 mgd—the estimated capacity required for operation through 2035.
- **Austin Creek Pump Station; Vallejo Sanitation and Flood Control District; Vallejo, CA; Project Manager.** Performed preliminary structural evaluation of the existing Austin Creek Pumping Station, a 40 x 24-foot cast-in-place concrete structure constructed circa 1956. The evaluation assessed the structural condition of the existing building as it related to the need for repair or replacement.
- **WWTP Expansion; City of Brentwood; Structural Engineer of Record.** Design of a 10-mgd WWTP expansion. This substantially new, \$40 million facility included all elements of the process train and required consideration for mitigation of highly liquefiable soils. The selected mitigation measure included a combination of stone piles and dynamic compaction. Provided engineering services during construction.
- **Plant Operations Center; Delta Diablo; Structural Engineer of Record.** Responsible for the structural design of a 40,000-sq. ft. plant operations center consisting of a 28,000-sq. ft., two-story, steel-framed office/lab structure and a 12,000-sq. ft., tilt-up shop and warehouse facility.

- **Oxygen Reactors Improvements; City of Yuba City Public Works Utilities Division; Project Manager and Principal in Charge.** Designed isolated concrete masonry unit building for housing electrical switchgear equipment to support mechanical upgrades at the Wastewater Treatment Facility. Designed a coating rehabilitation for pure oxygen aeration system.
- **Coral Street and Fountain Avenue Pump Station Upgrades; Monterey Regional Water Pollution Control Agency, Monterey, CA; Principal in Charge.** Directed the seismic analysis and design for refurbishment of oceanside pump stations.
- **Ridgemark WWTP Expansion; Sunnyslope County Water District; Ridgemark, CA; Project Manager.** Lead and provided quality assurance/quality control reviews for the design of modification and expansion of the headworks, membrane bioreactors, blower building and solids handling storage tank on a fault rupture site.
- **Graham Hill WTP Electrical Improvements Project; City of Santa Cruz Water Department, Santa Cruz, CA; Principal in Charge.** Design of a new concrete masonry unit electrical building and retaining wall. Project included renovation, expansion of, and improvements to the electrical distribution system at the City's main Graham Hill WTP.
- **1630 East Recycled Water Pump Station; Cucamonga Valley Water District; Rancho Cucamonga, CA; Structural Quality Assurance Lead.** Structural design of a 40 x 74-foot concrete masonry unit pump station housing five pumps and an electrical equipment room. The structure consisted of masonry slumpstone walls with a metal truss pitched roof.
- **Palo Alto Regional Water Quality Control Plant Auxiliary Disinfection System and UV Disinfection System; City of Palo Alto, CA; Principal Engineer.** Design of chemical containment areas for new sodium hypochlorite and sodium bisulfite tanks, and design of a new, 75 x 35-foot, cast-in-place concrete UV disinfection structure, including influent and effluent basins, UV channels, pile supports, and support for the roof structure, which includes a bridge crane.
- **Domestic Water Connection and Distribution System Piping Project; Sacramento County Airport System; Project Manager.** Provided engineering for the design of prestressed concrete pile foundation system supporting two 1.5-MG prestressed concrete potable water storage reservoirs.
- **Drinking Water Improvement Project; City of Folsom, CA; Project Manager.** Provided engineering for the design of a 10-mgd WTP expansion. Specific elements included Actiflo pretreatment structure, filters, and partially buried prestressed concrete chlorine contact tank. Provided engineering services during construction.
- **WTP Seismic/Process Upgrades; Santa Clara Valley, CA; Structural Engineer.** Managed upgrades for three of Santa Clara Valley's WTPs. All three plants are within the seismically active Bay Area and required development of site-specific ground accelerations. Developed landslide mitigation measure recommendations for one of the plants sited on an active landslide.
- **Manufacturing Facility Seismic Evaluation/Retrofit; Raytheon; Mountain View, CA; Structural Design Engineer.** Performed seismic evaluations and prepared retrofit designs for Raytheon's manufacturing facility. Modifications to this one-story, tilt-up structure included both the vertical and lateral load-carrying systems. Significant modification to the plant's HVAC and scrubber system required support without interruption of production within the building.

- **Automobile Service Station; United Oil; Cerritos, CA; Project Manager.** Performed a peer review of a 60 x 60-foot, triangular shaped building and 41 x 85-foot open canopy structure with integrated photovoltaic panels.
- **Groundwater Replenishment Project; Orange County Water District; Fountain Valley, CA; Task Manager and Structural Engineer of Record.** Provided engineering for the design of prestressed concrete pile foundations for all structures in the Advanced Water Treatment Facility of the Groundwater Replenishment Project.
- **Operations Building and Maintenance Shop; Washoe County Department of Water Resources; Reno, NV; Engineer of Record.** As part of a 6-mgd WTP project, designed a 6,700-sq. ft. concrete masonry block operations building and a 2,250-sq. ft. concrete masonry block maintenance shop.
- **Pump Station; Monte Vista Water District, Montclair, CA; Project Manager.** Provided engineering for the design of concrete masonry block pump station. The project was performed under a very aggressive schedule, completed within four weeks from start to finish.
- **Stormwater Wet Well and Pump Station; Alameda Transit Corridor; Los Angeles, CA; Structural Engineer of Record.** Responsible for the structural design of a below-grade stormwater wet well and masonry block pump station. The stringent schedule requirements of this multibillion-dollar project required the design of the wet well and pump station to be completed in 2 months.
- **WWTPs; Department of the Navy; Camp Pendleton, CA; Structural Engineer of Record.** Structural modifications to seven existing WWTPs and two existing lift stations for the Navy in Camp Pendleton, CA. Upgrades included addition of clarifiers, digesters, and pump stations. Additional modifications included accessibility improvements to various process units and upgrades to existing operations buildings. Provided engineering services during construction.
- **Water Pump Stations; Fountain Valley, CA.** Preliminary design and design for seismic upgrade and minor modifications for two existing pump stations.
- **Tolt WTP; Seattle, WA.** Responsible for the design of a 125-mgd water filtration plant. The Tolt WTP was one of the first large-scale Design-Build-Operate projects issued by a municipality.
- **Hyperion WWTP Expansion; Structural Design Engineer.** Prepared structural designs for a 12,000-sq. ft., three-story, steel frame control building and a 15,000-sq. ft., steel frame compressor building.

Publications

Moehle, Jack P. and Cavanagh, Terry. "Confinement Effectiveness of Crossties in RC." Journal of Structural Engineering, Vol. 3, No. 10. ASCE. October 1985.



Richard K. Thow, S.E.
Associate

Experience

Richard Thow has worked in the structural design and seismic evaluation fields since 1986. He has designed and evaluated facilities including WTP structures, WWTP structures, bridges, chemical storage facilities, pump stations, and storage tanks/reservoirs. Mr. Thow's experience also comprises extensive evaluation and analysis for nuclear facilities, including regulatory interpretation and compliance, structural evaluation, and facility design and modification. His specific project experience includes the following:

- **Rinconada WTP Reliability Improvement Project; Santa Clara Valley Water District; Los Gatos, CA; Project Engineer.** Structural design for a new ozone generation building, LOX facility, flocculation/sedimentation basins, filters, washwater recovery facility, chlorine contact basin, and an elevated concrete platform to support electrical equipment. The structures are part of this major project to improve reliability at the Rinconada WTP, which is the main WTP serving the western service area for the District.
- **Bridge Condition Assessment and Temporary Structure Design; Pasadena Water and Power; Pasadena, CA; Project Engineer.** Performed structural evaluations of three existing bridges and designed temporary structures to support movement of heavy construction equipment during the City of Pasadena's Arroyo Seco Canyon Project. The bridge designs included a repurposed flatbed railroad car and a field-fabricated, wide-flange steel beam bridge.
- **Structural On-Call Services; Central Contra Costa Sanitary District, Martinez, CA; Lead Design Engineer.** Provided on-call design services for a hazardous waste containment canopy, installation of a manhole at the Influent Junction Structure as part of the 7311 Safety Enhancements Project, and an air-handling unit as part of an equipment replacement project.
- **Structural On-Call Services; City of South San Francisco, CA; Lead Structural Engineer.** Provided design services for a soldier pile retaining wall, and a corporate yard soils stockpile canopy to be used as a best management practice for compliance with the City's Storm Water Permit issued by the Regional Water Quality Control Board.
- **Arcy Lane Influent Junction Structures; Delta Diablo, Antioch, CA; Lead Design Engineer. Arcy Lane Influent Junction Structures; Delta Diablo, Antioch, CA; Lead Design Engineer.** Provided structural material condition assessments and a repair design for influent junction structures accommodating 24 to 48-inch sewer pipes.
- **Flint Pump Station Upgrade Project; City of San Mateo, CA; Lead Design Engineer.** Provided construction services including bid support for reviewing structural submittals.
- **Coral Street and Fountain Avenue Pump Station Upgrades; Monterey Regional Water Pollution Control Agency, Monterey, CA; Project Manager.** Performed a seismic analysis and design for refurbishment of oceanside pump stations.

Education

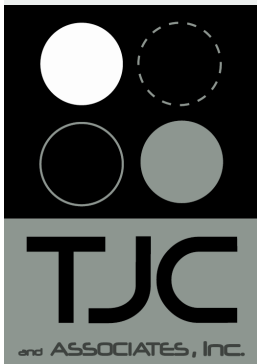
BS, Civil Engineering, with honors; University of Abertay, Scotland; 1986

Professional Registrations

Structural: CA
Civil: CA

Specialized Training Certification

Confined Space Entry: CA



- **West Antioch Creek Channel Improvement Project; City of Antioch, CA; Lead Design Engineer.** Provided design engineering for inlet and outlet head walls for four 50-foot-long, 14 x 7-foot box culverts, placed side by side at a flood channel road crossing.
- **Murray Reservoir Demolition and Murray Hydro-Pneumatic Zone Upgrades; Pasadena Water and Power; Pasadena, CA; Quality Assurance/Quality Control (QA/QC).** Provided a structural design for a CMU pump station and hydro-pneumatic tank to be located over a demolished in-ground reservoir.
- **Water Distribution Pipe Bridge; St. Helena Hospital; St. Helena, CA; Lead Structural Engineer.** Provided structural engineering design and drafting for a new pipe bridge carrying 10-inch and 6-inch potable water pipelines. The bridge spanned 42 feet 6 inches feet of Brook Creek in St. Helena, California. Provided engineering support during construction.
- **Sewer Pipe Bridge Crossings; Central Contra Costa Sanitary District; Martinez, Orinda, Lafayette, Alamo, Danville, and San Ramon, CA; Lead Structural Engineer.** Provided structural engineering support for condition assessment, modifications, and retrofits for 11 sewer pipe bridge crossing at sites throughout the Central Contra Costa Sanitary District. Pipe sizes ranged from 6 to 18 inches. Provided engineering support during construction.
- **Northern Burbank Recycled Water Main Extension Project; City of Burbank Water and Power, Burbank, CA; Lead Design Engineer.** Provided structural engineering and drafting services in support of the Burbank Western Channel Crossing. Project included traversing an existing flood channel and required collaboration with the US Army Corps of Engineers, Los Angeles District.
- **T4 3-MG Water Tank and Booster Pump Station Project; City of Fresno, CA; Project Engineer.** Provided engineering services during construction on behalf of the City of Fresno for design-build of a DN Tanks 3-MG prestressed concrete water tank.
- **Alta Vista Tank No. 2; Montara Water and Sanitary District, Montara, CA; Project Engineer.** Provided engineering services during construction on behalf of the Montara Water and Sanitary District for design-build of a DN Tanks 0.5-MG prestressed concrete water tank. Provided on-site inspections.
- **1630 East Recycled Water Pump Station; Cucamonga Valley Water District; Rancho Cucamonga, CA; QA/QC.** Structural design of a 40 x 74-foot concrete masonry unit pump station housing five pumps and an electrical equipment room. The structure consisted of masonry slumpstone walls with a metal truss pitched roof.
- **Glenview Water Storage Tank; City of San Bruno, CA; Project Engineer.** Provided structural engineering services for seismic assessment of a 2-MG prestressed concrete tank constructed in 1950, including peer review of seismic retrofit bid documents.
- **Cunningham Water Tank No. 1 Structural Assessment; City of San Bruno, CA; Project Engineer.** Provided structural assessment of a 1964 welded steel tank, with methods including non-destructive testing. Provided retrofit recommendations.
- **Donnelly Reservoir Refurbishment; City of Burlingame, CA; Project Engineer.** Provided structural consulting services in support of two existing welded steel tanks.
- **Clayton Regency Potable Water Storage Project; Contra Costa County, CA; Project Engineer.** Provided structural consulting services for a 1-MG bolted steel water tank.
- **Condition Assessment and Design; City of Sunnyvale, CA; Design Engineer.** Structural evaluation and design for repair of concrete, slide gate systems, and leaking pipes in the primary treatment systems at the city of Sunnyvale's Water Pollution Control Plant. This project is intended to extend the life of existing structures until they

are replaced as part of the City's Master Plan and Primary Treatment Facility Design Project.

- ***Pump Station; Monte Vista Water District, Montclair, CA; Project Engineer.*** Provided engineering for the design of concrete masonry block pump station. The project was performed under a very aggressive schedule, completed within four weeks from start to finish.
- ***Seismic Assessments; Columbus Foods in South San Francisco, Hayward, and Bayfront Sites, CA; Project Engineer.*** Performed site inspections as part of seismic assessments to identify governing structural elements and areas of seismic vulnerability as part of California Accidental Release Program seismic evaluations.
- ***Walnut Creek No. 1 and 2 Well Water Pumping Plant Electrical Safety Improvements; East Bay Municipal Utility District, Walnut Creek, CA; Project Engineer.*** Designed slabs on grade for a 42,000-pound, pile-supported transformer and two switchgear pads. Fast track project for which design through construction was completed in 4 months.
- ***C Street Pump Station; City of Petaluma, CA; Lead Design Engineer.*** Performed a seismic assessment and refurbishment design for a 1960s pump station, to accommodate new pumps, improve Code compliance, and address architectural aesthetics.
- ***Bridgehead Emergency Storage Basin and Pump Station; Delta Diablo, Oakley, CA; Project Engineer.*** Structural design of a sewage pumping station and a 1-MG, cast-in-place emergency storage basin. Design included a concrete building 26 feet below grade and an above-grade, two-story, 1,720-sq. ft. masonry block building with a metal truss built-up roof.
- ***McCloud Reservoir Assessment; City of Pleasanton, CA; Project Manager.*** Provided an assessment of a 2-MG, prestressed, cast-in-place concrete tank. Developed retrofit recommendations.
- ***Recycled Water Pipe Bridge Crossing; City of Santa Clara, CA; Lead Design Engineer.*** Provided structural engineering design and drafting for a new, 12-inch recycled water pipeline across San Tomas Aquino Creek. Pipeline was attached to the existing Walsh Avenue Road Bridge. Provided engineering support during construction.
- ***Recycled Water Pipe Bridge Crossings; Palo Alto–Mountain View, CA; Lead Design Engineer.*** Provided structural engineering design for recycled water pipeline bridge crossings over Matadero and Adobe Creeks. Provided engineering support during construction.
- ***Advanced Floatation Tank Replacement Project; City of Sunnyvale, CA; Design Engineer.*** This structural evaluation included field investigation of tank vulnerability to seismic events. The final design required sequencing considerations to maintain plant operations throughout the various tank retrofits, maintaining at least two tanks in operation at all times.
- ***Ridgemark WWTP Expansion; Sunnyslope County Water District, Ridgemark, CA; Design Engineer.*** Provided structural engineering support for modification and expansion of the headworks, membrane bioreactors, blower building, and solids handling storage tank on a fault rupture site.
- ***Headworks Project; Sausalito–Marin City Sanitary District, Sausalito, CA; Project Engineer.*** Provided structural assessment, evaluated options for headworks structure improvements, and developed a design for a WWTP expansion on a highly constrained site adjacent to San Francisco Bay.
- ***Vineyard Avenue Pump Station; City of Pleasanton, CA; Project Engineer.*** Provided engineering and construction services for the design of a 2,176-sq. ft. concrete

masonry unit pump station/electrical building on a constricted site with strict architectural/aesthetic requirements.

- **Ironhouse WWTP Expansion; Oakley, CA; Project Engineer.** Responsible for the structural design of a 9-mgd expansion, including an influent pump station, headworks, anoxic/aeration basins, membrane bioreactors, backpulse tank, blower/electrical/generator/chemical building, UV/Effluent pump station, and a solids handling building.
- **Northern Dougherty Valley Zone 3 Potable Water Facilities Reservoir 300B and Pump Station 300C; Dublin San Ramon Services District, CA; Project Engineer.** Provided engineering services during construction of a 1.5-MG, prestressed concrete potable water storage tank and masonry block pump station. Structural elements of this project were not designed by TJCAA.
- **Bisso O&M/Administration Buildings Emergency Generator Project; Contra Costa Water District, Concord CA; Project Engineer.** Provided foundation design for Emergency Generators.
- **Operations Building and Maintenance Shop; Washoe County Department of Water Resources, Reno, NV; Project Engineer.** As part of a 6-mgd WTP project, designed a 6,700-sq. ft. concrete masonry block operations building and a 2,250-sq. ft. concrete masonry block maintenance shop.
- **Pure Oxygen Aeration System Concrete Rehabilitation Project; City of Yuba City, CA; Lead Design Engineer.** Performed inspections and evaluated alternatives for the rehabilitation of twelve 43-sq. ft. basins in a Pure Oxygen Aeration System at Yuba City's Wastewater Treatment Facility, to address deterioration of concrete walls, columns, and slabs.
- **Zone 1 Water System Improvement; City of Livermore, CA; Project Engineer.** Provided engineering for the structural design of a masonry block pump station and prestressed concrete water storage reservoir.
- **Dougherty Valley Reservoir 200B; Dublin San Ramon Services District, CA; Project Engineer.** Provided engineering associated with the development of a Performance Specification for a 1.5-MG potable water reservoir.
- **Domestic Water Connection and Distribution System Piping Project; Sacramento County Airport System, Sacramento, CA; Project Engineer.** Provided engineering for the design of prestressed concrete pile foundation system supporting two 1.5-MG prestressed concrete potable water storage reservoirs.
- **Oak Park Lane Traffic Bridge; Central Contra Costa County Sanitary District, Pleasant Hill, CA; Design Engineer.** Provided structural engineering services for a condition assessment of an existing traffic bridge in support of a sewer renovation project. Project included development of as-built drawings of the bridge and an assessment of its load-carrying capacity, specifically, its ability to handle daily construction traffic.
- **Surface Water Treatment Facility, Phase I; City of Brentwood, CA; Project Engineer.** Provided engineering for the design of a WTP expansion. Specific elements of the project included a 30 x 35-foot, 35-foot-deep wet well and concrete masonry block electrical building.
- **Austin Creek Pump Station; Vallejo Sanitation and Flood Control District, Vallejo CA; Project Engineer.** Performed a preliminary structural evaluation of the existing Austin Creek Pumping Station, a 40 x 24-foot cast-in-place concrete structure constructed circa 1956. The evaluation assessed the structural condition of the existing building as it related to the need for repair or replacement.

- **Airport Avenue Pump Station; City of Livermore, CA; Project Engineer.** Structural engineering consultation in support of the refurbishment of an existing pump station near the Livermore Airport in Livermore, California.
- **Drinking Water Improvement Project; City of Folsom, CA; Project Engineer.** Provided engineering for the design of a 10-mgd WTP expansion. Specific elements included Actiflo pretreatment structure, filters, and partially buried, prestressed concrete chlorine contact tank. Provided engineering services during construction.
- **Tank Inspection, Vopak Jet Fuel Storage Facility; Wilmington, CA; Project Engineer.** Performed structural assessment of three jet fuel storage tanks. The tanks experienced some degree of damage during the October 16, 1999 Hector Mine earthquake. The assessment was performed to ascertain whether damage to the interior aluminum floating cover was attributable to the seismic event.
- **Nuclear Medical Camera Installation; ADAC.** Structural design of support system for 6,500-pound nuclear imaging camera to be installed within an existing office building.
- **Stormwater Pump Station Refurbishment; Central Sanitation District, Orinda CA; Project Engineer.** Prepared seismic evaluations and retrofit designs for the upgrade of the Lower Orinda Pump Station. Expansion of this circa 1950 pump station increased its capacity from 14 to 21 mgd—the estimated capacity required for operation through 2035.
- **Groundwater Replenishment System; Orange County Water District and Orange County Sanitary District Joint Project, Fountain Valley, CA; Project Engineer.** Provided engineering for the design of 750 prestressed concrete pile foundations for all structures in the Advanced Water Treatment Facility.
- **Stormwater Wet Well and Pump Station; Alameda Transit Corridor, Los Angeles, CA; Project Engineer.** Provided engineering for the structural design of a below-grade storm water wet well and masonry block pump station. Specific elements included the design of 80-foot-deep concrete piers, intermediate support struts, above-grade concrete masonry unit structure, and intermediate platforms to accommodate process requirements.
- **WWTP Expansion; City of Brentwood, CA; Project Engineer.** Designed specific elements of a 10-mgd plant expansion. Basin designs included oxidation ditches, primary clarifiers, filter basins, and chlorine contact basins.
- **WWTP Expansion; Delta Diablo, Antioch, CA; Project Engineer.** Provided structural engineering support for design of a 12.2-mgd plant expansion to provide recycled water. Specific elements included filters, clarifiers, chlorine contact basins, and a 1.8-MG steel reservoir.
- **Wet Weather Facility Upgrade; City and County of San Francisco Department of Public Works, San Francisco, CA; Project Engineer.** Prepared seismic evaluations and retrofit designs for a conceptual design report for the upgrade of the North Point Wet Weather Facility.
- **Recycled Water Project; Delta Diablo, Pittsburg, CA; Project Engineer.** Provided structural design and construction services for a 1-MG welded steel recycled water tank and supporting pump stations.
- **Wastewater and Recycled Water Facility Upgrade; Novato Sanitary District; Novato, CA; Lead Design Engineer.** Provided a predesign evaluation to identify areas of seismic vulnerability and determine options for placement of new equipment in existing structures. Designed upgrades that accommodated continual plant operation and seismic concerns regarding differential settlement on Bay Mud.
- **Maintenance Rule Implementation; Various Nuclear Facilities; Lead Project Engineer.** Responsible for implementing 10 CFR 50.65 (the maintenance rule) at

several commercial nuclear power plants, including Diablo Canyon Power Plant, CA; Indian Point Three, NY; and Cooper Nuclear Station, NE.

- **Engineering Research; Electric Power Research Institute; Lead Research Engineer.** Investigated a Nuclear Regulatory Commission notice suggesting that resistance temperature detectors in a nuclear power plant's reactor coolant system may experience non-conservative drift. Research indicated that the original Nuclear Regulatory Commission concerns were unfounded, resulting in millions of dollars saved by nuclear utilities.
- **Comanche Peak Steam Electric Station, Unit 1, TX; Project Engineer.** Responsible for developing cost-effective analytical methods using existing software for structural analysis of concrete walls for a nuclear facility. The analysis resulted in a program for control of rebar cuts during facility retrofits.
- **Comanche Peak Steam Electric Station, Unit 2, TX; Project Engineer.** Responsible for developing a technical approach for the generic seismic qualification of all Category II structural steel stairways in a nuclear facility.
- **Comanche Peak Steam Electric Station, Unit 1, TX; Engineer.** Performed manual analysis, both as originator and checker, of the seismic adequacy of the conduit supports at a commercial nuclear power facility. Ensured correct technical approach and adherence to quality assurance requirements. Responsible for training and coordinating staff and for "as-built" data review.

Publications

"Effects of Aging of Resistance Temperature Detectors on Cross Calibration Techniques." EPRI Report No. EPRI TR-103099. June 1994.



**Daisy M. Yu, S.E., LEED AP
Senior Structural Engineer**

Experience

Ms. Yu has extensive experience in seismic evaluation and retrofit design and in the design of large, multi-story, steel-framed structures. Her design experience also includes water and wastewater treatment facilities such as reinforced concrete reservoirs, reinforced masonry pump stations, and chemical storage facilities. As a LEED accredited professional, she is recognized as having a background and understanding of the principles that go into designing structures with a minimal impact on the environment, and that promote energy efficiency and a healthy environment for their occupants. Ms. Yu is not only an experienced structural engineer, but also a proven project manager. Her specific experience includes the following:

- **Rinconada WTP Reliability Improvement Project; Santa Clara Valley Water District; Los Gatos, CA; Project Engineer.** Provided structural design for a new ozone generation building, LOX facility, flocculation/sedimentation basins, filters, washwater recovery facility, chlorine contact basin, and an elevated concrete platform to support electrical equipment. The structures are part of this major project to improve reliability at the Rinconada WTP, which is the main WTP serving the western service area for the District. Providing engineering services during construction.
- **Folsom Zone 6 Pump Station; City of Folsom, CA; Project Manager.** Provided structural design of a 26 x 94-foot booster pump station housing five vertical pumps and an electrical room. The single-story, concrete masonry building has a prefabricated wood truss roof. Produced final designs and specifications under an aggressive schedule.
- **Rinconada WTP Residuals Management Project; Santa Clara Valley Water District; Los Gatos, CA; Project Engineer.** Responsible for the structural design of new gravity thickeners, a two-story concrete building housing new centrifuges and electrical equipment, and a steel frame load-out structure. Provided engineering services during construction.
- **Hilltop Green Lift Station Replacement; West County Wastewater District; Richmond, CA; Project Manager.** Provided structural design of a 22 x 14-foot, below-grade concrete wetwell approximately 22 feet deep and associated concrete valve vault.
- **Soscol Recycled Water Pump Station North-South Split; Napa Sanitation District; Napa, CA; Project Manager.** Foundation design for a 2,000-gallon vertical surge tank at the Soscol Recycled Water Pump Station. Provided engineering services during construction.
- **Napa MST Recycled Water Booster Pump Station No. 1 and Pipeline Project; Napa Sanitation District; Napa, CA; Project Engineer.** Structural design of a 40 x 60-foot concrete masonry pump station and electrical equipment room, as well as four pipe crossings over existing creeks. Provided engineering services during construction.

Education

MS, Structural Engineering; University of CA, Berkeley; 1999
BS, Civil Engineering; University of CA, Berkeley; 1994

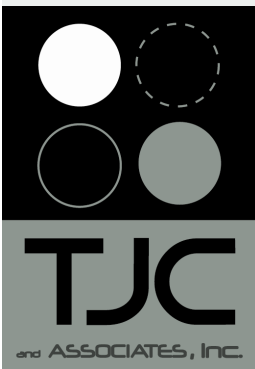
Professional Registrations

Structural: CA
Civil: CA

LEED Accredited Professional

Professional Memberships

Structural Engineers Association of Northern California
American Concrete Institute
American Institute of Steel Construction



- **Yountville WWTP Dissolved Air Flotation (DAF) Installation; Town of Yountville; Project Manager.** Structural design and construction services for a 10 x 23-foot concrete foundation slab, including anchorage requirements, for a DAF unit for solids thickening.
- **West Antioch Creek Channel Improvement Project; City of Antioch, CA; Project Engineer.** Provided engineering for modifications to an existing concrete masonry building that **needed** to be partially demolished to make room for creek channel improvements.
- **Upper Llagas Creek Flood Protection Project; Santa Clara Valley Water District, Morgan Hill, CA; QA/QC.** Performed QA/QC of design engineering for wing walls and head walls for Upper Llagas Creek culverts and other conveyance structures at roads and bridge crossings.
- **Murray Reservoir Demolition and Murray Hydro-Pneumatic Zone Upgrades; Pasadena Water and Power, City of Pasadena, CA; QA/QC.** Performed QA/QC of design engineering for a 15 x 17-foot concrete masonry building with a gabled, wood truss roof in a seismically active area.
- **Pump Station Q Force Main/Gravity Interceptor Reverse Flow Upgrades; East Bay Municipal Utilities District, Berkeley, CA; QA/QC.** Performed QA/QC of design engineering for five cast-in-place, below-grade vaults. These vaults provide locations for metering and diversion of flows, and pipe sizes accommodated by the vault designs ranged from 36 to 96 inches in diameter.
- **1630 East Recycled Water Pump Station; Cucamonga Valley Water District; Rancho Cucamonga, CA; Project Manager.** Structural design of a 40 x 74-foot concrete masonry unit pump station housing five pumps and an electrical equipment room. The structure consisted of masonry slumpstone walls with a steel truss roof.
- **Wochholz Wastewater Treatment Facility Improved Salinity Effluent Project; Yucaipa Valley Water District; Calimesa, CA; Project Manager.** Designed new loading dock and chemical storage areas for the addition of a reverse osmosis train to reduce salinity levels in the effluent water.
- **L.A. County Waterworks, District 29 Creek Crossing Repairs; Malibu, CA; Project Engineer.** Reviewed existing pipe crossing supports and designed repairs to strengthen deficiencies.
- **C Street Pump Station; City of Petaluma, CA; QA/QC.** Performed quality assurance/quality control reviews for a seismic assessment and refurbishment design of a 1960s pump station.
- **Wastewater and Recycled Water Facility Upgrade; Novato Sanitary District; Novato, CA; Design Engineer.** Provided a predesign evaluation to identify areas of seismic vulnerability and determine options for placement of new equipment in existing structures. Designed upgrades that accommodated continual plant operation and seismic concerns regarding differential settlement on Bay Mud.
- **Headworks Project; Sausalito-Marin City Sanitary District; Sausalito, CA; QA/QC.** Provided structural assessment and evaluated options for clarifier improvements for a WWTP expansion on a highly constrained site adjacent to San Francisco Bay. Performed QA/QC for the design.
- **Ridgemark WWTP Expansion; Sunnyslope County Water District; Ridgemark, CA; Design Engineer.** Provided structural engineering support for modification and expansion of the headworks, membrane bioreactors, blower building, and solids handling storage tank on a fault rupture site.

- **Yountville Veterans Home, Title 22 Upgrades and Recycled Water Expansion Project; Project Engineer and TJCAA Project Manager.** Design of a partially buried, 24 x 50-foot cast-in-place concrete chlorine contact basin with redwood baffle walls.
- **Ironhouse WWTP Expansion; Oakley, CA; Project Engineer.** Responsible for the structural design of a 9-mgd expansion, including an influent pump station, headworks, anoxic/aeration basins, membrane bioreactors, backpulse tank, blower/electrical/generator/chemical building, UV/Effluent pump station, and a solids handling building.
- **Graham Hill WTP Electrical Improvements Project; City of Santa Cruz Water Department; Santa Cruz, CA; Project Engineer.** Renovation, expansion, and improvements to the electrical distribution system at the City's main Graham Hill WTP. This project included design of a new concrete masonry unit electrical building and retaining wall.
- **Building A Seismic Retrofit; Columbus Foods; South San Francisco CA; Design Engineer.** Performed a seismic assessment and upgrade design for a 53,000-sq. ft. concrete tilt-up building at the Columbus Foods Forbes food processing facility.
- **Palo Alto Regional Water Quality Control Plant Auxiliary Disinfection System and UV Disinfection System; City of Palo Alto, CA; Project Engineer and TJCAA Project Manager.** Design of chemical containment areas for new sodium hypochlorite and sodium bisulfite tanks, and design of a new, 75 x 35-foot cast-in-place concrete UV disinfection structure, including influent and effluent basins, UV channels, pile supports, and support for the roof structure, which includes a bridge crane.
- **Tolt WTP; City of Seattle; Seattle, WA.** Performed structural design for the ozone contactor/flocculator structure and filters for a 125-mgd water filtration plant.
- **Pittsburg Water Storage Reservoir; Pittsburg, CA.** Responsible for structural design of 1-MG and 5-MG prestressed water storage reservoirs.
- **Crittenden Pump Station; Mountain View, CA. Performed structural design** for a pump station wet well and a concrete masonry unit pump station building.
- **San Francisco Friends School; San Francisco, CA; Project Manager.** Responsible for the structural design of the seismic upgrade and retrofit of this existing 85,000-sq. ft., three-story timber building. The building has new steel concentrically braced frames, strengthened diaphragms, a new concrete mat foundation, and a new steel truss roof structure over the gymnasium and theatre.
- **Berkeley Community College; Peralta Community College District; Berkeley, CA; Project Manager/Engineer.** Responsible for the structural analysis and design of this new six-story, 165,000-sq. ft. building. The structure is steel framed with concrete filled metal deck at the floors, concrete shear walls, and a drilled concrete pier foundation. A 60 x 80-foot elliptical skylight supported on steel tension rod trusses provides cover for the central atrium.
- **Science and Technology Center; Dominican University of California; San Rafael, CA; Project Manager/Engineer.** Responsible for the structural analysis and design of this new 35,000-sq. ft., two-story building with an L-shaped configuration. The structure is steel framed with concrete filled metal deck and steel concentrically braced frames. Coordinated work with design-build foundation contractor for implementing a Geopier foundation.

- **California Maritime Academy, Simulation Center; California State University; Vallejo, CA; Project Engineer.** Performed structural analysis and design of a new two-story, steel-framed building with steel concentrically braced frames and a drilled concrete pier foundation.
- **Portola Valley Town Center; City of Portola Valley; Portola Valley, CA; Project Engineer.** Performed the structural analysis and design for this project, which consists of five new one-story, wood-framed buildings with wood shear walls and concrete spread footings: a Town Hall, Community Hall, Library, Maintenance Building, and Restroom Building.
- **Olympic City Club Renovation; Olympic City Club; San Francisco, CA; Project Engineer.** Performed the structural analysis for the retrofit and seismic upgrade of a ten-story, concrete building with new concrete shear walls.
- **Contra Costa Community College Evaluations; San Pablo, CA; Project Engineer.** Performed preliminary seismic evaluations of 15 buildings on the college campus to identify seismic deficiencies using ASCE 31.
- **Cañada College Buildings 16, 17, and 18 Renovations; Redwood City, CA; Project Engineer.** Provided structural design support for renovations and improvements to existing concrete buildings.
- **Latimer Hall Seismic Upgrade, University of California at Berkeley; Berkeley, CA; Project Engineer.** Performed structural analysis and design of seismic retrofit of an 11-story concrete building with shear walls in one direction and concrete moment frames in the other direction.
- **Fremont Fire Stations Evaluations; Fremont, CA; Project Engineer.** Performed seismic evaluation of fire stations to identify deficiencies and retrofit options.



**Paul Giorsetto, P.E., LEED AP
Vice President**

Experience

Paul Giorsetto, a licensed engineer since 1984, has extensive design experience in the areas of electrical power distribution, electrical industrial applications, control systems, and instrumentation. His specific experience includes electrical system modeling and planning; medium- and low-voltage electrical distribution designs of water, wastewater and industrial waste treatment facilities; plant instrumentation; and SCADA systems for in-plant and telemetry-based systems. He also has significant experience in construction services, as a resident engineer and inspector, and during facility startup.

Mr. Giorsetto has been the electrical and/or discipline lead on numerous large water and wastewater design projects, and has been a project manager on stand-alone control system and electrical design projects having construction costs in excess of \$3 million. He has acted as project manager on several stand-alone electrical and instrumentation and controls (I&C) design-build projects.

● **Rinconada WTP Reliability Improvement Project; Santa Clara Valley Water District; Los Gatos, CA; I&C and Electrical Discipline Lead.** Oversaw the electrical engineering and control systems designs for the \$180 million WTP modernization. This project incorporates capacity increases to raise plant output to 100 mgd and incorporates new ozone treatment trains, multiple new and retrofitted chemical systems, filters, and floc-sed basins. The design was developed to maintain the plant in operation throughout the estimated 5-year construction period. Design included new 12-kV distribution, arc flash protection strategies, a new 3-MW diesel standby generator, and new distributed motor control centers with smart motor starters and variable frequency drive (VFD) equipment. I&C design incorporated a new distributed programmable logic controller (PLC) architecture coordinated with construction phasing and new processes. Final design included over 400 electrical and I&C design drawings.

● **Residuals Management Project (RMP); Rinconada WTP, Santa Clara Valley Water District, Los Gatos, CA; I&C and Electrical Discipline Lead.** TJCAA discipline task leader for I&C and electrical discipline designs for the RMP effort. The project included new solids handling processes including gravity thickeners, polymer chemical systems, centrifuges, supporting feed pump stations, and sludge conveyance systems. TJCAA prepared final design documents for project elements including a new 1,500-kVA unit substation, motor control centers, fiber optic cable allocations for control network and communication systems, new distributed (redundant) PLC, and lighting designs. The electrical design included provisions for future double-ended substation, smart motors starters and VFDs, and integration of supplier-furnished, packaged conveyor and centrifuge systems.

● **Digester 1 and 2 and FOG Facility; City of Sunnyvale Water Pollution Control Plant, Sunnyvale, CA; Control System Engineer.** Provided the I&C system design for rehabilitation of two existing digesters and a new FOG disposal facility at the City of Sunnyvale’s WWTP. Work included replacement of the existing OPTO 22-based control platform over to an existing Allen-Bradley based ControlLogix PLC.

Education

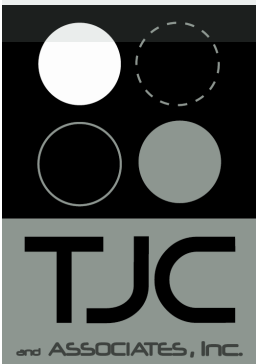
MBA, University of CA, Berkeley, 1988
MS, Electrical Engineering and Computer Science; University of CA, Berkeley; 1980
BS, Electrical Engineering and Computer Science; University of CA, Berkeley; 1978

Professional Registrations

Electrical: CA, WA, NV, HI, WY, CO, OR, AZ, ID, AK
PE: UT, NM, WI, OH
Control Systems: CA
LEED Accredited Professional

Professional Memberships

Institute of Electrical and Electronics Engineers
Instrumentation, Systems, and Automation Soc.



- **Cogeneration Electrical Improvements and Service Relocation Project; Dublin San Ramon Services District, Pleasanton CA; Project Engineer and TJCAA Project Manager.** Performed preliminary and final design services for improvements to and expansion of the WWTP electrical distribution and cogeneration facility. This project relocated the WWTP existing 21-kV PG&E service, replaced existing cogeneration control/switchgear, and added a third cogeneration unit, resulting in a total internal generation capacity in excess of 2 MW. Project work included coordinating necessary facility improvements for power export capability to PG&E, new PG&E primary service, new networked engine-generator controls, and upgrades to several 480-V and 21-kV switchgear. TJCAA assisted the District with engineering services during construction.
- **Sobrante and USL WTP Electrical Studies; East Bay Municipal Utilities District, Oakland, CA. Electrical Engineer.** Performing electrical system modeling using SKM PowerTools© at two existing WTPs in the San Francisco Bay Area. This work is part of the District's Ozone Replacement Project at these two sites. Modeling and simulations are addressing several issues of concern to the District: updating the existing facility's arc flash study to meet requirements of NFPA 70E, identifying potential methods to reduce arc flash hazards to Category 2 or lower, and developing harmonic distortion models that can be used to specify power quality criteria for the new ozone equipment. This task included field inventories of existing electrical equipment to update the District's current model, revisiting previous short circuit, coordination studies, arc flash calculations, and data logging of harmonic distortion levels over a 5-week period. The intent of the data logging was to establish power quality criteria of the existing system to assist the design engineering group specifying the new pre-purchased ozone generation equipment.
- **SCADA System Master Plan and Standards Development; Union Sanitary District (USD); Fremont, CA; Control System Engineer.** Assisted in the technical development of the SCADA Master Planning document providing a road map for USD SCADA system improvements over the next 10 years. The Master Planning process included reconnaissance, interviews with staff, development of potential projects (including costs), review and selection of projects, and projection of annual budget impacts. TJCAA also lead the effort to develop several technical standard documents for the USD engineering and project managers under the same project scope. Standards were developed addressing PLC programming, SCADA/human-machine interface software, field instrumentation, control panels, and I&C design methods.
- **Stevenson Communication Tower; Union Sanitary District; Fremont, CA; Project Manager.** Prepared final design documents for a proposed 100 to 120-foot communications tower for the USD remote site high-speed communications network based on 18-GHz microwave radios. The microwave communication scheme would provide the communication backbone between USD's WWTP and pump and lift stations in the District's southern service area. Work included performing site geotechnical assessment; preparation of site civil design; design of communication tower structural pier foundation, electrical improvements, and installation of owner-furnished communications equipment; and preparation of communication tower specification (deferred submittal). Final design documents are being held for potential bidding by USD in the future, pending results negotiations with AT&T for high-speed fiber optic services.
- **WWTP Arc Flash Study Updates; Dublin San Ramon Services District, Pleasanton, CA; TJCAA Project Manager.** Project manager for expanding and updating the existing arc flash study for a WWTP. The arc flash effort included field reconnaissance to verify existing equipment and integration of the acquired data into the District's partial model (built under the SKM PowerTools© software) to produce a comprehensive electrical model of the WWTP electrical distribution system. Additional

modeling included coordination studies, arc flash calculations, and load flow simulations for determining the conceptual feasibility of DSRSD participation in PG&E's Demand Reduction Program.

- ***Pump Station 2C Electrical Improvements; Dublin San Ramon Services District, Pleasanton, CA; TJCAA Project Manager.*** Project manager for replacing the existing electrical equipment at DSRSD's Station 2C. Electrical design work included new utility service, pump controls, portable standby generator connection, and new RTU and radio equipment. Specifications were developed for pre-purchase of the critical electrical equipment with subsequent installation by an installation contractor. This project also included an arc flash analysis of the final system using parameters of the pre-purchased equipment.
- ***WWTP VFD Replacement Project; Dublin San Ramon Services District, Pleasanton, CA; TJCAA Project Manager.*** Project manager for replacement of 14 VFDs at a WWTP. The existing VFDs serve a variety of critical plant pumping loads including influent, return activated sludge, effluent, and the DSRSD-EBMUD Recycled Water Authority. The existing drives are a variety of ages and technologies, all having reached the end of their useful lives. Spare parts have become difficult to procure, jeopardizing reliability and making maintenance increasingly difficult. The design aspects required review of the existing pumping loads that identified additional constraints due to smaller-than-anticipated feeder conductors. An additional design requirement was that the contract documents be configured to allow groups of drives to be issued as individual bid packages, to better match the work with DSRSD's Capital Improvement Plan.
- ***Blending Facility Telecommunications Project; Alameda County Water District, Fremont CA; Project Manager.*** Project Manager for TJCAA, as prime consultant performing planning and conceptual design for a high-speed communications backbone for the ACWD's SCADA and LAN communications networks. This project was initially configured around a 140-foot (nominal) microwave tower located at the ACWD's Blending Facility and surrounded by a residential neighborhood. To mitigate potential public concerns, TJCAA assisted ACWD in establishing functional requirements for the new system. Following this step, feasible alternatives were identified in an effort to either justify the need for the tower or determine an alternative that could perform with similar functionality. Working with ACWD technical staff and other internal stakeholders, TJCAA identified an alternative approach based on a 20-foot mast at the Blending Facility with a repeater located on a nearby ridge. TJCAA also supported the project effort with technical development of the microwave communications and preparation of the necessary project environmental (CEQA) documentation.
- ***SCADA System Integrator Projects FY2013-14 and FY 2014-2016; Contra Costa Water District, Concord, CA; Principal-In-Charge.*** Acting as system integrator for CCWD SCADA projects. Provided assistance with development of panel I/O requirements, system PLC programming (Modicon Unity), human-machine interface graphic preparation (Telvent and WonderWare), coordination with construction contractors, and development of as-built documentation. Work included SCADA-related tasks on a variety of CCWD capital improvement projects including new chlorination boosters, storage tank upgrades, a new wireless I/O installation at the sludge drying beds at CCWD's Randall-Bold WTP, a new control system interface to replacement ozone destruct equipment, and a new control system interface to the UPS system installed at the CCWD Bisso Lane Engineering Headquarters and other capital improvement projects.
- ***Arc Flash Implementation; Central Contra Costa Sanitation District, Martinez, CA; Project Manager.*** Prepared an arc flash implementation strategy for the District that included reviews of previous arc flash and electrical improvement studies, field

verification of hazard mitigation techniques, development of standard criteria for arc flash hazard identification and field labeling, and preparation of a standardized facility graphic for communication of arc flash conditions to District electricians.

- **Graham Hill WTP Electrical Improvements Project; City of Santa Cruz Water Department, Santa Cruz, CA; Project Engineer and TJCAA Project Manager.** Renovation, expansion, and improvements to the electrical distribution system at the City's main Graham Hill WTP. This project included verification and design validation to establish the conceptual approach. Final design for upgrades to the electrical system included a new utility 21-kV primary service, 480-V main-tie-main switchgear with source transfer logic, remote switchgear console for arc-flash considerations, 1,500-kW engine-generator set, and a dedicated electrical building.
- **SCADA System Improvements; Marina Coast Water District, Marina CA; Project Manager.** Developed SCADA system rehabilitation, implementation, and standardization strategies. The existing system suffered from a variety of chronic radio system failures, poor remote site component performance, absence of standardization strategies, and lack of hardware or software documentation procedures. This effort included development of standardized RTU bid specifications for new construction, associated submittal requirements, radio path analysis for converting from 900-MHz unlicensed to 450-MHz licensed radios, control strategy and programming standards, and "quick fix" design for addressing system failure symptoms before development of a systemwide Master Plan.
- **SCADA Telemetry Upgrade Project; Contra Costa Water District, Concord, CA Project Manager.** Prepared comprehensive predesign analyses and report for development of alternatives for remote site radio and PLC equipment, new multiple address system radios, new point-to-point and high bandwidth backbone communication links, and secure MPLS strategy as a standby strategy for routing telemetry SCADA data to CCWD servers. This project also included development of RFQ and RFP documents for execution of a design/build procurement strategy by CCWD for both the telemetry equipment and new server equipment being installed at the Randall-Bold WTP.
- **Diemer WTP, Electrical System Reliability Analysis (Electrical Master Plan); Yorba Linda, CA.** Performed reliability analysis of the existing 40-year-old electrical system at the Diemer WTP in Yorba Linda. This project included field investigations, review of existing documentation, and application of client's reliability criteria as it related to the electrical distribution system. This work also included development of a final report with recommendations for system improvements and for integrating the work with ongoing planning and design projects.
- **Pacheco Pumping Plant Adjustable Speed Drive Replacement Project; Santa Clara Valley Water District, Santa Clara, CA; Lead Instrumentation Engineer, Project QA/QC, and TJCAA Project Manager.** This project included replacement of 12 existing, 2,000-hp, 5-kV, wound-rotor motor speed controls with new PWM Adjustable Speed Drives. Work included analysis of drive technologies, review of prequalification and procurement delivery methods, control system interfaces to large drives, and modifications to the existing controls to support interim operation of parallel control systems for the multi-year construction cycle. TJCAA assisted SCVWD with engineering services during construction.
- **1630 Pump Station Project; Cucamonga Valley Water District, Rancho Cucamonga, CA; TJCAA Project Manager.** New pump station executed as a joint effort between CVWD and the Inland Empire Utilities District. Project management tasks included prime consultant responsibilities for all support disciplines: structural architectural, building mechanical, electrical, and I&C. The new pump station included a new building structure, building mechanical systems, new electrical (SCE) service, and

control system coordination for secure extra-agency data exchange. Project requirements included a pre-purchase process to expedite procurement and ensure commonality of provided equipment.

- **Basin Improvements Project; Inland Empire Utilities Agency, Chino Hills CA; Project I&C Engineer.** Design of improvements for several groundwater replenishment basins and water supply turnouts, including definition of project requirements and final design. Work included development of a scheme for expansion to the existing radio-based telemetry system, solar powered remote facilities, and subnetworking local radio communications. The water supply turnouts are from the Metropolitan Water District's (MWD's) existing pipeline system for replenishment basin water supply from the MWD system, and were required to conform to MWD technical standards.
- **SCADA System Intertie Study; City of Upland, CA; Project Manager/Project Engineer.** Prepared feasibility planning study for integrating the City's water system monitoring SCADA system with the neighboring San Antonio Water Company's SCADA system. The two systems, while separate from an organizational perspective, each had certain assets that span between the two groups, including groundwater wells, reservoirs, well head chlorination facilities, and WTPs. The study developed an integration method that was coordinated with the two SCADA systems to allow necessary exchange of data while addressing staffing, maintenance, security, and implementation methods and cost.
- **Pressure Zones 2 and 3 Pump Station Improvements; Dublin San Ramon Services District, Pleasanton, CA; Project Engineer and TJCAA Project Manager.** Project Lead electrical and I&C engineer for preliminary design, final design, and construction services for electrical and mechanical renovations at four drinking water pump stations. Work included field inspections, conceptual approaches, use of reduced voltage starters for hydraulic surge control, replacement of all electrical equipment, and interfacing to DSRSD's radio-based SCADA system. This project also resulted in relocating several PG&E service points at each pump station and developing bid documents to incorporate a sole-sourced DSRSD programmer for performing SCADA system upgrades.
- **Bisso O&M/Administration Buildings Emergency Generator Project; Contra Costa Water District, Concord, CA; Project Manager.** Performed a detailed review and design of a standby generator retrofit to an existing electrical system. The 400-kW diesel generator was required to conform to EPA Tier 3 emission requirements, and the design process, which featured a user group approach for gaining client input, also addressed the need for uninterrupted service and minimal impact on day-to-day operations during construction.
- **Skinner WTP; Metropolitan Water District, Riverside CA; Electrical and I&C Task Leader.** Designed renovation of existing medium-voltage distribution, including a new 33-kV SCE service, new 4.16-kV main switchgear, addition of a 1.75-MW standby generator, and campus style unit substations as part of the \$180 million plant upgrade. The design incorporated strict criteria for power supply switchover to the new SCE service and system controls for the standby generator addition with multiple main-tie-main circuit breakers. The project also included a fiber optic network, electrical power modeling, and electrical distribution and lighting design. I&C design included development of P&IDs for the facility including MWD-furnished ozone system equipment, 144-inch raw water metering, control narrative development, integration into the existing MWD control system, development of software interface protocols, and detailed I&C design for the plant improvements.

- **Groundwater Replenishment System; Orange County Water District, Fountain Valley, CA; Electrical and I&C Task Leader.** Designed electrical and I&C components. I&C design elements included application of P&IDs, design of bus-based I&C system using Foundation Fieldbus and DeviceNet, and a distributed control system preselection effort resulting in selection of an Emerson DeltaV process control system platform. Electrical aspects of the project included integrating the bus-based control system, a new 66-kV substation, 12-kV in-plant distribution, and large-scale application of VFDs, with over 30 units ranging in size from 500 to 2,500 hp using active front-end technologies.
- **Walnut Creek WTP Upgrades; East Bay Municipal Utilities District, Walnut Creek, CA; Lead Electrical Design Engineer.** Designed electrical elements for a plant expansion, including a renovation of the plant's electrical distribution system, new service substation, standby power system, medium- and low-voltage plant distribution, and facility/building electrical designs.
- **Bollman 5-kV System Upgrade Project; Contra Costa Water District, Concord, CA; Project Manager.** Design of an upgrade to the 5-kV distribution system and large motor (up to 1,500 hp) starters and controls. The design for the \$3 million construction project was delivered on time and under budget.
- **Electrical Rehabilitation Project; National Park Service, Yosemite National Park, Yosemite, CA; Lead Electrical/Project Engineer.** Designed a rehabilitation of the electrical distribution system for Yosemite National Park. This project required that all concepts and designs be performed within the strict environmental and aesthetic criteria of the National Park Service, and involved designing an electrical substation constructed in a structure listed on the National Register of Historic Places.
- **WWTP Electrical System Design; Salalah, Oman; Lead Electrical Design Engineer.** Designed WWTP electrical systems. The design, which featured adaptation of United States design techniques to British Standards and Codes, also included extensive medium-voltage distribution (11,000 V) and motor utilization voltage (3,300 V), low-voltage distribution at 415 V, motor control, a standby generator, and a distribution system applied to a campus-style plant configuration.
- **Electrical System Design Studies.** Completed electrical system planning studies for both new and retrofit projects. These studies developed feasible alternatives and recommendations for the electrical system design and included efficiency analyses, generation studies, load studies, short circuit analyses, and harmonic mitigation. Projects include analyses for Skinner WTP for MWD, Diemer WTP for MWD, main WWTP for Dublin-San Ramon Services District, Santa Clara Valley Water District, Ventura Water Reclamation Facility, GWRS for Orange County Water District, and EBMUD Walnut Creek WTP.
- **Control System Master Plans.** Directed the development of control system and SCADA master plans for Orange County Water District, the City of San Mateo, and The City of San Diego Miramar WTP. These control system master plans reviewed data requirements for operations, engineering, and maintenance staff, and covered control system technology, methods for providing data, and implementation feasibility.

Publications and Presentations

"Electrical Fundamentals for Water Distribution and Treatment Facilities," presented at Contra Costa Water District, June 23, 2011.

"Wireless Applications in the Water and Wastewater Industries," presented at the American Water Works Association, Fall 2007 Conference,

"SCADA and Asset Management," presented at the California Water and Environment Association, SCADA and Communications Systems Technology Seminar, April 3, 2003.

"SCADA Systems: The Physical Layer," presented at the Santa Ana River Basins Section of the California Water Environment Association, SCADA and Data Management Seminar, March 13, 2002.

"Instrumentation and SCADA Systems, an Overview," presented at the North Carolina AWWA/WEA Seminar on Instrumentation for Water and Wastewater Systems, July 12, 2000.



Michael J. Erwin, P.E.
Principal

Experience

Michael Erwin, who heads up TJCAA’s Control Systems Programming group, has been building valuable experience since 1986 in the design, implementation, and management of electrical power, control, automation, and instrumentation systems. He performs electrical design engineering for water and wastewater treatment facilities, collection and distribution systems, and industrial facilities, focusing on instrumentation and control system design and programming. His specific experience includes development of power calculations, protective device coordination, equipment specification, instrument selection, and control panel fabrication design; design of SCADA systems for in-plant and telemetry-based systems; and PLC programming.

Mr. Erwin has hands-on familiarity with a wide variety of PLC and SCADA hardware and software platforms, including Rockwell Automation, Schneider Electric, and GE Intelligent Platforms. He gained his extensive experience not only as a consultant, but also as chief engineer and project manager for a Northern California systems integrator. With this understanding of the water/wastewater, control system, and construction industries, he emphasizes constructability and focuses on systems that feature maximum operator usability and efficiency. His experience includes the following:

- **Treatment Plant 2 PLC Upgrade Project; Alameda County Water District; Project Manager/Lead Programmer.** Treatment Plant 2 was built in 1993 and included four Modicon 984-785 PLC systems, three of which were hot-standby PLCs. Michael Erwin was one of the PLC programmers on the original 1993 project. The PLC upgrade project involved converting the original Modicon 984 PLC programs to the latest version of Schneider Electric’s Unity software and testing and commissioning new Quantum Unity PLC systems to replace the existing PLCs. The programming work included development of new ACWD-defined function blocks, conversion of the LL984 ladder for plant control functions, and thoroughly bench-testing all aspects of the new program before installation and testing in the field.

- **Oro Loma Effluent Pump Station Control System Upgrade Project; East Bay Dischargers Authority, San Lorenzo, CA; Project Manager/Programmer.** The Oro Loma Effluent Pump Station collects treated wastewater from Hayward, San Leandro, San Lorenzo, Castro Valley, and Union City and pumps the treated water through a dechlorination station and into San Francisco Bay. The pump station consists of two 350-hp electric pumps on variable frequency drives (VFDs) and two 1,200-hp diesel driven pumps, and has a pumping capacity of over 200 mgd. The first phase of the project involved development of a control system design package to replace three existing Automation Direct PLCs and two Woodward engine controllers with two Quantum Unity PLCs that provided parallel control to two pumps each. In the second phase of the project TJCAA developed the new Unity PLC control programs and configured the plant’s existing Wonderware system to monitor the control of the pump station.

Education

BS, Electrical Engineering; San Diego State University; 1986

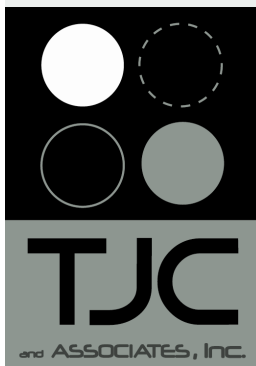
Professional Registration

Electrical: CA

Professional Memberships

Instrumentation, Systems, and Automation Society

American Water Works Association



- **WTP PLC Upgrade Project; City of Benicia, CA; Project Manager/Programmer.** The Main PLC at the City's WTP had become obsolete and difficult to maintain. In addition, multiple undocumented changes had been made over the past 15 years while the City's maintenance staff was keeping the system operating reliably. The project included field verifying and "as-building" the existing PLC control panel, developing a bid set of documents for replacement of the PLC control panel, and programming the new GE RX3i PLC to improve performance of some treatment processes and a fully documented PLC control program. Because the plant was in operation, the installation team had only 24 hours to remove the existing PLC panel, install the new panel, and bring the plant's primary processes back into operation. Not only was the installation completed on time, the plant was back in full automated operation within 32 hours of the initial plant shutdown.
- **Rinconada WTP Reliability Improvement Project; Santa Clara Valley Water District; Los Gatos, CA; Lead I&C Engineer.** Oversaw the electrical engineering and control systems design work for the \$180 million WTP modernization. This project incorporates capacity increases to raise plant output to 100 mgd and incorporates new ozone treatment trains, multiple new and retrofitted chemical systems, filters, and flocced basins. The design was developed to maintain the plant in operation throughout the estimated 5-year construction period. Design included new 12-kV distribution, arc flash protection strategies, a new 3-MW diesel standby generator, and new distributed motor control centers with smart motor starters and VFD equipment. I&C design incorporated a new distributed PLC architecture coordinated with construction phasing and new processes. Final design included over 400 electrical, instrumentation, and controls design drawings.
- **WWTP; City of Malibu, CA; I&C and Electrical Discipline Lead.** Lead I&C and electrical engineer for new greenfield WWTP and collection system pump stations for City of Malibu. This project included new SCE service, secondary selective 480-V distribution for reliability, standby generation, and local motor controls. The I&C design incorporated distributed controls based on PLCs and integration of control platforms provided by process package suppliers.
- **Montclair Lift Station; Inland Empire Utilities Agency, Chino Hills, CA; Lead I&C and Electrical Engineer.** Design of an electrical system replacement, including distribution equipment, VFDs, and PLC control panel, with a new system using redundant ControlLogix PLCs. The project design required a phased installation sequence to maintain continuous operation during construction.
- **SCADA System Integrator Projects FY2013-14 and FY 2014-2016; Contra Costa Water District, Concord, CA; Project Manager.** Acting as system integrator for CCWD SCADA projects. Provided assistance with development of panel I/O requirements, system PLC programming (Modicon Unity), human-machine interface graphic preparation (Telvent and Wonderware), coordination with construction contractors, and development of as-built documentation. This work included SCADA-related tasks on a variety of CCWD capital improvement projects including new chlorination boosters, storage tank upgrades, a new wireless I/O installation at the sludge drying beds at CCWD's Randall-Bold WTP, a new control system interface to replacement ozone destruct equipment, and a new control system interface to the UPS system installed at the CCWD Bisso Lane Engineering Headquarters and other capital improvement projects.
- **Well 2 PLC Program Upgrade; Bella Vista Water District, Redding, CA; Lead Programmer.** Performed an update of the well site PLC program to meet BVWD programming standards and organization, add residual chlorine monitoring, and improve the automated backwash sequence.

- **Lincoln Pump Station; City of Stockton, CA; Project Manager and Lead Programmer.** Control system design for a new pump station with three lift pumps, VFDs, PLC controls, and integration into the city's existing telemetry/SCADA system.
- **Water Distribution System SCADA Upgrade; San Juan Water District, Granite Bay, CA; Project Engineer.** Hardware and software upgrades from an existing proprietary control system to a new Allen-Bradley PLC and Wonderware-based SCADA system. Eight major PLC panels were replaced at the WTP using AB CompactLogix PLCs on a fiber optic Ethernet network. A combination of 900-MHz and 2,400-MHz spread spectrum Ethernet radio networks was used for control and monitoring of 6 pump stations, 3 tank sites, and 17 flow metering sites. An Intouch SCADA application was deployed on redundant virtual servers and redundant historian servers with thin-clients distributed throughout the treatment plant and the major pump stations. Execution of this project had to be performed with minimal plant shutdowns, and installation had to be performed using existing field wiring—the design included provisions for complete panel replacement and termination in less than 24 hours.
- **WWTP Expansion with New Control System; City of Delano, CA; Project Manager/Lead Programmer.** Control system design, PLC program development, and SCADA programming for the expansion. The project included selection and integration of new instrumentation throughout the facility, seven new PLC control panels with Rockwell Automation ControlLogix controllers, a managed fiber optic Ethernet network, and a Wonderware Orchestra SCADA system with an Intouch HMI, SCADAalarm alarm dialer package, and reporting software.
- **WTP Expansion; Bella Vista Water District, Redding, CA; Project Manager/Lead Programmer.** Upgrades to the raw water pump station, WTP, and 10 remote pump stations and well sites. Worked directly with the District to design and implement new control strategies and update the process to meet all California drinking water standards. Upgrades included new PLC programs for the raw water, filter plant, and telemetry GE Fanuc 90-30 PLC systems and a new Intellution iFix SCADA system with redundant SCADA servers and two remote view nodes.

Publications and Presentations

"Planning for the Replacement of Your Obsolete PLC System," American Water Works Association Water Education Seminar, August 2015.

"Diplomacy – Dealing with Customers, Owners, Engineers, and Vendors," presented quarterly at MCC Control Systems, 2004–2010.

"The Specifics – Reading, Understanding, and Implementing Specifications," presented quarterly at MCC Control Systems, 2004–2010.



Elaine M. Tee, P.E.
Electrical Engineer

Experience

Ms. Tee’s experience includes instrumentation, controls, and electrical design and fieldwork for municipal water/wastewater, industrial, commercial, and traffic applications. Her experience in design includes power distribution, P&ID development, motor controls, lighting, and cost estimating. Ms. Tee has also supervised and performed onsite facility inspections and has provided construction and field services for several facilities and expansion projects.

As an engineer for TJCAA, Ms. Tee performs instrumentation, control, and electrical design for water and wastewater treatment, distribution, and pumping facilities. She performs detailed designs for all aspects of industrial electrical and control systems, including low-voltage (480-V) electrical distribution and motor control, lighting and facility electrical systems, motor controls, and automated instrumentation and control systems.

Ms. Tee’s specific experience includes the following:

- **Sobrante and Upper San Leandro WTPs Ozone System Improvements; EBMUD; El Sobrante and Oakland, CA; Project Engineer.** Performed power systems analysis on existing electrical distribution systems and proposed new/modified electrical distribution systems. Confirmed as-built drawings, existing plans and reports, plant operational data, and water quality data. Performed field investigations to gather electrical data and record existing conditions. Obtained utility system data and performed short circuit analyses, device evaluation, system protection and coordination study, arc flash study, load flow study, and harmonic analysis. Provided a flicker and power quality assessment for 12-kV and 480-V power systems. Provided field data logging devices to monitor field power and harmonic conditions and model power analyses. Prepared an arc flash implementation strategy that included reviews of previous arc flash studies and electrical improvement studies, field verification of hazard mitigation techniques, development of standard criteria for arc flash hazard identification, and field component labeling.
- **Primary Service Review, San Mateo WWTP; City of San Mateo, CA; Project Engineer.** Preliminary design review to upgrade the plant incoming electrical primary service including capacity and relocation of existing equipment, which had been installed over an open, below-grade cable trench subject to tidal filling with brackish water. The existing equipment was on questionable soil subject to potential liquefaction during seismic events. Evaluated several siting and equipment configuration alternatives and prepared a comprehensive Preliminary Design Report addressing the primary service installation with respect to the plant’s existing cogeneration generators and the facility’s Interconnection Agreement with PG&E. The report also reviewed the structural aspects of the equipment layout and foundation options to mitigate soil conditions as well as accessibility, both during construction and final installation to minimize impacts on operations.

Education

BS, Electrical Engineering;
University of CA, Davis; 2003

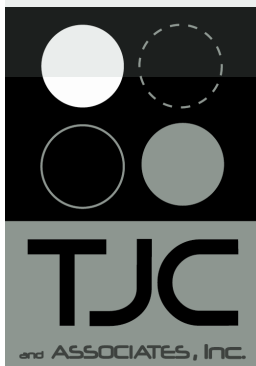
Professional Registrations

Electrical: CA

Professional Memberships

Institute of Electrical and Electronic Engineers (IEEE)

Instrumentation, Systems, and Automation Society



- **SCADA Telemetry Upgrade Project; Contra Costa Water District; Concord, CA; Project Engineer.** Prepared comprehensive predesign analyses and report for development of alternatives for remote site radio and PLC equipment, new multiple address system radios, new point-to-point and high-bandwidth backbone communication links, and secure MPLS strategy as a standby strategy for routing telemetry SCADA data to servers. This project also included development of RFQ and RFP documents for execution of a design/build procurement strategy for both the telemetry equipment and new server equipment being installed at the Randall-Bold WTP.
- **WWTP; Sunnyslope County Water District; Hollister, CA; Project Engineer.** I&C and Electrical project engineer for new greenfield wastewater treatment facility. Project included predesign, new sequence batch reactor system preselection process, and full plant design. Design responsibilities included complete P&IDs, coordination of process control system strategies, control system architecture, power distribution, lighting, site electrical, and new utility service.
- **Graham Hill WTP Electrical Improvements Project; City of Santa Cruz Water Department; Santa Cruz, CA; Project Engineer.** Renovation, expansion and improvements to the electrical distribution system at the City's main Graham Hill WTP. Project included verification and design validation to establish the conceptual approach. Final design for upgrades to the electrical system included a new utility 21-kV primary service; 480-V, main-tie-main switchgear with source transfer logic; remote switchgear console for arc-flash considerations; 1,500-kW engine-generator set; and a dedicated electrical building for housing the electrical components.
- **Cogeneration Electrical Improvements and Service Relocation Project; Dublin San Ramon Services District; Pleasanton CA; Project Engineer and TJCAA Project Manager.** Performed preliminary and final design services for improvements to and expansion of the WWTP electrical distribution and cogeneration facility. Project includes relocation of the WWTP existing 21-kV PG&E service, replacing existing cogeneration control/switchgear, and adding a third cogeneration unit to the facility, resulting in a total internal generation capacity in excess of 2 MW. Work included coordinating necessary facility improvements for power export capability to PG&E, new PG&E primary service, new networked engine-generator controls, and upgrades to 480-V and 21-kV switchgear.
- **Pressure Zones 2 and 3 Pump Station Improvements; Dublin San Ramon Services District; Pleasanton, CA; Electrical Engineer.** Work included field inspections, development of conceptual approaches, use of reduced voltage starters for hydraulic surge control, replacement of all electrical equipment, and interfacing to the District's radio-based SCADA system. Project also resulted in relocating several PG&E service points at each pump station and developing bid documents to incorporate a sole-sourced District programmer for performing SCADA system upgrades.
- **San Antonio Spreading Grounds Conjunctive Use Project; Three Valleys Municipal Water District; Claremont, CA; Electrical Engineer.** Performed instrumentation, control, SCADA, and electrical (ICE) design for a new, on-site variable frequency drive-controlled well pump and improvements to spreading ground basins located on site at the Three Valleys Municipal Water District's Miramar WTP.
- **Calistoga WTP Improvements Project; City of Calistoga, CA; Lead Electrical Engineer.** Developed detailed electrical design documents for pressure filter-based treatment facility for the City's main WTP. Work included expansion of existing motor control systems, integration with the existing control system, and addition of multiple water quality monitoring instrumentation onto a centralized water quality monitoring panel.

- ***Bisso O&M/Administration Buildings Emergency Generator Project; Contra Costa Water District; Concord, CA; Staff Engineer.*** Performed a detailed review and design of a standby generator retrofit to an existing electrical system. The 400-kW diesel generator was required to conform to EPA Tier 3 emission requirements, and the design process, which featured a user group approach for gaining client input, also addressed the need for uninterrupted service and minimal impact on day-to-day operations during construction.
- ***Lake View Pump Station Upgrade Project; City of Redwood City, CA; Electrical Engineer.*** Project electrical engineer for rehabilitation of an existing water distribution system pump station for the City of Redwood City, California. Project included retrofit of two variable frequency drives for existing 50-hp pumps and motors, relocated PG&E service drop, standby generator, and new modular building. Work also included relocation of existing telephone services, controls, telemetry panels, and pump station instrumentation.
- ***Bollman 5-kV Electrical System Upgrade Phase 1 and Phase 2; Contra Costa Water District; Concord, CA; Design and Field Engineer.*** Served as field inspector and primary contact for the District and the contractor for the Phase 1 project construction. Responsible for shop drawing management and review, responding to technical queries, providing engineering representation at construction coordination meetings, and performing electrical witness testing and inspections. Prepared design documents to complete the replacement of the facility medium- and low-voltage equipment.
- ***Skinner Filtration Plant Oxidation Retrofit Project; Metropolitan Water District of Southern California; Winchester, CA; Electrical Engineer.*** Design team member for the electrical and fire alarm systems, with responsibilities including electrical load analysis, bus rating calculations, other design tasks, and development of an Access-based circuit and conduit tracking database application used by the design team.

Publications and Presentations

“Wireless Applications in the Water/Wastewater Industry,” presented at the American Water Works Association Fall Conference, October 2007.



BS, Electrical Engineering;
California Polytechnic State University San Luis Obispo; 1994

Professional Registration

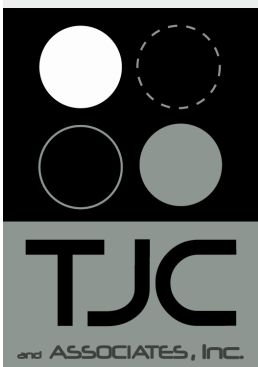
Electrical in CA

Eileen A. Nakamura, P.E.
Electrical Engineer

Experience

Eileen Nakamura is an electrical engineer with design experience in the areas of electrical power distribution, electrical industrial applications, control systems, and instrumentation. Her specific experience includes design of medium- and low-voltage electrical distribution systems for water, wastewater, and industrial waste treatment facilities; plant instrumentation; and SCADA systems for in-plant and telemetry-based systems. She also has experience in construction services during facility startup for design-build projects.

- **Storm Drain Pump Station Project; The Cannery, City of Davis, CA; Electrical Designer.** Performed electrical and I&C system design for a new pump station. The project involved power distribution equipment design, lighting design, control panel design and integration with the City's SCADA system. Provided plans, specifications, and engineering support during construction services.
- **Agricultural Well Project; The Cannery, City of Davis, CA; Electrical Designer.** Performed electrical and I&C system design for a new well site. The project involved power distribution equipment design, lighting design, control panel design and integration with the City's SCADA system. Provided plans, specifications, and engineering support during construction services.
- **Rehabilitation of Anaerobic Digesters No. 1 and No. 2 and Improvements to No. 3 Project; Water Pollution Control Plant; Sunnyvale, CA; Electrical Designer.** Performed control system design as part of the plant upgrade. The project involved connecting existing I/O points to a new control panel. Provided specification development, and PLC remote I/O control and instrumentation schedules.
- **Rinconada WTP Reliability Improvement Project; Santa Clara Valley Water District; Los Gatos, CA; Electrical Designer.** Performed electrical engineering and control systems design as part of a \$135 million WTP modernization. Provided services including electrical design of motor control schematics, circuiting, specification development, and I/O and instrumentation schedules. This project involves demolition and phased expansion of an 80-mgd plant while maintaining plant operations.
- **Residuals Management Project; Rinconada WTP, Santa Clara Valley Water District, San Jose, CA; Electrical Designer.** Assisted in the preparation of final design documents for project elements including design drawings, specifications, schedules, and QA/QC. Assisted in the preparation of detailed control loop descriptions for the control logic details incorporated into the design documents. This project included new solids handling systems, including centrifuges, waste conveyor systems, gravity thickeners, and chemical coagulant feed systems at the main WTP serving the western service area for the District.



- **WWTP; City of Malibu, CA; Electrical Designer.** Design and engineering support for construction services for WWTP and collection system pump stations for City of Malibu. This project includes new SCE service, secondary selective 480-V distribution for reliability, standby generation, and local motor controls. The I&C design incorporates distributed controls based on PLCs and integration of control platforms provided by process package suppliers.
- **Diemer WTP, Electrical Power and Reliability Improvements, Preliminary Design; Metropolitan Water District (MWD), Yorba Linda, CA; Staff Engineer.** Performed load analysis and evaluation of the original (1960 vintage) electrical distribution system. The intent of this study was to determine an approach for reallocation of existing loads to a split bus unit substation configuration matching current MWD standards. The goal of the upgrades was to improve plant reliability by removing single points of failure within the existing distribution system.
- **Pump Stations for Zones 2 and 3 Renovation Project; Dublin San Ramon Services District, Pleasanton, CA; Staff Engineer.** Performed construction support services for electrical, I&C, and mechanical renovations at six drinking water pump stations. This work included review of I&C and electrical shop drawings and responding to contractor-generated field requests for information. I&C shop drawing review included verification of conformance with DSRSD standard system integration requirements.
- **Groundwater Replenishment System; Orange County Water District, Fountain Valley, CA.** Completed electrical power system modeling studies. These studies included short circuit, load flow, coordination, and harmonic analyses. Electrical aspects of the project included a new 66-kV substation, 12-kV in-plant distribution, and large-scale variable frequency drives.
- **Walnut Creek WTP Upgrades; East Bay Municipal Utility District, Walnut Creek, CA; Project Engineer for Operations and Filter Facilities.** Developed project tracking system for the extended design team to manage budget and schedule. Designed electrical elements for plant expansion, including medium- and low-voltage plant distribution and facility/building electrical designs.
- **West Basin Water Recycling Plant Expansion; West Basin Municipal Water District, El Segundo, CA.** Completed electrical system design for design-build project. This project included plant expansion of reverse osmosis and high-pressure boiler feed clearwell. Electrical aspects of the project included 12-kV in-plant distribution and large-scale variable frequency drives. Provided support during construction.
- **Sunol Valley WTP Upgrades; San Francisco Public Utilities Commission, Sunol, CA.** Completed preliminary analysis and summary technical memorandum for recommended electrical system upgrades. Completed electrical final design for filter areas and renovated operations building.
- **Glendale Groundwater Treatment Plant; Glendale Respondents Group, Glendale, CA.** Developed PLC and SCADA system software programming for controlling the WTP and eight wellhead sites. This design-build project included procurement of all I&C system devices, fabrication of the control panels, applications engineering, integration, factory testing, field calibration and startup. Performed factory testing and field checkout, trained system operators, and developed Operations and Maintenance Manuals for new system as part of plant startup.

- **Sparks Denitrification Project; Vista Canyon Group, Reno, NV.** Completed a plant upgrade of the control system including PLC programming and SCADA configuration. This design-build project included integrating a new PLC and adding new SCADA monitoring screens to the existing system. Provided field support, startup, and training through project completion.
- **Fresno Sanitary Landfill Groundwater Remediation Project; City of Fresno, CA; Electrical and Instrumentation Design Engineer.** Completed electrical and I&C design of a groundwater treatment plant for monitoring and testing at the Fresno Sanitary Landfill. The design included extraction wells and maintained compliance with the requirements of the Environmental Protection Agency and The City of Fresno. Provided construction support services through project completion.



Jacqueline N. Okubo, P.E.
Electrical Engineer

Experience

Jacqueline Okubo, P.E. is an electrical engineer with a wide variety of experience in I&C and electrical design development and construction coordination. Her experience includes fiber optic cable allocation, electrical load studies, and P&ID layouts and development, including coordination with process engineers. She has developed equipment layouts and panel elevations, electrical plans, lighting, and detailed control loop descriptions.

Ms. Okubo has developed design documents and prepared feasibility studies and reports for several water and wastewater projects and clients. Her background also includes construction inspections and observation on international development projects in Kenya.

- **Treatment Plant 2 PLC Upgrade Project; Alameda County Water District; Fremont, CA; Project Engineer.** Developed programming for an upgrade of the 21-mgd WTP 2 PLC from an obsolete 984-series ProWorx PLC system to a modern Quantum Unity PLC system. Field-verified and updated PLC-related documentation including PLC wiring diagrams, system design narratives, and coordination spreadsheet. This project included programming and bench-testing the new system, which involved I/O testing, SCADA testing, and function testing.

- **Wastewater Facilities Rehabilitation Project Phase 1; St. Helena Hospital; St. Helena, CA; Electrical Engineer.** I&C and electrical project engineer for installation of headworks, lift station, and associated controls at a WWTP. This project includes electrical load, voltage drop, and electrical power distribution design, as well as the design of remote monitoring of the lift station pump controls to be incorporated into existing wireless communication.

- **WWTP Electrical System Modeling; Dublin San Ramon Services District; Dublin, CA; Electrical Designer.** Field-verified plant conditions (fuse sizes, relay settings, and equipment ratings), and made final updates to the WWTP electrical system model. Performed modeling and power system studies using SKM PowerTools©, culminating in updated load flow, short circuit coordination, and arc flash analyses. This project included recommending additional equipment to improve electrical safety and establishing requirements for operation of plant in island mode to determine the conceptual feasibility of participation in Demand Reduction Programs.

- **Sobrante and USL WTP Electrical Studies, East Bay Municipal Utilities District, Oakland, CA. Electrical System Modeler.** Performing electrical system modeling using SKM PowerTools© at two existing WTPs in the San Francisco Bay Area as part of EBMUD’s Ozone Replacement Project at these sites. Performing modeling and simulations to address several issues of concern. Updating the existing facility’s arc flash study to meet NFPA 70E requirements, identifying potential methods to reduce arc flash hazards to category 2 or lower, and developing harmonic distortion models that can be used to mitigate power quality concerns related to the new ozone equipment.

Education

BS, Electrical Engineering;
 University of CA, Davis; 2012

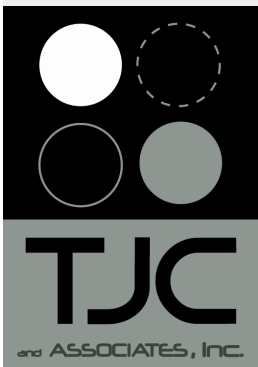
Professional Registration

Electrical: CA

Professional Memberships

Institute of Electrical and Electronics Engineers

National Society of Black Engineers



- **Stevenson Communication Tower; Union Sanitary District; Fremont, CA; Electrical Designer.** Performed electrical design for a new 100-foot (nominal) communication tower, power, and microwave equipment to provide the necessary infrastructure to support the District's 18-GHz microwave high-speed communications network. The microwave communication scheme focuses on providing the communication backbone between the WWTP and pump and lift stations in Union Sanitary District's southern service area.
- **Rinconada WTP Reliability Improvement Project; Santa Clara Valley Water District; Los Gatos, CA; Electrical Designer.** Performed electrical engineering and control systems design as part of a \$135-million WTP modernization. Provided services including field investigation and load analysis. Facilitated coordination and tracking of over 400 electrical, instrumentation, and controls design drawings. This project involves demolition and phased expansion of an 80-mgd plant while maintaining plant operations.
- **Electrical Reliability Study; Sewer Authority of Mid-Coastside (SAM); Half Moon Bay, CA; Electrical Designer.** Prepared feasibility study for reliability improvements to the existing electrical distribution system at SAM's main WWTP, where existing electrical service and major electrical distribution equipment is in an area potentially subject to flooding, and is configured in a way that could result in a single point of failure of the electrical supply. Work included investigation of existing field conditions, site evaluations, development of alternatives, identification of new distribution strategies to eliminate single points of failure of the main service equipment, and preparation of a comprehensive report.
- **Rinconada WTP Residuals Management Project; Santa Clara Valley Water District; Los Gatos, CA; Electrical Designer.** Developed and assisted in the preparation of final design documents for project elements including fiber optic cable allocations for control network and communication systems, input/output (I/O) lists for PLCs, lighting designs, and conduit and cable schedules. Assisted in the preparation of detailed control loop descriptions for the control logic details incorporated into the design documents. Project included installation of new solids handling systems, including centrifuges, waste conveyor systems, gravity thickeners, and chemical coagulant feed systems at the main WTP serving the western service area of Santa Clara Valley Water District.
- **Digester 1 and 2 and FOG Facility, Water Pollution Control Plant; City of Sunnyvale, CA; Electrical Designer.** Assisted with the I&C system design for rehabilitation of two existing digesters and a new FOG disposal facility at the City of Sunnyvale's WWTP. Work included transfer of the existing OPTO 22-based control platform over to an existing Allen-Bradley based ControlLogix PLC. Ms. Okubo prepared and maintained the design P&IDs and system architecture diagrams throughout the design process, coordinating with process engineers to maintain the drawings through the various revisions stages of the project. Her responsibilities also included coordinating the project electrical control requirements, including coordination with site wiring and motor control schematics with the I&C documentation.
- **Emergency Water Source; Purissima Hills Water District; Los Altos Hills, CA; Electrical Designer.** This project included feasibility analysis of alternatives to provide an emergency water source after a natural disaster that potentially interrupted normal water supplies from the Hetch-Hetchy system. This project also included development and comparison of alternatives with various combinations of temporary pumping, generators, and manual/automatic control schemes. The approach required development of preliminary interconnection schemes that could be implemented by non-electricians to ensure a reliable water supply following an earthquake or other major event, and included assisting the District with developing cost effective approaches to balance the

cost of alternatives against reliability benefits and installation requirements.

- ***System Integrator Support; Contra Costa Water District; Concord, CA; Electrical Designer.*** This project included performing control system integration for a variety of design projects. System integration tasks included field verification and documentation of existing SCADA RTU panels and development of necessary upgrades to support specific project design modifications. Ms. Okubo developed new panel internal elevations detailing the components and equipment required. Panel layouts included internal power and signal distribution, component mounting locations, device designations, and RTU I/O requirements. Specific work at the Randall-Bold WTP Sludge Lagoon facility included incorporation of wireless I/O in a new panel layout for routing process information to the plant's central control location.
- ***Sewer Manhole Flowmeter Project; City of San Bruno, CA; Electrical Designer.*** Prepared summary report for electrical supply and remote telemetry monitoring for two new open channel flowmeters for the City of San Bruno. Work included feasibility review of manhole installation, coordination of conduit and cable routing in public thoroughfares, and comparison of remote telemetry alternatives for transmitting flow data to the Cities of San Bruno and South San Francisco



Client References

Ben Eggers

Project Engineer
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43885 S. Grimmer Blvd.
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Braden Yu

Planning & Development Manager
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David Stoops

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Greg Yim

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Jenny Skrel

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Jimmy Tan, P.E.

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Mandeep Chohan

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Michael H. Ballard, P.E.

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Scott Rovanpera

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(707) 746-4393

Statement of Qualifications - Engineering Services

Steven Delight, P.E.

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Terry McKinney

Production Superintendent
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(831) 420-5450

Tom Zaharris

WTP Superintendent
Bella Vista Water District
11368 Stillwater Way
Redding, CA 96003
(925) 224-6501

 TJCAA Experience Bank - Structural

| TJCAA Structural Experience Bank | | | | | | | | | | | | | | | | | |
|--|-----------------|----------------------|---------------------|--------------|-------------|------------------|-------------------|--------------------|-------------|------------|------------|--------------------------|----------------|---------------------------------|-------------------------|----------------------|------------------|
| Project Description | Service Areas | | | | | | | | | | | | | | | | |
| | Water Treatment | Wastewater Treatment | Reservoir / Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction / Eval | Seismic Upgrades / Eval | Landslide Mitigation | Power Generation |
| Santa Clara Valley Water District – Rinconada WTP Reliability Improvement Project. Structural design for a new ozone generation building, LOX facility, flocculation/sedimentation basins, filters, washwater recovery facility, chlorine contact basin, and an elevated concrete platform to support electrical equipment. | ■ | | | | | | | | | | | ■ | | ■ | | | |
| Cucamonga Valley Water District – 1630 East Recycled Water Pump Station. Structural design of a 40'x74' concrete masonry unit pump station housing 5 pumps and an electrical room for equipment. Structure consisted of masonry slumpstone walls with metal truss pitched roof and asphalt shingles. | | | | ■ | | | | | | | | | | | | | |
| Pasadena Water and Power – Temporary Structure Design at Arroyo Seco Canyon. Analysis and structural design of temporary bridges to carry construction equipment for the Arroyo Seco Canyon Project. | | | | | ■ | | | | | | | ■ | | | | | |
| City of Pleasanton – Vineyard Avenue Pump Station. Provided engineering and construction services for the design of a 2,176-sq. ft. concrete masonry unit pump station/electrical building on a constricted site with strict architectural/aesthetic requirements. | | | | ■ | | | | | | | | | | ■ | | | |
| Ironhouse Sanitary District – Ironhouse WWTP Expansion Project. Structural design of a 9-mgd expansion, including an influent pump station, headworks, anoxic/aeration basins, membrane bioreactors, backpulse tank, blower/electrical/generator/chemical building, UV/Effluent pump station, and a solids handling building. | | ■ | | ■ | | ■ | | | | | | | | | | | |
| City of Santa Cruz – Graham Hill Water Treatment Plant. Design of electrical building. | ■ | | | | | | | | | | | | | | ■ | | |
| Napa Sanitation District – Recycled Water Pipeline and Pump Station Design. Design of booster pump station and support structures for pipeline crossings. | | | | ■ | | | | ■ | | | | | | | | | |
| Wochholz Wastewater Treatment Plant – Improved Effluent Salinity Project. Designed new loading dock and chemical storage areas. | | ■ | | | | ■ | | | | | | | | | | | |

Statement of Qualifications - Engineering Services

| TJCAA Structural Experience Bank | | | | | | | | | | | | | | | | | |
|--|-----------------|----------------------|-------------------|--------------|-------------|------------------|-------------------|--------------------|-------------|------------|------------|--------------------------|----------------|--------------------------|-----------------------|----------------------|------------------|
| Project Description | Service Areas | | | | | | | | | | | | | | | | |
| | Water Treatment | Wastewater Treatment | Reservoir/Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction | Seismic Upgrades/Eval | Landslide Mitigation | Power Generation |
| City of Antioch – West Antioch Creek Channel Improvement Project. Structural design for inlet and outlet head walls for four 50-foot-long, 14 x 7-foot box culverts. Structural elements included culvert headwalls, wingwalls, and soldier pile retaining wall. | | | | | | | | | | | | | | | | | |
| MCWD – SCADA Consulting Services. Structural support for review of existing system deficiencies and design of new equipment | | | ■ | ■ | | | | | | | | | | | | | |
| Redwood City Glenwood Pump Station Improvements Project. Design of modifications to existing outdoor pump station to add a building and standby generator. | | | | ■ | | | | ■ | | | | | | ■ | | | ■ |
| Novato Sanitary District – Wastewater and Recycled Water Facility Upgrade Project. Seismic evaluation and design for a new Title 22 recycled water facility. | | | | | | | | | | | | | | | | | |
| City of Sunnyvale – Advanced Flootation Tank Replacement Project. Field investigation of tank vulnerability to seismic events. | | ■ | ■ | | | | | | | | | | | ■ | ■ | | |
| Cal Water Service Company – RPVD PV-37 Energy Recovery Project. Structural design of a concrete foundation slab with short retaining walls on three sides for support of a new hydro-power driven generator at the CalWater existing pressure reduction station (PV-37) in Rancho Palos Verdes, California. Prepared structural drawings suitable for public bidding for the construction. | | | | | | | | | | | | | | | | | ■ |
| City of Burbank – Northern Burbank Recycled Water Main Extension Project. Structural design of a new 8-inch diameter ductile iron pipe crossing at Burbank Western Channel along Cohasset Street. The 38-ft pipe span was supported on the existing concrete channel walls at each end. Pipe crossing needed to be coordinated with existing constraints including an existing 16-inch diameter pipeline crossing at the same location. | | | | | | | | ■ | | | | | | | | | |
| Washoe County Department of Water Resources – South Truckee Meadows Water Treatment Facility Project. Designed single-story, masonry block buildings: 6,700-sq. ft. operations building and 2,250-sq. ft. maintenance shop. | ■ | | | | | | | | | | | ■ | | | | | |
| Contra Costa Water District – Bisso O&M/ Administration Buildings Emergency Generator Project. Foundation design for a standby generator. | ■ | | | | | | | | | | | | | ■ | | | |
| Delta Diablo – Bridgehead Emergency Storage Basin and Pump Station. Structural design of a sewage pumping station and a 1 million gallon cast-in-place emergency storage basin. Included a concrete building 26 feet below grade and an above grade, two-story, 1,720-sq.-ft. masonry block building with a metal truss built-up roof. | | | ■ | ■ | | | | | | | | | | ■ | | | |

Statement of Qualifications - Engineering Services

| TJCAA Structural Experience Bank | | | | | | | | | | | | | | | | | |
|---|-----------------|----------------------|-------------------|--------------|-------------|------------------|-------------------|--------------------|-------------|------------|------------|--------------------------|----------------|--------------------------|-----------------------|----------------------|------------------|
| Project Description | Service Areas | | | | | | | | | | | | | | | | |
| | Water Treatment | Wastewater Treatment | Reservoir/Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction | Seismic Upgrades/Eval | Landslide Mitigation | Power Generation |
| Monte Vista Water District – Pump Station. Provided engineering for the design of concrete masonry block pump station. The project was performed under an aggressive schedule, completed within four weeks from start to finish. | | | | ■ | | | | | | | | | | | | | |
| City of San Bruno – Reservoirs. Structural assessment of The Cunningham Water Tank No. 1, built in 1964, a 2 million gallon, welded carbon steel tank; and the Glenview Water Tank No. 3, built in 1950, a 2 million gallon, prestressed concrete tank. | | | ■ | | | | | | | | | | | | ■ | | |
| Inland Empire Utilities Agency – 1630 East Recycled Water Pipeline Segment A Project. Pipeline and turnouts for raw water distribution. | | | | | | | | ■ | | | | | | | | | |
| Sacramento County Airport System – Domestic Water Connection and Distribution System Piping Project. Provided engineering for the design of prestressed concrete pile foundation system supporting two 1.5-MG, prestressed concrete water storage reservoirs. | | | | ■ | | | | | | | | | | | | | |
| Delta Diablo – Pittsburg Recycled Water System. Working with multiple agencies, provided structural design and construction services for a 1-MG welded steel recycled water tank, main pump station building (prefabricated masonry unit), and a booster pump station of prefabricated, fiber-reinforced plastic. | | | ■ | ■ | | | | | | | | | | ■ | | | |
| Vopak Jet Fuel Storage Facility – Tank Inspection. Performed structural assessment of three jet fuel storage tanks in Wilmington, California. The tanks experienced some degree of damage during the October 16, 1999 Hector Mine earthquake. The inspection ascertained whether damage to the interior aluminum floating cover was attributable to the seismic event. | | | | ■ | | | | | | | | | | | ■ | | |
| City of Livermore – Airport Avenue Pump Station. Structural engineering consultation in support of the refurbishment of an existing pump station. | | | | ■ | | | | | | | | | | | | | |
| Contra Costa County Sanitation District – Acacia Avenue Pump Station. Structural engineering consultation in support of the refurbishment of an existing pump station with a capacity of 4 mgd. | | | | ■ | | | | | | | | | | | | | |
| Contra Costa County Sanitation District – Fairview Avenue Pump Station. Structural engineering support for the modification and expansion of an existing submersible pump station with a capacity of 12 mgd. | | | | ■ | | | | | | | | | | | | | |

Statement of Qualifications - Engineering Services

| TJCAA Structural Experience Bank | | | | | | | | | | | | | | | | | |
|---|-----------------|----------------------|-------------------|--------------|-------------|------------------|-------------------|--------------------|-------------|------------|------------|--------------------------|----------------|--------------------------|-----------------------|----------------------|------------------|
| Project Description | Service Areas | | | | | | | | | | | | | | | | |
| | Water Treatment | Wastewater Treatment | Reservoir/Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction | Seismic Upgrades/Eval | Landslide Mitigation | Power Generation |
| Central Sanitation District, Orinda – Storm Water Pump Station Refurbishment. Prepared seismic evaluations and retrofit designs for the upgrade of the Lower Orinda Pump Station. The expansion of this circa 1950 pump station increased the flow capacity from 14 mgd up to 21 mgd—the estimated capacity required for operation through 2035. | | | | ■ | ■ | | | | | | | | | ■ | ■ | | |
| Monte Vista Water District, Montclair, CA – Aquifer Storage and Recovery Well No.30: Structural design of 32'x32' concrete masonry building. Project was performed under a very aggressive schedule, completed within four weeks. | | | | ■ | | ■ | | | | | | | | | | | |
| Dublin San Ramon Services District – Northern Dougherty Valley Zone 3 Potable Water Facilities Reservoir 300B and Pump Station 300C. Engineering services during construction of 1.5-MG, prestressed concrete reservoir and concrete masonry block building. | | | | | | | | | | | | | | ■ | | | |
| Dublin San Ramon Services District – Dougherty Valley Reservoir 200B. Design of structural elements associated with 1.5-MG, prestressed concrete potable water reservoir. Client elected to use Performance Specification approach for design. | | | ■ | | | | | | | | | | | ■ | | | |
| City of Brentwood – Surface Water Treatment Facility, Phase I. Structural design of 30 x 35 ft., 35-foot-deep wet well and concrete masonry electrical building. | ■ | | ■ | | | | | | | | | | | | | | |
| Contra Costa Sanitary District – Walnut Creek Renovations Phase 2. Structural evaluations of existing traffic bridges within Walnut Creek, CA. | | | | | ■ | | | | | | | | | | ■ | | |
| City of Pleasanton – McCloud Water Tank. Structural assessment of a prestressed concrete tank built in 1953 and development of rehabilitation recommendations. | | | ■ | | | | | | | | | | | | ■ | | |
| Ito Cariani Sausage Company (ICSC), Hayward CA – Seismic Vulnerability Evaluation. Seismic vulnerability evaluation and retrofit recommendations for ICSC 10,000-sq. ft. Hayward facility. | | | | | | | | | | | ■ | | | | ■ | | |
| Sacramento Regional County Sanitation District, Sacramento Regional Wastewater Treatment Plant – 2E/2F Substation Replacement Project. Structural design of 93'x47' concrete electrical building. | | ■ | | | | | | | | | | | | | | | |
| City of Folsom Drinking Water Improvement Project. Structural design of a 10-mgd WTP expansion. Specific elements included Actiflo pretreatment structure, filters, bypass vault, and partially buried, prestressed concrete chlorine contact tank. | ■ | | | | | ■ | | | | | | | | ■ | | | |

Statement of Qualifications - Engineering Services

| TJCAA Structural Experience Bank | | | | | | | | | | | | | | | | | |
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| Project Description | Service Areas | | | | | | | | | | | | | | | | |
| | Water Treatment | Wastewater Treatment | Reservoir/Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction | Seismic Upgrades/Eval | Landslide Mitigation | Power Generation |
| <p>Orange County Water District – Groundwater Replenishment Project. Pile foundation consulting services for the Groundwater Replenishment Project (GWR). GWR is a water reuse project funded jointly by the Orange County Water District and the Orange County Sanitation District, and is planned to ultimately reuse approximately 140,000 acre-feet per year of advanced treated wastewater. The project supplements existing water supplies by recharging the Orange County Groundwater Basin with a new, reliable, high quality source. The project augments County supply for irrigation and industrial use. Protecting the Basin from further seawater intrusion is another goal of the project.</p> | ■ | ■ | | ■ | | | | | | | | | | ■ | | | |
| <p>Dublin San Ramon Services District. Engineering services during construction for a prestressed concrete water storage tank and masonry block pump station. Structural elements of this project were not designed by TJCAA.</p> | | | | | | | | | | | | | | ■ | | | |
| <p>City of Livermore – Zone 1 Water System Improvement. Structural design of a masonry block pump station and prestressed concrete water storage reservoir.</p> | | | ■ | ■ | | | | | | | | | | | | | |
| <p>City and County of San Francisco Department of Public Works. Seismic evaluations and retrofit designs for a conceptual design report for the upgrade of the North Point Wet Weather Facility, San Francisco, California</p> | | | | | ■ | | | | | | | | | | ■ | | |
| <p>Vallejo Sanitation and Flood Control District – Austin Creek Pump Station. Structural evaluation of the existing Austin Creek Pumping Station: a 40 x 24 ft., cast-in-place concrete structure constructed circa 1956.</p> | | | | ■ | ■ | | | | | | | | | ■ | ■ | | |
| <p>Brentwood WWTP Expansion Project – \$40 million construction. Structural design of a 10-mgd WWTP expansion in the city of Brentwood, CA. Process facilities included an influent pump station, headworks, denitrification facilities, oxidation ditches, primary clarifiers, chemical area, tertiary filters, chlorine contact basins, cascade aerators, and an outfall structure. Additional structures included an administration building, electrical area, and solids handling facilities. Soil densification using deep dynamic compaction and stone piles was required due to high ground water and loosely compacted soil. Provided engineering services during construction.</p> | | ■ | | | | | | | | | | | | ■ | | | |
| <p>Delta Diablo – Calpine Recycled Water Facility – \$11 million construction. Design of structural elements for a 13-mgd recycled water facility. This facility provides cooling tower water for two new power generation facilities. Process elements included influent pump station, clarifiers, filters, chlorine contact basins, effluent pump station, and a 2-MG, welded steel reservoir. Additional facilities include a chemical storage area and electrical building. Provided engineering services during construction.</p> | | ■ | | ■ | | ■ | | | | | | | | ■ | | | |

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| ADAC – Nuclear Medical Camera Installation. Structural design of support system for 6,500-lb. nuclear imaging camera installed in an existing office building. | | | | | | | | | | | | ■ | | | | | |
| Montebello Land and Water Company – Well No 14 Pump Station. Structural design of a concrete masonry building to house the equipment associated with this wellhead and pump station. | | | | ■ | | | ■ | | | | | | | | | | |
| Fountain Valley Pump Station – Upgrades. Preliminary design for seismic upgrade and minor modifications for two existing pumps stations. | | | | ■ | | | | | | | | | | | ■ | | |
| Zoe Avenue Pump Station. This 34-mgd pump station consists of a large wet well with the bottom invert depth at 50 feet below grade. Stormwater pumps are contained within a 2,360-sq. ft. masonry block building constructed atop the wet well. The pump station wet well walls are constructed of 36-inch diameter cast-in-drilled-hole piles with an internal coating of shotcrete. | | | | ■ | | | ■ | | | | | | | ■ | | | |
| City of Mountain View – Shoreline Sailing Lake Project. Design of structural elements for wet well submersible pump station for transferring water from the delta into the sailing lake. | | | | ■ | | | | | | | | | | ■ | | | |
| Sunnyslope County Water District – Ridgemark WWTP Expansion Project. Structural engineering support for the modification and expansion of existing facility. Included headworks, membrane bioreactors, blower building and solids handling storage tank. Project included refurbishment and modifications of two existing submersible pump stations. | | ■ | ■ | ■ | | | | | | | | | | ■ | | | |
| City of Pacific Grove – Reconstruction of Wastewater Pump Station 12. Design for relocation of an above grade emergency generator into a below grade, precast vault. Structure had to meet strict aesthetic requirements. | | | | ■ | | | | | | | | | | | | | |
| City of Stockton – River Island Sewage Pump Station. Structural design of a 15'x35' cast-in-place concrete wet well submersible pump station, approximately 30 feet below grade. With 50'x40' masonry block electrical and chemical storage building. | | | | ■ | | ■ | | | | | | | | | | | |
| Moulton Niguel Water District – Crown Valley Highland Pump Station. Structural design of a 400-sq. ft., 12-mgd, below grade, concrete vault housing three recycled water pumps and associated instruments and controls. | | ■ | | ■ | | | | | | | | | | ■ | | | |
| Moulton Niguel Water District – Alicia Recycled Water Pump Station. Structural design of a 770-sq. ft., 9-mgd, concrete masonry building to house two recycled water pumps and associated instruments and controls. | | ■ | | ■ | | | | | | | | | | ■ | | | |

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| North Open Space Well. Structural design of 850-sq. ft. masonry block building to house a wellhead pump station. Building was designed and constructed to look like a house. | | | | ■ | | ■ | | | | | | | | ■ | | | |
| South Montebello Irrigation District – Well No. 7. Structural design of a concrete masonry building to house a 700-bhp gas engine and pump system associated with a wellhead pump station. | | | | ■ | | | | | | | | | | | | | |
| Diablo Hills Reservoir: Preliminary design of a below grade, cast-in-place reservoir for the Contra Costa Water District. This structure was sited beneath the 8th hole of an existing golf course. | | | ■ | | | | | | | | | | | | | | |
| South Sacramento – Design Build Pump Station. Structural design of a wet well sited 50 feet below grade and the associated masonry block operations building. The pump station was a pre-manufactured item that was anchored alongside the wet well. | | | | | | | | | | | | | | ■ | | | |
| Montebello Land and Water Company – Well No 14 Pump Station. Structural design of a concrete masonry building to house the equipment associated with this wellhead and pump station. | | | | ■ | | ■ | | | | | | | | ■ | | | |
| Delta Diablo – Chemical Storage Area. Structural design of a chemical storage area for a WWTP. Chemicals involved include sodium hypochlorite and sodium bisulfite. | | ■ | | | | ■ | | | | | | | | ■ | | | |
| Hill Brothers Chemical – Chemical Containment Area. Structural design of a chemical storage and containment area in San Jose, CA. The facility included specialized truck and container loading and unloading areas. Chemicals involved include HCL, H ₂ SO ₄ , and NaOH. | | | | | | ■ | | | ■ | ■ | | | | | | | |
| Calleguas Water District – Water Storage Reservoir. Preliminary design for the structural elements of this 5.0-MG water storage reservoir. Structural evaluation included alternatives for prestressed concrete, cast-in-place concrete and steel. Both circular and rectangular configurations were considered. Provided technical consultation during the final design phase of the project. | ■ | | ■ | | | | | | | | | | | | | | |
| City of Pittsburg – Water Storage Reservoir. Preliminary design for replacement of an existing 6-MG water storage reservoir at the WTP. The design included two prestressed concrete reservoirs. A 1-MG reservoir was used as finished and backwash water storage, while a second 5-MG reservoir was sited in the footprint of the existing 6-MG tank. The design required two reservoirs to minimize the impact on the WTP. | ■ | | ■ | | | | | | | | | | | | | | |

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| Department of the Navy, Camp Pendleton – \$8.5 million construction. Structural modifications to seven existing WWTPs and two existing lift stations for the Navy in Camp Pendleton, CA. Upgrades included addition of clarifiers, digesters and pump stations. Additional modifications include improving accessibility to various process units and upgrading existing operations buildings. Provided engineering services during construction. | | ■ | | ■ | | ■ | | | | | | | | ■ | | | |
| City of Mesa, AZ – Gilbert/Mesa South WRF Lift Station. Structural design of a 14.33-mgd reclaimed water lift station. This facility included circular equalization basins, a 30 x 100 ft., 40-foot-deep dry well and provisions for future expansion, and addition of treatment facilities. | | ■ | | ■ | | | | | | | | | | | | | |
| City of Seattle – Tolt Water Filtration Plant. Structural design of a 120-mgd water filtration plant sited on the Tolt River east of Seattle. Process elements of this design/build/operate project consisted of ozone, flocculation, and filtration basins. Supporting facilities included a 7.4-MG, buried concrete clearwell, chemical storage, and plant operation facilities. | | ■ | | ■ | | ■ | | | | | | ■ | | ■ | | | |
| CCWD – Bollman WTP Expansion. Structural design required to add ozone treatment to the existing Bollman WTP in Contra Costa County. Specific structures included ozone contactors, ozone generation buildings, various foundations, secondary containment for new chemical storage areas, and a pier foundation for the proposed backwash tank. This project included special seismic design criteria specifically tailored for CCWD's projects and seismic upgrade of an existing 11-MG, buried concrete reservoir. | | ■ | | ■ | | ■ | | | | | | | | ■ | ■ | | |
| City of Mt View – Crittenden Pump Station. Structural design of a concrete, CMU pump station for this 600-hp pump station and set sell facility. The project included a standby power generation and fuel storage facilities. | | | | ■ | ■ | | | | | | | | | ■ | | | |
| Leucadia Water District – Bataquitos Pump Station. Structural design of a concrete block building to house electrical and control equipment for an existing 750-hp pump station. | | | | ■ | | | | | | | | | | ■ | | | |
| Vallicitos Water District – Twin Oaks Reservoirs. Technical review of two 33-MG, prestressed concrete reservoirs for water storage. Technical review of these circular prestressed concrete reservoirs was conducted on the final design documents for the project. Emphasis was focused on the seismic design elements of the project. | | | | ■ | ■ | | | | | | | | | | | | |
| City of Southgate – Westside Reservoirs & PS. Structural design of two above grade, steel water storage reservoirs along with an associated pump station. Stand-by power and chemical storage were included in the project. | | | | ■ | ■ | ■ | | | | | | | | | | | |

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| | Water Treatment | Wastewater Treatment | Reservoir/Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction | Seismic Upgrades/Eval | Landslide Mitigation | Power Generation |
| City of Allentown, PA – WWTP Upgrades. Structural design for various upgrades to an existing WWTP designed in the 1920s. The project site was in a floodplain and required the use of rock anchors to prevent floatation of the basin foundations. | | ■ | | ■ | | ■ | | | | | | | | ■ | | | |
| City of Wallingford – Overflow Reservoir. Structural design of a two-celled, buried concrete reservoir. | | ■ | ■ | | | | | | | | | | | | | | |
| VWD – Mt. Bell Reservoir Evaluation. Seismic evaluation of an existing bolted steel reservoir. | ■ | | ■ | | | | | | | | | | | | ■ | | |
| SCVWD – Reservoir Evaluation. Seismic evaluation of two existing above grade water storage reservoirs. Both reservoirs were approximately 3 MG and required recommendations for mitigating potential damage caused by the design seismic event. | ■ | | ■ | | | | | | | | | | | | ■ | | |
| City of Redlands – 1350 Zone Reservoir. Structural evaluation and design of a 3.9-MG prestressed concrete water storage reservoir. Evaluation included alternatives for prestressed concrete, cast-in-place concrete, and steel. | ■ | | ■ | | | | | | | | | | | | ■ | | |
| Calleguas Water District – Springville Reservoir. Structural design of a cast-in-place access vault for the 48-inch outlet pipeline connection. Special attention was necessary to minimize the possibility of undermining the reservoir embankment and access roadway. | ■ | | ■ | | | | | ■ | | | | | | | ■ | | |
| Calleguas Water District – Pipeline Fault Crossing. Structural evaluation of alternatives for crossing an active fault with a large diameter RCP pipeline. Solutions required assessment of the design level earthquake and anticipated lateral movement at the fault crossing. Developed alternatives for flexibility to accommodate the anticipated movement. | | | | | | | | ■ | | | | | | | ■ | | |
| Penske Motorsports – 13' Dia. Pipeline Protection. Structural design of a concrete protection structure for an existing 13-foot-diameter RCP pipeline owned by the Metropolitan Water District. Protection of the pipeline was required by MWD for construction of the new California Speedway. The concrete structures were placed under the 30-foot-tall embankments for the proposed racetrack. An additional protection structure was required under a rail line proposed as part of the same development. | | | | | | | | ■ | ■ | ■ | | | | ■ | | | |
| City of Irvine – Santiago Canyon. Structural design of a groundwater remediation facility in Orange County, CA. Project included concrete foundations and seismic anchorage of various pieces of equipment. | | | | | | ■ | | ■ | ■ | | | | | ■ | | | |
| Hong Kong Airport. Structural protection for multiple well monitoring points within the active runways of the Hong Kong airport. Design criteria included requirements for loading caused by planes and strict limitations on closure times for construction. | | | | | | ■ | | ■ | ■ | | | | | ■ | | | |

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| Simi Valley WWTP – CoGen Facility. Structural modifications to an existing operations facility; required for the addition of a co-generation facility at the wastewater treatment plant. | | ■ | | | | | | | | | | | | | | | |
| City of San Buenaventura, WRF Upgrades Project – \$11 million construction. Seismic evaluation of existing structures within this 14-mgd WWTP. Due to the close proximity of the facility to an active fault, the design level earthquake for the project was approximately 50 percent higher than typical UBC criteria. Modifications were designed to upgrade the existing structures to withstand the design level earthquake. Provided engineering services during construction. | | ■ | | ■ | | ■ | | | | | | | | ■ | ■ | | |
| City of Burlingame – Donnelly Tanks. Assessment and coating design for two 50,000 gallon welded steel storage tanks. | | | ■ | | | | | | | | | | | | | | |
| City of Santa Clara – Pipe Bridge. Design for a bridge carrying recycled water pipe. | | | | | | | | ■ | | | | | | | | | |
| City of Livermore – Pump Station Technical Review. Technical review of the structural design portion of a proposed concrete masonry pump station. | | | | ■ | | | | | | | | | | | | | |
| City of Santa Cruz – Graham Hill Water Treatment Plant. Structural design of redwood baffling system designed to control the flow of water through the flocculation basins. The new horizontal baffles were designed to be removable and supports were sited to avoid conflict with the existing horizontal flocculator paddle wheels. | ■ | | | | | | | | | | | | | | | | |
| City of Santa Fe, NM – Transfer Station. Structural design of 500 ton/day solid waste transfer station. The concrete tilt-up structure included 200 foot, free span frames and a buried concrete tunnel system with hoppers loading the hauling trucks. | | | | | | | | | ■ | | | | | | | | |
| City of Ontario, CA – Transfer Station. Structural design of 2,000 ton/day solid waste transfer station. The concrete tilt-up structure included 240-foot free span frames and a buried concrete tunnel system with hoppers loading the hauling trucks. | | | | | | | | | ■ | | | | | | | | |
| City of Folsom – Folsom WTP Expansion. Structural design of multiple phases of expansion for the existing water treatment plant. Expansions include addition of sedimentation basins, chemical storage facilities, and filtration basins. | ■ | | | | | ■ | | | | | | | | | ■ | | |
| Madras, India. Provided structural technical review of a 250 km water transmission pipeline, associated pump stations, and treatment plant to provide potable water to Madras. | ■ | | | | | | | ■ | | | | | | | | | |
| Port Hueneme – Sewage Lift Station. Structural design of a concrete sewage lift station. The project was sited in sandy material with high groundwater. Caisson construction was used to eliminate the need for dewatering the site, which was near the Pacific Ocean. | | ■ | | | | | | | | | | | | | | | |

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| | Water Treatment | Wastewater Treatment | Reservoir/Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction | Seismic Upgrades/Eval | Landslide Mitigation | Power Generation |
| City of Tustin – Tustin Desalter. Structural design of a concrete masonry building for housing a desalting facility. The project included chemical storage, wet-well, and a mechanical room for the RO equipment. | | | | ■ | | ■ | ■ | | | | | | | | | | |
| Chino Basin Municipal Water District – Carbon Canyon WWTP. Structural design of upgrade to an existing WWTP. Included addition of a below grade, cast-in-place concrete storage reservoir and a 24-inch-diameter pipeline crossing at an existing highway bridge. | | ■ | ■ | ■ | | | | | | | | | | | | | |
| City of Glendale, CA – Groundwater Remediation. Structural design of facilities associated with groundwater remediation. Elements included seismic anchorage, operations facilities, chemical storage, groundwater well vaults, and a 240-foot, clear span pipe crossing over an existing water channel. Required mat foundations to accommodate potential settlement from the existing unconsolidated soils. | | | | ■ | | ■ | ■ | | ■ | ■ | | | | ■ | ■ | | |
| Union Pacific RR – Chemical Containment Area. Structural design of a chemical storage and containment area for a train refueling station in Yermo, CA. | | | | | | ■ | | | ■ | ■ | | | | ■ | | | |
| City of Vallejo – Lake Chabot Spillway. Structural design of the new concrete spillway for Lake Chabot. Elements of the spillway included a required critical water elevation to maintain proper function of the water treatment facilities at Marine World Africa USA. | | | ■ | | ■ | | | | | | | | | ■ | | | |
| Marin Municipal Water District – WTP Upgrades. Structural design associated with the addition of sodium hypochlorite to three existing WTPs. The project included concrete masonry buildings to house the stored chemicals and associated pumping equipment. | ■ | | | | | ■ | | | | | | | | ■ | ■ | | |
| MWD – Ozone Addition. Provided technical guidance with the structural aspects of the predesign phase of adding ozone to two of the District's WTPs. Combined capacity of the two plants was over 1,000 mgd. | ■ | | | | | | | | | | | | | | | | |
| Delta Diablo – Plant Operations Center. Structural design of a 40,000-sq. ft. plant operations center for the District's WWTP. Project included a two-story, 28,000-sq. ft., steel frame office building and a 12,000-sq. ft., tilt-up concrete shop and warehouse structure. | | ■ | | | | | | | | | | ■ | | | | | |
| Santa Clara Valley Water District – Water Quality Regulation Compliance Project. Preliminary design for modifications to three WTPs. Specific project elements included recommendations for seismic upgrades to the WTPs and mitigations for limiting potential damage caused by a potentially active, 300-foot-deep landslide under the Penitencia WTP. Additional upgrade elements included the addition of ozone facilities and additional chemical storage facilities. | ■ | | ■ | | | ■ | | | | | | | | | | | |

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| | Water Treatment | Wastewater Treatment | Reservoir/Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction | Seismic Upgrades/Eval | Landslide Mitigation | Power Generation |
| Santa Clara Valley Water District – Toxic Gas Ordinance Project. Modification to three WTPs for the addition of sodium hypochlorite. | ■ | | | | | ■ | | | | | | | | | | | |
| Alameda County Water District – WTP No. 2 (30 mgd) – \$30 million construction. Structural design of a WTP located in the seismically active south San Francisco Bay Area. The facilities include an operations building, separately housed chemical storage, and ozonation system. Unique aspects of this project included the process block concept (common wall construction) in which all of the basins were incorporated into one structure, and the special architectural requirements necessary for the residentially sensitive area in which it was constructed. Provided engineering services during construction. | ■ | | ■ | | | ■ | | | | | | ■ | | ■ | ■ | | |
| City of San Francisco – San Andreas WTP Expansion Phase 2. Services during construction for the expansion and modification of the existing WTP. Expansion included addition of ozone treatment, capacity increase from 120 to 180 mgd, and an 8-MG prestressed and vertically post-tensioned concrete water storage reservoir. A unique aspect of this project was the 0.7 g lateral force requirement due to its close proximity to the San Andreas Fault. | ■ | | ■ | | | | | | | | | | | ■ | | | |
| City of Pittsburg – Water Storage Reservoir. Pittsburg WTP reservoir repair involving improvements to a 6-MG reservoir, with a wooden roof and concrete floor and sides, originally constructed in 1953. The hopper-bottom reservoir was leaking about 4,000 gal/min through cracks in the floor before the repair. | ■ | | ■ | | | | | | | | | | | | | | |
| Contra Costa Water District – Reservoirs and Pump Station. Structural design of various water storage reservoirs and their associated pump stations for CCWD and developers within the District's management area. Projects include: -- Northgate Reservoir, 0.61 MG, below ground, cast-in-place concrete; -- Rancho Paraiso Reservoir, 0.4 MG, below ground, cast-in-place concrete; -- Oakhurst Reservoir, 0.75 MG, below ground, cast-in-place concrete; -- Irish Canyon Reservoir, 0.83 MG, below ground, cast-in-place concrete; -- Keller Ranch Reservoir, 0.48 MG, below ground, cast-in-place concrete; -- Power Line Reservoir, 0.4 MG, below ground, cast-in-place concrete; -- Eagle Peak Pump Station, concrete block with wood roof; -- Northgate Pump Station, concrete block with wood roof; -- Clubhouse Pump Station, concrete block with wood roof; -- Irish Canyon Pump Station, partially buried concrete; structure. | ■ | | ■ | ■ | | | | | | | | | | ■ | | | |

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| City of Pleasanton – Kottinger Ranch Reservoir. Structural design of a 1.0-MG, welded steel, above ground water storage reservoir with a concrete masonry pump station. | | | ■ | ■ | | | | | | | | | | | | | |
| City of Pleasanton – Canyon Meadow Pump Station. Structural design of a concrete masonry building for this 6-mgd pump station. | | | | ■ | | | | | | | | | | | | | |
| City of Vallejo – Shadow Ridge Pump Station. Structural design of a concrete masonry structure for a 60-hp pump station. | | | | ■ | | | | | | | | | | | | | |
| City of Rialto – Rialto Reservoir. Structural design of a 6.0-MG, partially buried, vertical post-tensioned, prestressed concrete water storage reservoir. | | | ■ | | | | | | | | | | | ■ | | | |
| City of Poway – Poway Pump Station. Structural review of the design for a concrete masonry pump station. | | | | ■ | | | | | | | | | | | | | |
| Contra Costa County Sanitary District – Outfall Repair. Outfall repair as part of a 7.5-mile-long outfall rehabilitation project. | | | | | ■ | | | | | | | | | | | | |
| City of Vallejo – Clearpointe Reservoir. Engineering services during construction of an aboveground, 1.6-MG, shotcrete, prestressed water storage reservoir. | | | ■ | | | | | | | | | | | ■ | | | |
| City of Pittsburg – WTP Expansion. Engineering services during construction for the expansion of a WTP from 8 to 16 mgd. | ■ | | ■ | | | ■ | | | | | | | | ■ | | | |
| City of Santa Cruz – Neary Lagoon Pump Station. Engineering services provided during the construction of an outfall structure, a new 150-mgd, 750-hp pump station with a full stand-by power facility, and a seawall. The majority of the project was next to the municipal wharf in Santa Cruz. | | | | ■ | ■ | | | | | | | | | ■ | | | |
| East Bay MUD – Modification to Bridge Support. Structural design necessary for the modification of one of the Oakland-San Francisco Bay Bridge approach support structures. Modifications were required to relocate the Adeline Interceptor. This project required coordination with Cal-Trans to obtain approval for passing a 60-inch-diameter pipe under one of the support structures, which was built in the late 1930s. | | | | | | | | ■ | | | | | ■ | | | | |
| Texaco Oil – Coal Gasification Plant. Structural design of a sludge handling facility consisting of a pre-engineered metal building enclosing two truck unloading bays and a control center over a concrete basement that houses the sludge processing equipment. Also included are two sludge storage silos over 100 feet tall. | | | | | | | | | ■ | ■ | | | | | | | |
| City of Oxnard – Sludge Drying Facility. Structural design of a 3 acre, pre-engineered, metal building with a translucent roof to facilitate sludge drying. | | ■ | | | | | | | | | | | | | | | |

Statement of Qualifications - Engineering Services

| TJCAA Structural Experience Bank | | | | | | | | | | | | | | | | | |
|--|-----------------|----------------------|-------------------|--------------|-------------|------------------|-------------------|--------------------|-------------|------------|------------|--------------------------|----------------|--------------------------|-----------------------|----------------------|------------------|
| Project Description | Service Areas | | | | | | | | | | | | | | | | |
| | Water Treatment | Wastewater Treatment | Reservoir/Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction | Seismic Upgrades/Eval | Landslide Mitigation | Power Generation |
| CP Organics – Seismic Evaluation of Chemical Storage. Seismic evaluation for ten chemical storage tanks with secondary confinement for an industrial client in the City of Newark. | | | | | | ■ | | | ■ | ■ | | | | | | | |
| Chinese Petroleum Corporation – Oil Storage EIR. Seismic evaluation portion of the environmental impact assessment for construction of ten welded steel reservoirs to store 211 MG of petroleum products in Taiwan. | | | ■ | | | | | | | | | | | | ■ | | |
| City of Fontana – WWTP Preliminary Design. Predesign for the Fontana WWRF, a proposed 30-mgd WWTP in Southern CA. Included measures to mitigate potential impacts of a contaminated site. | | ■ | | ■ | | | | | | | | | | | | | |
| Seattle Metro – Pipe Crossing. Structural design of a two-span, 300-foot pipe bridge to cross the Cascade River in Renton, WA. The design incorporated two 36-inch-diameter steel casings that acted as a composite section to cross the river. A 24-inch sewer line and 16-inch water line were placed inside the casing pipes. | | | | | | | | ■ | | | | | | | | | |
| St Paul, MN – Flood Wall. Provided construction documents for a sheet pile flood wall along the Mississippi River in MN. The flood wall was necessary to implement a soil remediation project. | | | | | | | | | | ■ | | | | | | | |
| City of Benicia – Reservoir Upgrade. Seismic evaluation and repair of an existing 2.3-MG water reservoir. The reservoir is an above-grade steel tank originally designed and built in 1970. Replacement of the ringwall foundation was required as part of the seismic mitigation measures. | ■ | | ■ | | | | | | | | | | | | ■ | | |
| City of San Bernardino – Devil Canyon WTP. Preliminary design of a 20-mgd WTP on a site divided by the San Andreas Fault. Preliminary information provided anticipated ground accelerations in excess of 1.0 g. The structural portion of the work included estimating preliminary sizes of this 20-mgd, modular design water treatment facility. | ■ | | ■ | | | ■ | | | | | | | | | ■ | | |
| San Jose Water Co. – Microfiltration Upgrade. Structural design required to retrofit an existing conventional water treatment facility sited on a landslide in a 40 x 40-ft. metal building. The project replaced the existing equipment with membrane treatment equipment. The design included means of retaining the existing building in order to minimize the impact on the neighborhood and special foundations to mitigate future movement by the active slide. | ■ | | | | | ■ | | | | | | | | | ■ | ■ | |
| County of Maui – WTP Upgrade. Structural design of the operations building for a WTP. | ■ | | | | | ■ | | | | | | ■ | | | | | |
| City of Corona, Water Storage Reservoir. Structural engineering for the design of a 4.7-MG prestressed concrete reservoir. | | | ■ | | | | | | | | | | | | | | |

Statement of Qualifications - Engineering Services

| TJCAA Structural Experience Bank | | | | | | | | | | | | | | | | | |
|---|-----------------|----------------------|-------------------|--------------|-------------|------------------|-------------------|--------------------|-------------|------------|------------|--------------------------|----------------|--------------------------|-----------------------|----------------------|------------------|
| Project Description | Service Areas | | | | | | | | | | | | | | | | |
| | Water Treatment | Wastewater Treatment | Reservoir/Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction | Seismic Upgrades/Eval | Landslide Mitigation | Power Generation |
| Honvest Towers, HI – Architectural Façade. Design of the structural attachments for the architectural metal panel facade of a 17-story office building. | | | | | | | | | | | ■ | ■ | | | | | |
| Hyatt Regency Resorts – Seismic Damage Review. Structural consultation regarding the cause of damage to the 1.5-year-old Hyatt Regency in Burlingame, CA. Evaluations showed the damage was caused by the 1989 Loma Prieta earthquake. | | | | | | | | | | | ■ | | | | ■ | | |
| City of Burlingame – WWTP Expansion. Structural design of pile-supported structures, including primary clarifiers, new headworks, and a two-story office/laboratory building. | | ■ | | | | | | | | | | ■ | | | | | |
| Oakley Water District – WTP Upgrades. Structural design of a concrete block pump station over the wet well of this 16-mgd WTP. Project also included a 2.5-MG, welded steel reservoir and minor modifications to the operations building and chlorine storage area. | ■ | | ■ | ■ | | ■ | | | | | | | | ■ | | | |
| City of Walnut Creek – Civic Park Bridge. Developed structural alternatives to upgrading an existing 100-foot bridge to handle an HS20 loading. The alternatives included upgrading the existing turn-of-the-century bridge or replacing it with a new cable-stayed suspension bridge. | | | | | | | | | | | | | ■ | | | | |
| City of Gresham, OR – WWTP Expansion. Structural design for elements of a 45-mgd WWTP. Included headworks facility, primary and secondary clarifiers, aeration basin, solids handling facility, two digesters, and a digester control building. | | ■ | | | | | | | | | | | | | | | |
| City of Vancouver, WA – WWTP Upgrade. Minor structural improvements to an existing WWTP. | | ■ | | | | | | | | | | | | | | | |
| Seattle Metro – Westpoint WWTP. Assistance during the construction of prestressed digesters and a digester control facility. | | ■ | | | | | ■ | | | | | | | | | | |
| Hyperion Wastewater Treatment Plant. Structural design of a 12,000-sq. ft., three-story control building; a 15,000-sq. ft. compressor building with a travelling bridge crane; an electrical control building, and foundations for a chemical tank farm. | | ■ | | | | ■ | | | | | | ■ | | | | | |
| Dublin-San Ramon Services District, CA – Seismic Evaluation. Seismic evaluation and design of upgrades for four steel reservoirs. The reservoir sizes ranged from 0.5 MG to 4 MG. | | | ■ | | | | | | | | | | | | ■ | | |
| Raytheon Corporation – Seismic Evaluation. Seismic evaluation of Raytheon’s manufacturing facility in Mountain View, CA. This one-story, tilt-up building required a seismic evaluation because of the existence of a tremendous amount of air handling/cleaning equipment that was installed on the roof during the life of the structure. Due to the lack of structural plans for the facility, extensive field reconnaissance was necessary before analysis of the structural system. A complete gravity load evaluation of the roof was included within this seismic report. | | | | | | | | | ■ | ■ | | | | | ■ | | |

Statement of Qualifications - Engineering Services

| TJCAA Structural Experience Bank | | | | | | | | | | | | | | | | | |
|--|-----------------|----------------------|-------------------|--------------|-------------|------------------|-------------------|--------------------|-------------|------------|------------|--------------------------|----------------|--------------------------|-----------------------|----------------------|------------------|
| Project Description | Service Areas | | | | | | | | | | | | | | | | |
| | Water Treatment | Wastewater Treatment | Reservoir/Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction | Seismic Upgrades/Eval | Landslide Mitigation | Power Generation |
| Target Department Stores – Seismic upgrade. This 70,000–sq. ft., tilt-up building required a seismic evaluation due to the modifications of the exterior shear walls during Target's takeover of Gemco department stores. Included design of two structural steel braced frames, which were intended to take the place of 160 feet of concrete shear wall slated for demolition during the building modification phase of the project. | | | | | | | | | | | ■ | | | | ■ | | |
| City of Walnut Creek – Seismic Upgrade of Restaurant. Seismic upgrade to an over 100-year-old building that was originally one of the main fire stations for Walnut Creek. Construction materials within the system ranged from reinforced concrete block to unreinforced terra cotta brick. | | | | | | | | | | | ■ | | | | ■ | | |
| Target Department Stores – Conversion from Gemco to Target. Structural design necessary for the conversion of various Gemco stores to Target department stores. Included seismic upgrades, modifications to roof structures and relocation of vertical load carrying elements. | | | | | | | | | | | ■ | | | | ■ | | |
| Portola Valley Town Center. Design of five new one-story, wood-framed buildings with wood shear walls and concrete spread footings: a Town Hall, Community Hall, Library, Maintenance Building, and Restroom Building. | | | | | | | | | | | | ■ | | | | | |
| Los Medanos Community Hospital – Medical Office Building. Structural design of a two-story, steel framed, 30,000–sq. ft. medical office building in Pittsburg, CA. | | | | | | | | | | | | ■ | | | | | |
| City of Belmont – Recreation Facility. Structural design of a two-story, concrete block recreation facility and two concession/restroom buildings for new softball fields. | | | | | | | | | | | ■ | | | | | | |
| Bond Oil – Platform Harriet. Structural design for elements of an 8-leg platform in 75 feet of water. Included the design of mud mats, jacket lifting pad eyes, wellhead fender, appurtenance supports, conductors, and sump deck. | | | | | | | | | ■ | ■ | | | | | | | |
| Arco – Cherry Point Calciner. Structural design for various elements of this expansion project. The project included an 80-foot-diameter reinforced concrete structure to support a rotary hearth furnace and a 12,000–sq. ft., 100-foot-tall, steel building to house the furnace. | | | | | | | | | ■ | ■ | | | | | | | |
| Los Positas Overcrossing. Inspection services for the construction of a two-lane bridge over Interstate 680 in Pleasanton, CA | | | | | | | | | | | | | ■ | ■ | | | |
| Sunol Grade Vehicle Inspection Station. Inspection services for the construction of an inspection station in Sunol, CA. | | | | | | | | | | | | | ■ | ■ | | | |

Statement of Qualifications - Engineering Services

| TJCAA Structural Experience Bank | | | | | | | | | | | | | | | | | |
|--|-----------------|----------------------|-------------------|--------------|-------------|------------------|-------------------|--------------------|-------------|------------|------------|--------------------------|----------------|--------------------------|-----------------------|----------------------|------------------|
| Project Description | Service Areas | | | | | | | | | | | | | | | | |
| | Water Treatment | Wastewater Treatment | Reservoir/Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction | Seismic Upgrades/Eval | Landslide Mitigation | Power Generation |
| San Francisco Friends School – Seismic Upgrade Design. Seismic upgrade and retrofit of this existing 85,000-sq.-ft., three-story timber building with new steel concentrically braced frames, strengthened diaphragms, new concrete mat foundation, and new steel truss roof structure over the gymnasium and theatre. | | | | | | | | | | | | ■ | | | ■ | | |
| Berkeley Community College – Building. Structural design of a new six-story, 165,000-sq. ft. building. The structure is steel framed with concrete filled metal deck at the floors, concrete shear walls, and a drilled concrete pier foundation. A 60 x 80 ft. elliptical skylight supported on steel tension rod trusses provides cover for the central atrium. | | | | | | | | | | | | ■ | | | | | |
| Dominican University – Science and Technology Center. Structural design of a new 35,000-sq.-ft., two-story building with an L-shaped configuration. The structure is steel framed with concrete filled metal deck and steel concentrically-braced frames. | | | | | | | | | | | | ■ | | | | | |
| California Maritime Academy – Simulation Center. Structural design of a new two-story, steel-framed building with steel, concentrically-braced frames and drilled concrete piers. | | | | | | | | | | | | ■ | | | | | |
| Olympic City Club – Structural Analysis. Structural analysis for the retrofit and seismic upgrade of this existing ten-story, concrete building in San Francisco, CA | | | | | | | | | | | | | | | ■ | | |
| Palo Alto Regional Water Quality Control Plant. Design of chemical containment areas for sodium hypochlorite and sodium bisulfite tanks. | | | | | | | ■ | | | | | | | | | | |
| Yuba City – Solids Thickening Improvements. Provided structural design assistance for installation of new waste activated sludge thickeners on the second floor of an existing dewatering building. | | ■ | | | | | | | | | | | | | | | |
| Yountville Veterans Home – Title 22 Upgrades and Recycled Water Expansion Project. Design of a partially buried 24 x 50 ft. chlorine contact structure of cast-in-place concrete with redwood baffle walls. | | ■ | | | | | | | | | | | | | | | |
| City of Petaluma – C Street Pump Station. Structural analysis of pump station design. | | | ■ | | | | | | | | | | | | | | |
| Monterey Water and Sanitation District – Analysis of Reservoir Roof Failure. Analysis of a prestressed concrete tank and development of recommendations. | | | ■ | | | | | | | | | | | | | | |
| Monte Vista Water District – Well 32 and 33. Provided engineering for the design of a concrete masonry block pump station and a concrete slab on grade. The design for the building was required to meet strict aesthetic requirements for a residential area. | | | | ■ | | | ■ | | | | | | | | | | |
| Sausalito Marin City Sanitary District – Wet Weather Storage Facility. Feasibility-level design for a 4.5-MG wet weather storage tank to be sited within Young’s Bay Mud in the Marina District in Sausalito, CA. | | | ■ | | ■ | | | | | | | | | | | | |

Statement of Qualifications - Engineering Services

| TJCAA Structural Experience Bank | | | | | | | | | | | | | | | | | |
|---|-----------------|----------------------|---------------------|--------------|-------------|------------------|-------------------|--------------------|-------------|------------|------------|--------------------------|----------------|--------------------------|-------------------------|----------------------|------------------|
| Project Description | Service Areas | | | | | | | | | | | | | | | | |
| | Water Treatment | Wastewater Treatment | Reservoir / Storage | Pump Station | Storm Water | Chemical Storage | Groundwater Wells | Water Transmission | Solid Waste | Industrial | Commercial | Buildings and Structures | Transportation | Svcs During Construction | Seismic Upgrades / Eval | Landslide Mitigation | Power Generation |
| Monterey Water and Sanitation District – Analysis of Reservoir Roof Failure. Analysis of a prestressed concrete tank and development of recommendations. | | | ■ | | | | | | | | | | | | | | |

 TJCAA Experience Bank - ICE

| TJCAA Instrumentation, Control, and Electrical Experience Bank | | | | | | | | |
|---|---------------------------------------|-----------------------------------|---|--------------------------------|---|--------------------------|--------------------------------------|---|
| Project Description | Service Areas | | | | | | | |
| | Facility Electrical & Industrial Apps | Medium & Low-Voltage Distribution | System Modeling, Analysis, & Utility Coordination | Control System Master Planning | Water & Wastewater Instrumentation & Control System Designs | Remote Telemetry & SCADA | Standby & Emergency Power Facilities | Project Management & Alternative Delivery Methods |
| Alameda County Water District – Treatment Plant 2 PLC Upgrade Project. Services for an upgrade of PLCs that control all processes in a 21-mgd water treatment plant. The project included programming, bench testing, equipment commissioning, operational readiness testing, and functional acceptance testing. | | | | ■ | ■ | ■ | | |
| Santa Clara Valley Water District – Rinconada WTP Reliability Improvement Project. Electrical and I&C design for a \$180 million plant upgrade, including 12-kV distribution, arc flash protection strategies, a new 3-MW diesel standby generator, and new distributed motor control centers with smart motor starters and variable frequency drive equipment. The I&C design incorporated a new distributed programmable logic controller architecture, coordinated with construction phasing and new processes. | ■ | ■ | | | ■ | | ■ | |
| Union Sanitary District – SCADA System Master Plan and Standards Development Project. Technical development of SCADA Master Planning document including reconnaissance, staff interviews, project selection, budget impact planning, and development of standards. | | | | ■ | | ■ | | |
| City of Santa Cruz – Graham Hill WTP Electrical Improvements Project. Project management and electrical design for renovation, expansion and improvements to the electrical distribution system at the City’s main Graham Hill WTP. | ■ | ■ | ■ | | ■ | ■ | ■ | ■ |
| Napa Sanitation District – Recycled Water Pipeline and Pump Station Design. Design for service and power distribution equipment, pump station motors and motor controls, and electrical building auxiliary electrical and lighting needs. | ■ | ■ | | | ■ | ■ | | |
| Redwood City Glenwood Pump Station Improvements Project. Performed design of electrical upgrades for an existing water distribution pump station. | ■ | | | | ■ | | ■ | |
| CCWD – SCADA Telemetry Improvements Project. Prepared comprehensive predesign analyses and report for development of upgrade scheme for SCADA and telemetry system. | | | | ■ | | ■ | ■ | ■ |

Statement of Qualifications - Engineering Services

| TJCAA Instrumentation, Control, and Electrical Experience Bank | | | | | | | | |
|--|---------------------------------------|-----------------------------------|---|--------------------------------|---|--------------------------|--------------------------------------|---|
| Project Description | Service Areas | | | | | | | |
| | Facility Electrical & Industrial Apps | Medium & Low-Voltage Distribution | System Modeling, Analysis, & Utility Coordination | Control System Master Planning | Water & Wastewater Instrumentation & Control System Designs | Remote Telemetry & SCADA | Standby & Emergency Power Facilities | Project Management & Alternative Delivery Methods |
| Central Contra Costa Sanitary District – Arc Flash Labeling Implementation Analysis and Review. Performed review and analysis of arc flash hazards at the District’s Wastewater Treatment Plant. | ■ | ■ | ■ | | | | | ■ |
| Wochholz Wastewater Treatment Plant – Improved Effluent Salinity Project. Designed electrical and structural elements for the addition of a new reverse osmosis (RO) Train and ancillary equipment including chemical systems as part of the process to reduce salinity levels in the effluent water | ■ | ■ | ■ | | ■ | | | |
| MCWD – SCADA Consulting Services. Review of existing system deficiencies; development of new RTU and radio standard hardware specifications; development of standard programming, submittal, and well control descriptions; and bid documents. | | | | ■ | ■ | ■ | | ■ |
| CVSD – Pump Station 5 Control Rehabilitation. Performed field investigations and emergency design for replacement of motor controls at a small sewage pump station. | ■ | ■ | | | ■ | | | ■ |
| Cucamonga Valley Water District – 1630 East Recycled Water Pump Station. Pump station with sizes ranging from 100 hp to 400 hp for delivering reclaimed water to the Inland Empire Utilities Agency recharge basin. Includes design of new pump station and integration of controls into CVWD and IEUA’s existing SCADA systems. | ■ | ■ | ■ | | ■ | ■ | | ■ |
| Santa Clara Valley Water District – Pacheco Pump Station Adjustable Speed Drive Replacement. Designed replacement of twelve existing adjustable speed drives with newer technology drives, to operate existing 2,000-hp medium-voltage wound-rotor motors. Project work also included a SCADA system upgrade. | ■ | ■ | | | ■ | ■ | | |
| City of Malibu – Malibu Legacy Park Project. Electrical design services for a multi-benefit facility providing stormwater management, water quality improvement, riparian habitat restoration, education, and open space for recreation. Electrical distribution system including a 480-V distribution panel with mini load centers throughout the park. | ■ | ■ | ■ | | | | | |
| Dublin San Ramon Services District – Zone 2 and 3 Pump Station Renovations. Design and construction services for electrical and mechanical renovations at four drinking water distribution pump stations. Included field inspections, conceptual approaches, use of reduced voltage starters for hydraulic surge control, replacement of all electrical equipment, and interfacing to existing SCADA. | ■ | ■ | ■ | | ■ | ■ | | ■ |

Statement of Qualifications - Engineering Services

| TJCAA Instrumentation, Control, and Electrical Experience Bank | | | | | | | | |
|--|---------------------------------------|-----------------------------------|---|--------------------------------|---|--------------------------|--------------------------------------|---|
| Project Description | Service Areas | | | | | | | |
| | Facility Electrical & Industrial Apps | Medium & Low-Voltage Distribution | System Modeling, Analysis, & Utility Coordination | Control System Master Planning | Water & Wastewater Instrumentation & Control System Designs | Remote Telemetry & SCADA | Standby & Emergency Power Facilities | Project Management & Alternative Delivery Methods |
| City of Calistoga – Kimball WTP Improvements. Developed detailed electrical design documents for pressure filter-based treatment facility for the City’s main water treatment plant. Work included expansion of existing motor control systems, integration to the existing control system, and addition of multiple water quality monitoring instrumentation onto a centralized water quality monitoring panel. | ■ | ■ | | | ■ | | | |
| Inland Empire Utilities Agency – Phase 2 Chino Basin Facilities Improvement Project. Predesign and design related to the improvement at several groundwater replenishment basins and water supply turnouts, conforming to MWD technical requirements and standards. | ■ | ■ | ■ | | | ■ | | |
| Metropolitan Water District – Diemer Water Treatment Plant Electrical Power and Reliability Improvements, Preliminary Design. Prepared recommendations for system improvements and upgrades to the original, 40 year old electrical system elements. | ■ | ■ | ■ | | | | ■ | |
| Cucamonga Valley Water District – Wells Number 43 and 46. Provided electrical and instrumentation design for two well pump stations. | ■ | ■ | ■ | | ■ | ■ | ■ | ■ |
| Sapphire Energy – Biofuel Plant Review. Value engineering review of instrumentation, control, and electrical elements for a biofuel generation plant. | ■ | | | | | | | |
| Inland Empire Utilities Agency – 1630 East Recycled Water Pipeline Segment A Project. Design services for power, instrumentation, and SCADA work at the San Sevaine and Victoria Basin Turnouts. | | ■ | ■ | | | ■ | | |
| Orange County Water District – Groundwater Replenishment System Initial Expansion. Engineering Support for Control Systems | ■ | | | | | | | |
| Dublin San Ramon Services District – Cogeneration Electrical Improvements Project. Design services for a WWTP expansion including the electrical distribution system and cogeneration facility. Included adding a third cogeneration unit, for a total internal generation capacity of over 2 MW. The project also included relocation of the 21-kV main service. | ■ | ■ | ■ | | | | ■ | ■ |
| Cucamonga Valley Water District – Booster Stations 1C and 2C. Design of and construction services for two large booster pump stations. Integration of existing facilities, including two large (600 and 700 hp) well pumps and coordination with Southern California Edison for new service at 1C and modifications to existing service at 2C. | ■ | ■ | | | ■ | ■ | ■ | |
| Contra Costa Water District – Bisso O&M/Administration Buildings Emergency Generator Project. Design of a standby generator retrofit. | ■ | ■ | | | | | ■ | ■ |

Statement of Qualifications - Engineering Services

| TJCAA Instrumentation, Control, and Electrical Experience Bank | | | | | | | | |
|--|---------------------------------------|-----------------------------------|---|--------------------------------|---|--------------------------|--------------------------------------|---|
| Project Description | Service Areas | | | | | | | |
| | Facility Electrical & Industrial Apps | Medium & Low-Voltage Distribution | System Modeling, Analysis, & Utility Coordination | Control System Master Planning | Water & Wastewater Instrumentation & Control System Designs | Remote Telemetry & SCADA | Standby & Emergency Power Facilities | Project Management & Alternative Delivery Methods |
| Orange County Water District – Groundwater Replenishment System Design. Task leader for Instrumentation & Control (I&C) and Electrical disciplines for ultimate 130-mgd water reclamation project. | ■ | ■ | ■ | ■ | ■ | ■ | | ■ |
| City of Mountain View – Crittenden (stormwater) Pump Station, Sewage Pump Station, and Whisman (drinking water) Pump Station. Electrical and instrumentation design. | ■ | ■ | ■ | | ■ | ■ | ■ | |
| City of Folsom – Folsom WTP Expansion. Electrical design of multiple phases of expansion for the existing WTP. | ■ | ■ | | ■ | ■ | ■ | ■ | ■ |
| United Water of Idaho – Columbia WTP. Design/build electrical and I&C design of ultrafiltration membrane treatment process. | ■ | ■ | ■ | | ■ | ■ | | ■ |
| Contra Costa Water District – Treated Water Generators and Seismic Valves Project. Designed addition of engine generators and seismic shutoff valves at treated water pump stations and reservoirs. | ■ | ■ | | | ■ | ■ | ■ | ■ |
| Alameda County Water District – Brackish Water Treatment Facility. Designed electrical systems for a major new reverse osmosis desalination project. | ■ | ■ | ■ | | ■ | | ■ | |
| City of Santa Fe, NM – Transfer Station. Electrical facility design for new solid waste transfer station. | ■ | ■ | ■ | | | | | |
| Metropolitan Water District – Skinner Oxidation Retrofit Program. Discipline task leader for ICE design elements on the extensive retrofit to MWD’s 630-mgd Skinner Water Treatment Plant (WTP). | ■ | ■ | ■ | | ■ | | ■ | |
| City of Salem, Oregon – River Road Wet Weather Treatment Facility. Electrical and I&C design for new high rate clarification and ultraviolet disinfection processes. | ■ | ■ | ■ | | ■ | ■ | ■ | ■ |
| Contra Costa Water District – Bollman WTP Surface Water Quality (SWQ) Project. Plant upgrade to the 75-mgd Ralph D. Bollman surface water treatment plant. | ■ | ■ | ■ | | ■ | ■ | ■ | |
| Contra Costa Water District – Bollman Emergency Generator Design/Build Project and 5-kV Master Plan. Design/build contract to install two new 2-MW, trailer-mounted engine-generator sets. | ■ | ■ | ■ | | | ■ | ■ | ■ |
| Contra Costa Water District – 5-kV Electrical System Upgrade Phases 1 and 2. Bollman plant 5-kV distribution renovation project. | ■ | ■ | ■ | | | ■ | ■ | ■ |
| Seattle Public Utilities, Tolt Water Treatment Plant. Design/build of a grassroots 120-mgd treatment plant. | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |

Statement of Qualifications - Engineering Services

| TJCAA Instrumentation, Control, and Electrical Experience Bank | | | | | | | | |
|--|---------------------------------------|-----------------------------------|---|--------------------------------|---|--------------------------|--------------------------------------|---|
| Project Description | Service Areas | | | | | | | |
| | Facility Electrical & Industrial Apps | Medium & Low-Voltage Distribution | System Modeling, Analysis, & Utility Coordination | Control System Master Planning | Water & Wastewater Instrumentation & Control System Designs | Remote Telemetry & SCADA | Standby & Emergency Power Facilities | Project Management & Alternative Delivery Methods |
| Sultanate of Oman – Salalah Wastewater Treatment Plant (WWTP). Lead electrical design for a new WWTP. | ■ | ■ | ■ | | | | ■ | |
| City of San Buenaventura WWRF – Control System Master Plan. Control system master plan consistent with the plant’s existing system and long-term goals. | | | | ■ | ■ | ■ | | |
| National Park Service – Yosemite National Park Electrical Distribution Upgrade. Rehabilitation of the electrical distribution system for Yosemite National Park. | ■ | ■ | ■ | | | | ■ | ■ |
| East Bay Municipal Utilities District – Walnut Creek WTP Upgrades. Detailed electrical design services for major upgrades and capacity expansion. | ■ | ■ | ■ | | | | ■ | |
| City San Buenaventura – Wastewater Reclamation Facility (WWRF) Upgrades Project. Upgrades at the reclamation facility. | ■ | ■ | ■ | | ■ | ■ | ■ | |
| Department of Defense – March Air Force Base Electrical Distribution Upgrades. Rehabilitation and reconfiguration of the Base’s overhead 12-kV electrical system under a design/build structure. | ■ | ■ | | | | | | ■ |
| City of Santa Cruz – Graham Hill WTP Expansion Power Study. Development of planning level report, including power analyses for process improvements at the facility. | ■ | ■ | ■ | | | | ■ | |
| Coastside Water District – Electrical System Study. Conceptual level power study and analysis for supporting planned process improvements. | ■ | ■ | ■ | | | | ■ | |
| Metropolitan Water District – Diemer WTP Electrical Reliability Study. System analysis and report to evaluate the electrical reliability of the existing electrical system. | ■ | ■ | ■ | | | | ■ | ■ |
| City of Folsom – WTP Control System Upgrade Design/Build. Control system upgrade performed under a design/build agreement. | | | | ■ | ■ | ■ | | ■ |
| Mercer Island, Washington – Telemetry Strategic Plan. Telemetry system strategic plan for the City’s water and wastewater utilities. | | | | ■ | ■ | ■ | | |
| City of San Mateo – Wastewater Plant Supervisory Control and Data Acquisition (SCADA) System Conceptual Master Plan. Master Plan providing a blueprint for development and phased implementation of in-plant SCADA. | | | | ■ | ■ | ■ | | ■ |
| City of San Bernardino – Vulnerability Assessment. Security vulnerability assessment for the City’s SCADA and telemetry system. | | | | ■ | ■ | ■ | | ■ |
| Santa Ana Watershed Project Authority – Telemetry Master Plan. Site inventories, technology review, and needs assessments. | | | | ■ | ■ | ■ | | ■ |

Statement of Qualifications - Engineering Services

| TJCAA Instrumentation, Control, and Electrical Experience Bank | | | | | | | | |
|---|---------------------------------------|-----------------------------------|---|--------------------------------|---|--------------------------|--------------------------------------|---|
| Project Description | Service Areas | | | | | | | |
| | Facility Electrical & Industrial Apps | Medium & Low-Voltage Distribution | System Modeling, Analysis, & Utility Coordination | Control System Master Planning | Water & Wastewater Instrumentation & Control System Designs | Remote Telemetry & SCADA | Standby & Emergency Power Facilities | Project Management & Alternative Delivery Methods |
| Delta Diablo – Discovery Bay Telemetry System. Radio-based telemetry system included design, replacement of RTUs, installation of central computers, system programming, and integration. | | | | ■ | ■ | ■ | | ■ |
| City of San Diego – Miramar WTP Expansion. I&C Task leader for the plant expansion, with associated instrumentation and distributed control PLC configured in a redundant, hot-standby arrangement. | | | | ■ | ■ | ■ | | ■ |
| City of Glendale – Remediation Project. Design and construction of electrical and I&C project elements, including remote telemetry to off-site wells, interlocks to central treatment facility, programmable logic-based controls and instrumentation for liquid and vapor stripping technologies. | ■ | ■ | | ■ | ■ | ■ | | ■ |
| City of San Francisco – WTP Design/Build Control System Upgrade. Major control system upgrades at the Harry Tracy WTP and Sunol WTP, which supply drinking water to the City of San Francisco. Project included new PLCs, computer workstations, and networking. | | | | ■ | ■ | ■ | | ■ |
| City of Santa Cruz – Graham Hill Water Treatment Plant Control System Upgrade. Design/build upgrade, including vendor selection, system design, panel fabrication, coordination of subcontractors, installation, startup, testing, training, and follow-up/warranty tasks. | | | | ■ | ■ | ■ | | ■ |
| San Jose Water Company – Montevina WTP, Electrical Upgrades. Installation of upgraded PLC system configured in a remote input/output architecture to minimize new wiring complications. | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| City of Livermore – Altamont Pump Station and Reservoir Improvements. Electrical and I&C design for rehabilitation of existing pump station to increase capacity and replace aging equipment. | ■ | ■ | | | ■ | ■ | ■ | |
| City of Mountain View – Turnouts Controls Design/Build. Project management for design/build project that included controls and SCADA interfaces for water purveyors’ turnouts. | | | | ■ | ■ | ■ | | ■ |
| City of Mountain View – Whisman Pump Station. Project management for the electrical design for rehabilitation of the City’s main drinking water pump station. The facility was sited at City’s corporation yard and required installation of a large standby generator for both pumping and corporation yard facility loads. | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Diablo Water District – Generator Replacement Project. Project manager for the electrical design for procurement and installation of new on-site diesel engine generator for the District’s central facility and Corporation yard. | ■ | ■ | ■ | | | | ■ | ■ |

Statement of Qualifications - Engineering Services

| TJCAA Instrumentation, Control, and Electrical Experience Bank | | | | | | | | |
|---|---------------------------------------|-----------------------------------|---|--------------------------------|---|--------------------------|--------------------------------------|---|
| Project Description | Service Areas | | | | | | | |
| | Facility Electrical & Industrial Apps | Medium & Low-Voltage Distribution | System Modeling, Analysis, & Utility Coordination | Control System Master Planning | Water & Wastewater Instrumentation & Control System Designs | Remote Telemetry & SCADA | Standby & Emergency Power Facilities | Project Management & Alternative Delivery Methods |
| Las Virgenes Municipal Water District – Tapia Water Reclamation Facility, Headworks Improvements Project. Prepared design/build bidding documents for upgrades to the Tapia WRF Headworks. | ■ | ■ | | | ■ | | | ■ |
| City of Folsom – WTP Control System Upgrade. Control system upgrade executed under a design/build approach, including design of control system architecture and interface to remote telemetry, fabrication/installation of PLC back panels, testing, training, and start-up. | | | | ■ | ■ | ■ | | ■ |
| Contra Costa Water District – Randall-Bold WTP Design/Build DCS Upgrade. Project Manager for design/build replacement of the plant's DCS. Developed bid/proposal documents for the designer/builder, defined proposal evaluation method, facilitated project interviews, and participated in the selection of the design/build firm. | | | | ■ | ■ | ■ | | ■ |
| South Bayside System Authority – Solids Handling Control Room. Design of electrical supply for new scrubber, heat pump, and other ventilation equipment associated with odor control systems at the solids handling building. | | | | | ■ | | | |
| South Bayside System Authority – Waste Gas Burner System Rehabilitation. Review and development of new waste gas burner ignition systems. | | | | | ■ | ■ | | |

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