CITY OF ANAHEIM
CLASS SPECIFICATION

TITLE CODE: K21

CLASSIFICATION: **Associate Power Engineer**

DEPARTMENT: **Public Utilities**

CLASS DEFINITION: To perform a variety of professional electrical engineering duties and responsibilities related to the planning, design and systems analysis of assigned engineering projects, including substation, automated distribution, transmission, Supervisory Control and Data Acquisition (SCADA), and telecommunication engineering projects, and to provide technical assistance to higher level engineering staff.

DISTINGUISHING CHARACTERISTICS:

This is the full journey level professional class in the Power Engineer series. Employees within this class are distinguished from the Assistant Power Engineer by the performance of the full range of duties as assigned. Employees at this level receive only occasional instruction or assistance as new or unusual situations arise, and are fully aware of the operating procedures and policies of the work unit. Positions in this class are generally filled by advancement from the Assistant Power Engineer level, or when filled from the outside, require prior experience.

SUPERVISION RECEIVED AND EXERCISED:

Receives direction from higher level engineering staff.

May exercise functional and technical supervision over technical staff.

EXAMPLES OF ESSENTIAL JOB FUNCTIONS:

The following functions are typical for this classification. Incumbents may not perform all of the listed functions and/or may be required to perform additional or different functions from those set forth below to address business needs and changing business practices.

Prepare preliminary and final plans, designs, cost estimates, schedules and specifications for electric utility projects including substation, transmission, distribution, street light, telecommunications, SCADA, computer control systems, underground conversion, and water process systems.

Conduct a variety of engineering related studies, calculations, and analyses related to load projections, the five year electric system plan, system protection, SCADA, and transmission and distribution system planning; organize and analyze data and information.

Develop system models and simulations; prepare reports including assessments and alternative recommendations; review and comment on detailed technical plans and application of construction standards for capital improvement projects such as underground conversions, system reliability and system expansion.

Assist in planning, prioritizing, assigning and reviewing the work of project staff; coordinate electrical engineering activities with other City departments, divisions, sections and outside agencies to minimize construction impacts to neighborhoods; evaluate joint trench opportunities with other agencies to improve cost savings among project participants.

Review plans of consulting engineers and private contractors; make technical engineering decisions and establish technical criteria and standards.

Survey and inspect project locations; analyze existing project documentation including maps, drawings and specifications; meet and confer with project staff.

Review and analyze electrical system operations; recommend system improvements that enhance reliability and operational flexibility; conduct economic and cost/benefit studies and prepare reports.

Initiate and monitor electric utility material requisitions; prepare requests for proposals, specifications and related documents; participate in the evaluation and selection of equipment.

Investigate field problems affecting property owners, contractors, maintenance and operations; provide information to the public; respond to citizen inquiries and complaints.

Calculate the quantity, quality and cost of materials used for various projects; review engineering calculations of other City engineers or engineering consultants.

Assist in the construction inspection of assigned projects; ensure conformance with contract plans and specifications; make recommendations on the approval of progress payments and change orders.

Develop and maintain engineering related databases; coordinate data transmission between engineering and other City divisions and departments.

Prepare progress reports on projects under construction; maintain records of changes and field notes.

Perform related duties as required.

When Assigned to SCADA/Automation:

Design, develop, and specify SCADA system modifications; prepare design and construction documentation; perform calculations; prepare purchase requisitions related to SCADA, systems automation projects and activities.

Design and recommend standards and procedures for SCADA systems; plan and implement expansions and modifications to the SCADA system; design and test SCADA master applications.

Coordinate activities of system users, service agencies, and vendors; evaluate resource utilization.

Maintain and update the SCADA system and database including computer files, historical data systems and system documentation; investigate and correct defects in the SCADA system software; perform logic analysis and analyze program flow; test and verify SCADA programming.

Prepare specifications and bid documentation for contractors and consultants; evaluate bids; direct activities of contractors and consultants; monitor and control expenditures related to SCADA projects and activities.

When Assigned to Substations:

Prepare preliminary and final designs, cost estimates, schedules, specifications, and bill of materials for electric substation projects; provide engineering services for the planning, design, and construction of project additions.

Act as project engineer for project support and implementation including scheduling, design, estimates, engineering specifications, drawings, materials procurement, construction contracts, cost tracking, and project cost projections.

Assist with engineering studies and investigations for substation upgrade projects including preparing oral and written reports; provide engineering assistance to other departments; provide technical input to assist in the development of project planning.

When Assigned to System Protection:

Calculate and issue protective relay settings for substation equipment and transmission line protection.

Calculate and issue protective device settings for electric distribution system and large customers including fuse sizing and fault interrupter settings; provide engineering support to T&D Engineering for electric distribution protection.

Perform short circuit studies for the protection coordination of the transmission system; simulate fault events utilizing protective relay coordination software.

Analyze electric system fault events in all aspects of substation, transmission, and distribution; conduct electric system fault studies for setting substation protective relays.

When Assigned to Telecommunications:

Design and specify fiber optics system modifications; prepare design and construction documentation; perform calculations; prepare purchase requisitions related to fiber optics system projects and activities.

Design and recommend standards and procedures for fiber optics system; plan and implement expansions and modifications to the fiber optics system; design and test fiber optics applications.

Maintain and implement modifications to the Remote Fiber Test System (RFTS) including field data collection and updating the fiber optics route entries for interface with the Geographic Information System.

Provide liaison, direction and advice to contractors, consultants, public and private agencies and other City departments and divisions on issues related to the fiber optics system projects and activities.

Maintain and update the fiber optics system including computer files, historical data records and system documentation; investigate and correct defects in RFTS software; perform logic analysis and analyze program flow.

JOB RELATED QUALIFICATIONS:

Experience and Education: Two years of responsible professional electrical engineering experience supplemented by a Bachelor's degree from an accredited college or university with major course work in electrical engineering or a related field. An equivalent combination of experience and education sufficient to perform the essential job functions and provide the required knowledge and abilities is qualifying.

Knowledge of: Principles and practices of electric power system engineering and project administration; techniques related to electrical system and load analysis and planning; controls engineering, telecommunications systems, load research, automated distribution and transmission planning; budget preparation and administration; electric utility transmission and distribution engineering design, construction and work methods; field inspection procedures; methods, materials and techniques used in the design and construction of a wide variety of electric utility projects; principles of advanced mathematics and their application to engineering work; recent developments, current literature and sources of information regarding

electrical engineering; office procedures, methods, and equipment including computers and applicable software applications such as word processing, spreadsheets, and databases; pertinent federal, state, and local codes, laws, and regulations.

When assigned to SCADA/Automation: computer control systems; advanced programming principles; operation and use of communication systems; fiber optics; electrical system hardware and software applications; capacitor and voltage control systems.

When assigned to Substations: Substation design parameters; design and functionality of substation apparatus including transformers, power circuit breakers, insulators, disconnect switches, bust system, capacitors, and underground structures.

When assigned to Telecommunications: Principles and practices of telecommunications networks including fiber optics, outside plan engineering, and testing/commissioning.

Ability to: Prepare plans and drawings neatly and accurately; make engineering design computations and check, design and prepare engineering plans and studies; conduct comprehensive engineering studies and prepare reports with recommendations; understand and interpret engineering construction plans, drawings, calculations, specifications, and contract documents; adapt to changing technologies and learn functionality of new equipment and systems; perform technical research and solve difficult engineering problems; research, analyze and evaluate new techniques, methods and procedures related to computerized utility system monitoring and control software; interact and direct contractors and technical staff in testing and implementing systems and projects; communicate clearly and concisely, both orally and in writing; and establish and maintain effective working relationships with those contacted in the course of work.

License/Certification Required: Possession of an appropriate, valid driver's license. Possession of an Engineer In Training Certificate.

WORKING CONDITIONS:

Environment: Work is primarily performed in a standard office setting with travel from site to site and exposure to an outdoor field environment and all types of weather and temperature conditions; exposure to noise, dirt, dust, traffic, and electrical energy; may work irregular hours; work and/or walk on various types of surfaces including slippery or uneven surfaces and rough terrain.

Physical: Primary functions require sufficient physical ability and mobility to work in an office setting and in a field environment; to stand or sit for prolonged periods of time; to occasionally stoop, bend, kneel, crouch, reach, and twist; walk on uneven terrain, loose soil, and sloped surfaces; to lift, carry, push, and/or pull light to moderate amounts of weight; to operate office equipment requiring repetitive hand movement and fine coordination including use of a computer keyboard; to travel to other locations; to operate equipment and vehicles; and to verbally communicate to exchange information.

OTHER:

FLSA Designation: Exempt

Unit Designation: Professional Management

CAREER LADDER INFORMATION: Experience gained in this classification may serve to meet minimum qualifications for Senior Electrical Engineer.

Note: The above statements are intended to describe the general nature and level of work being performed by persons assigned to this job. They are not intended to be an inclusive list of all duties, responsibilities and skills required of incumbents. In accordance with the Americans with Disability Act, reasonable accommodation may be made to enable individuals with disabilities to perform the essential job functions.

Document Number: CS3307
Previous Document Number: CS1474
Former Job Title: Associate Electrical Engineer
Revised: 9/1989 – Ralph Andersen & Associates
Revised: 10/1990 – C. Harris
Revised: 5/1993 – V. Kilmurray
Revised: 11/1998 – S. Witz (to include SCADA system related duties)
Revised: 8/2007 – G. McHaffie (to include Telecommunication system related duties)
Revised 11/2009 – Johnson & Associates – (Former Title: Associate Engineer - B)