

Jared C. Rogers
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Augspurger Komm Engineering, Inc.
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EDUCATION

B.S. Electrical Engineering, Arizona State University, 1972

PRINCIPAL AREAS OF RESEARCH, TEACHING OR CONSULTING

Twenty eight years of experience in designing power distributions systems, lighting systems, alarm and monitoring systems and control systems primarily for both water, waste water facilities and pump stations.

Power system designs often include the following:

- Coordination with electric utility companies for the proper income,ing electrical service.
- Specifying proper size and type of conductors, raceways, switchgear, motor control centers, motor controllers and panel boards.
- Incorporation of standby power systems such as engine driven generators or a second service from the utility company that would switch on and assume service automatically when the normal electrical power source fail.
- Motor control diagrams for automatic or manual operation of motor driven equipment and interlocking controls with other equipment when needed.
- Voltages from 12,470 volts to as low as 120 volts AC.

Lighting Systems designs often included specifying proper type of lighting, light fixtures, lighting controls and emergency lights for various applications.

Controls system designs often included the integration of programmable logic controller(s) and programmable logic control networks within motor control circuits.

In the earlier part of his career alarm and monitoring designs included graphic panels, strip chart recorders and annunciation panels. However, in the later half of his career all these devices were replaced with programmable logic controls and human machine interface panels and/or personal computers that would serve as the interface between a human operator and the programmable logic controller. Programmable logic controllers have become a major part of plant wide control systems, monitoring systems and alarm systems. Mr. Rogers has had experience in the integration of programmable logic control systems into motor control circuits, the monitoring of process variables, such as flow rates tank levels, system pressures, etc., and alarm circuits, such as excessive flow rates, levels, pressures and equipment failures, etc.

PRINCIPAL AREAS OF RESEARCH, TEACHING OR CONSULTING (Continued)

Mr. Rogers has experience in construction management, which includes the following;

- Respond to request for information from prospective bidders during the phase of a project.
- Assist in the evaluation for pre-qualification of electrical contractors.
- Review and comment on shop drawings submitted by the contractor for proposed electrical, lighting or control equipment to be furnished on projects.
- Perform inspections of electrical installations to assure furnished equipment and installation are in compliance with the National Electrical Code and project specifications and drawings.
- Assist with start up, testing and implementation of electrical, control, monitoring and alarm systems to assure proper operation is achieved.

PROFESSIONAL REGISTRATION

Electrical Engineer, Arizona #16264

Electrical Engineer, California #E13212

Electrical Engineer, Utah #170710-2202

PROFESSIONAL EXPERIENCE

2006 Consulting Electrical Engineer for Augspurger Komm Engineering, Inc., Phoenix, AZ

Electrical engineer for the East Mesa Water Treatment Plant for City of Yuma, Arizona. The project includes a new 3-mgd well; a new iron, manganese and odor removal-system; a new booster pump station; electrical, instrumentation and control and SCADA design.

Electrical engineer for Florida Water Services' Palm Coast Reverse Osmosis Water Treatment Plant Expansion, Apopka, Florida. The expansion of the water Treatment plant from 2 mgd to 9.6 mgd, included design of electrical equipment

Electrical engineer for the Cowlitz Water Pollution Control Wastewater Treatment Plant Improvements project, Longview, Washington. This expansion project increased the plant's treatment capacity from a 26.1MGD peak flow to 36.1MGD peak flow. Prior to the improvements, the plant was serviced by a single 12,470-volt service from the local utility company without any generator backup. The new design included the addition of a second electrical service from the utility company that served as an automatic backup supply of electrical power for the entire plant. In the event the normal electrical service would fail the plant's electrical system would automatically be transferred to the backup service. The expansion of the plant's electrical distribution system included modifications to the existing system as well as expanding the system to accommodate new equipment. The project also included 12,470-volt substations and switchgear.

PROFESSIONAL EXPERIENCE (Continued)

Electrical engineer for the 16th Street Booster Pump Station, City of Yuma, Arizona. The 16th Street Booster Pump Station is a critical pump station, in that it supplies water to the main area of the city and also feeds water to another water distribution zone.

Responsibilities included design and layout of a sequence in which, the existing electrical switchgear could be removed and replaced with new switchgear while keeping the pump station in service during the process. Designed a temporary electrical system to keep the pump station in service while the old gear was removed and replaced with new gear. The new electrical system included variable frequency drives with a solid state soft start bypass starter for each of the three pumps. Instrumental in introducing the City to a new concept for variable speed control of pumps. A fourth pump, an existing engine driven pump, was replaced with a Magna Drive variable speed controller. Project included addition of a standby generator that could power the entire pump station in the event of a power outage.

Electrical engineer for the Town of Gilbert Water Treatment Plant Expansion From 15 to 40 mgd, Gilbert, Arizona. Project elements included: filter retrofit, filter additions, GAC filters, existing facilities evaluation, hydraulic analysis, electrical and instrumentation improvements, ozonation, and construction management services.

Electrical engineer for the Arizona State Prison Lewis Complex water and wastewater system improvements, Arizona Department of Administration, located in Buckeye, Arizona. This project included planning and design of water supply treatment and storage systems and wastewater treatment, reuse storage and pumping facilities.

Lead electrical engineer for the Columbia Boulevard Wet Weather Treatment Facility influent pump station project, City of Portland, Oregon. This project includes the expansion of the Columbia Boulevard Wastewater Treatment Plant's 12,470-volt power distribution loop, low voltage switchgear, and variable frequency drives for 250- and 350-horsepower submersible pumps.

Lead electrical engineer for the Columbia Boulevard Wastewater Treatment Plant headworks Replacement project, which was designed and constructed for the City of Portland, Oregon Bureau of Environmental Services. The design included modifications to the plant's main 12,470-volt switchgear to accommodate a second service from Portland General Electric, modifications to the plant's existing 12,470-volt power distribution system, and the installation of four 450-horsepower and two 250-horsepower motor driven pumps. Five of the pump motors are driven by variable frequency drives (VFDs) and are backed up with solid state soft start controllers, which allow constant speed operation of a pump if the respective VFD fails. Also included in the design is an elaborate programmable logic control system that will monitor and automatically control the headwork's processes. The PLC system has been integrated into the plant's existing PLC network, which makes it possible for operators in the plant's main control room to monitor the operation of the head

PROFESSIONAL EXPERIENCE (Continued)

works and perform control functions.

Electrical engineer for design of the electrical distribution and control system for the expansion of the City of Yuma, Arizona, Main Street Water Treatment Plant. The design included some unique challenges in that existing Arizona Public Service Company (APS) services to the plant had to be modified in the minimum amount of time to allow the plant to remain on line and produce water. This required extensive coordination with plant personnel and APS. The design also included a programmable logic controller (PLC) network, natural gas driven generator, switchgear and filter control system that utilizes the PLC network. Also included was the addition of six 500-horsepower high service pumps that required the use of solid state soft start motor starters. The generator system was designed to automatically start and power critical machinery in the plant when power outages from APS occurred. The generator system was designed to be available for peak shaving duty during high demand periods.

Electrical engineer for the Jackrabbit Mesa Water Pollution Control Facility (WPCF), City of Yuma, Arizona. The scope of work included preliminary design report, planning services, detailed design of selected facility, bid phase services, construction phase services, and post construction services. Project involved construction of new aerobic digester, SBR basin enhancements, head works upgrade, pump upgrades, and new operations building construction.

Electrical engineer for the City of Chandler, Arizona, Motorola Well. Project features include a potable water production well with the capacity of approximately 1,200 gpm; discharge piping and connection to the City's water distribution system; chlorination facility; electrical service; MCC enclosure; perimeter fencing; and landscape restoration.

Electrical engineer for the City of Chandler, Arizona, Ocotillo Water Reclamation Facility Aquifer Storage and Recovery Wells. This project involves the design of four new ASR wells that will recharge a high-quality, municipal effluent from the Ocotillo WRF to the upper alluvial unit at the depth of about 300 to 350 feet below ground.

Electrical engineer for the Robson Communities' Saddle Brooke Wastewater Treatment Plant expansion from 0.62 mgd to 1.24 mgd, Sun Lakes, Arizona.

Electrical engineer for the Salt Lake City Public Utilities Big Cottonwood Water Treatment Plant Backwash Water Recovery project, Salt Lake City, Utah.

Electrical engineer for the Salt Lake City Public Utilities Big Cottonwood Water Treatment

PROFESSIONAL EXPERIENCE (Continued)

Plant Chemical Feed and Flocculation Basin Improvements, Salt Lake City, Utah.

Electrical engineer for the Salt Lake City Public Utilities Big Cottonwood Water Treatment Plant Chlorine Scrubber project, Salt Lake City, Utah.

Electrical engineer for the Salt Lake City Public Utilities Big Cottonwood Water Treatment Plant Filter Building Seismic Upgrade project, Salt Lake City, Utah.

Electrical engineer for the City of Yuma, Arizona, Water Distribution System Master Plan Update.

Lead electrical engineer for electrical design and instrumentation and control design for the Quail Creek Water Treatment Plant expansion, St. George, Utah. The upgrade increased the capacity from 10 to 20 mgd. The project included design of a new pretreatment basin for powdered activated carbon (PAC) addition; new filters with air/water backwash; a new polymer filter aid system; an upgraded process control system; concrete lined sludge beds, miscellaneous site improvements; and code upgrades to meet current UBC, UFC and ADA requirements.

Electrical engineer for the Provo City Water Reclamation Facility Bio-solids Facilities Upgrade project, Provo, Utah.

Electrical engineer for portions of the design of the expansion of the existing Administration Building and Water Quality Laboratory at the Alfred Merritt Smith Water Treatment Facility, Las Vegas, Nevada. This included the coordination of the relocation of a 5,000-volt feeder circuit to the administration building and the relocation of all instrumentation and control systems associated with the plant's carbon system.

Construction administrator for a four-year contract with Orange County, California, Sanitation Districts to oversee all electrical work involved with the more than \$110 million worth of ongoing construction. This included reviewing submitted shop drawings, answering contractor's questions and working with the District's personnel and the contractor for solutions to any electrical problems and/or deficiencies that surfaced during the construction and start-up phase of the various projects.

Lead electrical engineer for the South Tempe Water Treatment Plant expansion to 40 mgd, City of Tempe, Arizona. Responsible for the design of the expansion of the existing power distribution system, adding systems control circuits, and providing electrical design input to the process control system and the electrical inspection for the project. Conducted the inspection and plant start-up for the electrical systems at the initial 20-mgd South Tempe Plant. For the Papago Park Water Treatment Plant in Tempe, he served as lead electrical

PROFESSIONAL EXPERIENCE (Continued)

engineer for the plant upgrade and inspection.

Lead electrical design engineer for the Ashley Valley Water Treatment Plant located in Vernal, Utah. The design included variable frequency drives, programmable logic controllers and main frame computers. Automatic control of the plant processes were controlled via the programmable logic controls and computer system. Throughout the construction phase of the project, reviewed contractor submitted drawings and inspected the installation of the electrical and control system. Upon completion of construction, assisted in the start-up of the water treatment plant.

Electrical design engineer for the following wastewater treatment plant projects: City of Phoenix, Arizona, 91st Avenue Wastewater Treatment Plant Minor Modifications; Expansion of the Timpanogos, Utah, Wastewater Treatment Plant; City of Prescott, Arizona, 3.5 mgd Wastewater Treatment Plant; City of Quincy, California, Wastewater Treatment Plant; Riverside, California, Wastewater Treatment Plant Expansion.

PREVIOUS EXPERIENCE

One of two principal owners of CR Engineers. His specialty was lighting designs for a multitude of different types of buildings. Automatic controls were also included. He also performed electrical designs for commercial buildings and multi-family residences.

Other areas of responsibility include the design of variable frequency drives, programmable logic controllers (PLC), and communication between main frame computers.

Electrician: Prior to starting his career as an electrical engineer, he worked in the field as an electrician. For four years, he installed electrical and control systems which included the installation of conduits, conductors, and electrical panels. He has a practical knowledge of electrical control and instrumentation systems and how they are installed. One of his duties as an electrician was to trouble shoot control systems and make necessary repairs.

PUBLICATIONS

Jared Rogers, "Control of Sludge Transport and Storage-The Logical Way," Society of America International Conference, Chicago, Illinois, September 1993