STATE OF COLORADO

CLASS SERIES DESCRIPTION
JULY 2015

ELECTRONIC ENGINEER

I2B1TX TO I2B4XX

DESCRIPTION OF OCCUPATIONAL WORK

This class series uses three levels in the Physical Science and Engineering Occupational Group and describes professional engineering work in the acquisition, installation, and maintenance of electronics equipment and services to state agencies. The work includes planning, organizing, and implementing telecommunications and electronic service for the needs of state agencies in the areas of voice and digital transmissions, media broadcasting, radio communications, computer links, or other state-of-the art electronic capabilities. The work includes advising agency management on the feasibility and costs associated with acquiring electronic capabilities. Positions may work in one or more of the areas of design and installation or the maintenance and repair of existing equipment and capabilities. The work may also include providing similar services to local agencies who wish to use these positions serving in an advisory capacity for the state. In lieu of licensure by the Colorado State Board of Registration for Professional Engineers and Professional Land Surveyors, some positions may require licensure by the Federal Communications Commission (FCC).

ELECTRONIC ENGINEER I I2B1TX

CONCEPT OF CLASS

This class describes the fully-operational level. Positions in this level plan, design, and oversee the installation or maintenance of telecommunications and electronic capabilities throughout the state. Positions identify equipment replacement or upgrade requirements to higher level supervisors and managers for needed funding and planning. Positions work with customers to identify specific needs and capabilities before pursuing solutions. The work may include research of new equipment and contacts with industry sales representatives to identify equipment capabilities, cost, and availability. Positions work with purchasing personnel to develop bid specifications and evaluate proposals for adequacy. Positions may supervise the work of technicians or specialists performing installation or maintenance activities.

FACTORS

Allocation must be based on meeting all of the three factors as described below.

Decision Making -- The decisions regularly made are at the process level, as described here. Within limits set by professional standards, the agency's available technology and resources, and program objectives and regulations established by a higher management level, choices involve determining the process, including designing the set of operations. The general pattern, program, or system exists but must be individualized. This individualization requires analysis of data that is complicated. Analysis is breaking the problem or case into parts, examining these parts, and reaching conclusions that result in processes. This examination requires the application of known and established theory, principles, conceptual models, professional standards, and precedents in order to determine their relationship to the problem. New processes or objectives require approval of higher management or the agency with authority and accountability for the program or system. For example, positions decide the maintenance operations needed to repair and maintain telecommunications sites.

Complexity -- The nature of, and need for, analysis and judgment is formulative, as described here. Positions evaluate the relevance and importance of electronic engineering theories, concepts, and principles in order to tailor them to develop a different approach or tactical plan to fit specific circumstances. While general policy, precedent, or non-specific practices exist, they are inadequate so they are relevant only through approximation or analogy. In conjunction with theories, concepts, and principles, positions use judgment and resourcefulness in tailoring the existing guidelines so they can be applied to particular circumstances and to deal with emergencies. For example, positions analyze the importance of engineering principles when designing replacement systems.

Line/Staff Authority -- The direct field of influence the work of a position has on the organization is as an individual contributor. The individual contributor may explain work processes and train others. The individual contributor may serve as a resource or guide by advising others on how to use processes within a system or as a member of a collaborative problem-solving team. This level may include positions performing supervisory elements that do not fully meet the criteria for the next level in this factor.

ELECTRONIC ENGINEER II I2B2XX

CONCEPT OF CLASS

This class describes the work leader or staff authority level. In addition to work described by the lower class, positions in this level have work leader responsibility over other engineers. The work includes assigning or checking work, instructing or answering questions, and providing input to supervisors on performance. This class also includes those positions functioning as staff authorities in a particular field of electronic engineering where managers and peers rely on the position for expert advice. This class differs from the Electronic Engineer I in the Line/Staff Authority factor only.

FACTORS

Allocation must be based on meeting all of the three factors as described below.

Decision Making -- The decisions regularly made are at the process level, as described here. Within limits set by professional standards, the agency's available technology and resources, and program objectives and regulations established by a higher management level, choices involve determining the process, including designing the set of operations. The general pattern, program, or system exists but

must be individualized. This individualization requires analysis of data that is complicated. Analysis is breaking the problem or case into parts, examining these parts, and reaching conclusions that result in processes. This examination requires the application of known and established theory, principles, conceptual models, professional standards, and precedents in order to determine their relationship to the problem. New processes or objectives require approval of higher management or the agency with authority and accountability for the program or system. For example, positions individualize operational and maintenance processes for telecommunications services to state and local agencies.

Complexity -- The nature of, and need for, analysis and judgment is formulative, as described here. Positions evaluate the relevance and importance of electronic engineering theories, concepts, and principles in order to tailor them to develop a different approach or tactical plan to fit specific circumstances. While general policy, precedent, or non-specific practices exist, they are inadequate so they are relevant only through approximation or analogy. In conjunction with theories, concepts, and principles, positions use judgment and resourcefulness in tailoring the existing guidelines so they can be applied to particular circumstances and to deal with emergencies. For example, positions analyze the importance of engineering principles when designing replacement systems.

Line/Staff Authority -- The direct field of influence the work of a position has on the organization is as a work leader or staff authority. The work leader is partially accountable for the work product of two or more full-time equivalent positions, including timeliness, correctness, and soundness. At least one of the subordinate positions must be in the same series, telecommunications/electronic specialist, or at a comparable conceptual level. Typical elements of direct control over other positions by a work leader include assigning tasks, monitoring progress and work flow, checking the product, scheduling work, and establishing work standards. The work leader provides input into supervisory decisions made at higher levels, including signing leave requests and approving work hours. This level may include positions performing supervisory elements that do not fully meet the criteria for the next level in this factor.

OR

The staff authority is a pacesetter who has a unique level of technical expertise in a field or profession that, as part of the assignment, is critical to the success of an agency. It is an essential component of the work assignment that has been delegated by management to the position. This authority directly influences management decisions within an agency. For example, management relies on such a position when making decisions regarding the direction that policy or a program should take in the staff authority's field of expertise. Managers and peers recognize and seek this level of technical guidance and direction regarding the application of a program or system within the agency or to its clients.

ELECTRONIC ENGINEER III I2B3XX

CONCEPT OF CLASS

This class describes the first-level supervisor or senior authority level. Positions in this level direct the operations of a unit accomplishing electronic engineering support for state agencies. In addition to overseeing the work described in lower classes, positions have responsibility for decisions that affect the pay, status, or tenure of others. This class also describes those rare positions functioning as authorities for an electronic engineering field beyond their agency. This class differs from the Electronic Engineer II in the Line/Staff Authority factor only.

FACTORS

Allocation must be based on meeting all of the three factors as described below.

Decision Making -- The decisions regularly made are at the process level, as described here. Within limits set by professional standards, the agency's available technology and resources, and program objectives and regulations established by a higher management level, choices involve determining the process, including designing the set of operations. The general pattern, program, or system exists but must be individualized. This individualization requires analysis of data that is complicated. Analysis is breaking the problem or case into parts, examining these parts, and reaching conclusions that result in processes. This examination requires the application of known and established theory, principles, conceptual models, professional standards, and precedents in order to determine their relationship to the problem. New processes or objectives require approval of higher management or the agency with authority and accountability for the program or system. For example, positions decide the appropriate process for identifying and acquiring new electronic transmission capabilities for agencies.

Complexity -- The nature of, and need for, analysis and judgment is formulative, as described here. Positions evaluate the relevance and importance of electronic engineering theories, concepts, and principles in order to tailor them to develop a different approach or tactical plan to fit specific circumstances. While general policy, precedent, or non-specific practices exist, they are inadequate so they are relevant only through approximation or analogy. In conjunction with theories, concepts, and principles, positions use judgment and resourcefulness in tailoring the existing guidelines so they can be applied to particular circumstances and to deal with emergencies. For example, positions analyze electronic engineering principles in selecting appropriate replacement systems for upgrading capabilities and reliabilities.

Line/Staff Authority -- The direct field of influence the work of a position has on the organization is as a unit supervisor or senior authority. The unit supervisor is accountable, including signature authority, for actions and decisions that directly impact the pay, status, and tenure of three or more full-time equivalent positions. At least one of the subordinate positions must be in the same series or at a comparable conceptual level. The elements of formal supervision must include providing documentation to support recommended corrective and disciplinary actions, signing performance plans and appraisals, and resolving informal grievances. Positions start the hiring process, interview applicants, and recommend hire, promotion, or transfer.

OR

The senior authority is a pacesetter who has a unique level of technical expertise in a field or profession that, as part of the assignment, is critical to the success of an agency. It is an essential component of the work assignment that has been delegated by management to the position. This authority directly influences management decisions beyond the agency. Managers and peers seek this level of technical guidance and direction as the designer of a statewide system or in a subject area for other areas of state government. Managers and peers, both internally and externally to the agency, rely on this pacesetter when making decisions regarding the direction that policy, programs, and systems should take in the pacesetter's field of expertise.

ELECTRONIC ENGINEER IV I2B4XX

CONCEPT OF CLASS

This class describes the second-level supervisor and chief electronic engineer in an agency. Positions in this level establish telecommunications and electronics support programs for the state. The work includes working state wide issues and requirements and coordinating these with managers and directors. Positions also have responsibility for decisions affecting the pay, status, or tenure of other positions. This class differs from the Electronic Engineer III in all factors.

FACTORS

Allocation must be based on meeting all of the three factors as described below.

Decision Making -- The decisions regularly made are at the interpretive level, as described here. Within limits of the strategic master plan and allocated human and fiscal resources, choices involve determining tactical plans to achieve the objectives established by the higher management (strategic) level. This involves establishing what processes will be done, developing the budget, and developing the staffing patterns and work units in order to deploy staff. For example, positions at this level decide the operation and maintenance levels and units to support agency electronics systems. This level includes inventing and changing systems and guidelines that will be applied by others statewide. By nature, this is the first level where positions are not bound by processes and operations in their own programs as a framework for decision making and there are novel or unique situations that cause uncertainties that must be addressed at this level. Through deliberate analysis and experience with these unique situations, the manager or expert determines the systems, guidelines, and programs for the future. For example, positions decide which type of technology will be used for unique types of communications requirements.

OR

The decisions regularly made are at the programmatic level, as described here. Within limits set by organizational policy, general directives, overall goals and objectives, and allocated resources, choices involve formulating or adjusting programs, specifying program objectives, and allocating human and fiscal resources among constituent programs. This involves independently, and under conditions of uncertainty, determining what has been done, what can be done, proposals for long term policy, and estimates of what new resources are required. The long-term strategic plans, purposes, and staffing determined by this level require integration with other programs in the overall plan. Program, as used here, is defined by the mission of an agency or division as opposed to a segment or piece of a program, such as planning, program evaluation, etc. This level does not describe positions that are applying a program controlled by another agency which has the authority and accountability for it. For example, positions at this level decide communications program resources and capabilities for state-wide, government planning.

Complexity -- The nature of, and need for, analysis and judgment is strategic, as described here. Positions develop guidelines to implement a program that maintains the agency's mission. Guidelines do not exist for most situations. In directive situations, positions use judgment and resourcefulness to interpret circumstances in a variety of situations and establish guidelines that direct how a departmental/ agency program will be implemented. For example, positions develop guidelines which direct communications or electronic programs throughout state agencies.

Line/Staff Authority -- The direct field of influence the work of a position has on the organization is as a manager or leading authority. The manager must be accountable for multiple units through the direct supervision of at least two subordinate Unit Supervisors; and, have signature authority for actions and decisions that directly impact pay, status, and tenure. Elements of formal supervision must include providing documentation to support recommended corrective and disciplinary actions, second-level signature on performance plans and appraisals, and resolving informal grievances. Positions start the hiring process, interview applicants, and recommend hire, promotion, or transfer.

OR

The leading authority is a pacesetter who has a rare level of technical expertise in a field or profession that, as part of the assignment, is critical to the success of an agency. It is an essential component of the work assignment that has been delegated by management to the position. This authority directly influences management decisions and peers in the profession outside of state government. Managers and peers beyond state government recognize and seek this level of technical guidance and direction because of the recognized expertise in a subject area. For example, program managers and colleagues in other states rely on this regional or national pacesetter when making decisions regarding the direction of their policy, programs, and systems in the pacesetter's field of expertise. This reliance on, and delegation of, primary responsibility for influencing management direction, including representing the state regionally or nationally, separates this level of staff authority from all others.

ENTRANCE REQUIREMENTS

Minimum entry requirements and general competencies for classes in this series are contained in the State of Colorado Department of Personnel & Administration web site.

For purposes of the Americans with Disabilities Act, the essential functions of specific positions are identified in the position description questionnaires and job analyses.

CLASS SERIES HISTORY

Updated and removed the purpose of contact 6.30.2015
Effective 7/1/02 (DLF). PSE System Maintenance Study. No changes. Published as proposed 5/15/02.
Effective 9/1/93 (DLF). Job Evaluation System Revision project. Published as proposed 6/1/93. Revised 1/1/92. Changed occupational group, State Communications Director (A2571).
Revised 7/1/86. Changed grades and relationships, Electronic Engineers (A2555-57).
Revised 7/1/85. Changed nature of work and entrance requirements, Electronic Engineers (A2555-57).
Revised 7/1/81. Changed relationship, State Communications Director (A2571).
Revised 3/1/81. Changed nature of work and entrance requirements, State Communications Director (A2571).
Revised 7/1/80. Changed relationship, State Communications Director (A2571). Created 1/1/75.

SUMMARY OF FACTOR RATINGS

Class Level	Decision Making	Complexity	Line/Staff Authority
Electronic Engineer I	Process	Formulative	Indiv. Contributor
Electronic Engineer II	Process	Formulative	Work Leader or Staff authority
Electronic Engineer III	Process	Formulative	Unit Supervisor or Senior Authority
Electronic Engineer IV	Interpretive or Programmatic	Strategic	Manager or Leading Authority

ISSUING AUTHORITY: Colorado Department of Personnel & Administration