1. POSITION IDENTIFICATION

<table>
<thead>
<tr>
<th>Department Name:</th>
<th>Facilities Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position Number(s):</td>
<td>105985</td>
</tr>
<tr>
<td>Current Position Classification:</td>
<td>Technician, grade 11</td>
</tr>
<tr>
<td>Department Position Title:</td>
<td>Energy Management Systems (EMS) Technician</td>
</tr>
<tr>
<td>Evaluating Supervisor’s Title:</td>
<td>Energy Manager</td>
</tr>
<tr>
<td>Date Completed:</td>
<td>July 12, 2016</td>
</tr>
</tbody>
</table>

Part 1 is being completed by:
- Employee
- Evaluating Supervisor

2. POSITION SUMMARY

A summary of the major functions of the position in three or four sentences.

Operates and maintains the University’s automated building heating, ventilation and air conditioning (HVAC) controls systems controlling the operation of heating, cooling, and ventilation to University. Maintains the University’s Direct Digital Controls/Energy Management Systems/Building Automation Systems (DDC/EMS/BAS). Monitors and optimizes energy supply to match energy demand; identifies energy performance trends in buildings; prepares analyses of anomalies to troubleshoot for energy waste from HVAC equipment; maintains the EMS data current and accurate with building configuration space changes; and makes proposals for energy saving opportunities. As a member of the Energy Management team, works collaboratively to identify and evaluate potential technical solutions. Coordinates and liaises with consultants, contractors, and trades on a day-to-day basis to implement projects and advance energy management goals set from the University’s Strategic Energy Management Plan (SEMP). Assists and supports the Energy Manager with the development of Energy Efficiency, Conservation, and Sustainability Programs for the University.

3. MAJOR FUNCTIONS

List the duties and responsibilities of the position in order of frequency (i.e., (D) Daily; (W) Weekly; (M) Monthly; (S) Semester)

Daily

Operates and maintains the University’s automated building heating, ventilation, and air conditioning (HVAC) controls systems controlling the operation of heating, cooling, and ventilation to University buildings.
Maintains the University’s Direct Digital Controls/Energy Management Systems/Building Automation Systems (DDC/EMS/BAS) to ensure the HVAC system is operated in accordance with defined control Strategies.

Monitors, operates, and maintains the BAS system including hardware and software systems (i.e., Delta and Andover), network devices, control units, and other related components of the integrated system).

Analyzes trend logs to identify system & equipment operational mal-functions affecting air quality and comfort. Directs the work of in-house and external trades staff responsible for fault remediation

Analyzes the work requests reported through the Service Desk, or as assigned by the Energy Manager (e.g., temperature change, air flow adjustment).

Alerts and directs trades to respond to emergency alarms triggered and displayed on BAS.

Writes programmed code using English Controls Language based on C++, to operate HVAC systems and Facilities Services equipment in order to provide the best energy management while maintaining comfort in controlled spaces.

Refers to building schematics and information provided by external consultants to determine layout for the installation of electronic/ digital equipment to control the peripheral HVAC electrical and mechanical equipment.

Identifies energy performance trends in buildings; prepares analyses of anomalies to troubleshoot for energy waste from HVAC equipment problems; maintains the EMS data current and accurate with building configuration space changes; and makes proposals for energy saving opportunities.

Monitors and tracks energy usage in all university buildings. Conducts energy and utility analysis campus wide in order to optimize Utility consumption. Visits sites to identify opportunities to eliminate waste and to reduce energy costs. Provides recommendations to Manager to rectify deficiencies and create business cases for implementation of system improvements.

Maintains and tracks historical data on energy usage, trends, anomalies, etc. Compiles and analyses data and notifies the Energy Management team of the need to take corrective action to eliminate energy wastage.

Tracks data on greenhouse gas (GHG) to identify opportunities to further improve energy efficiency at the university.

Provides input and recommendations to the Energy Manager regarding improvements to preventative maintenance programs and operating procedures for the EMS and its peripherals.

As a member of the Energy Management team, works collaboratively to identify and evaluate potential technical solutions. Liaises with consultants, contractors, and trades to implement projects. Coordinates with the HVAC Operations trades and consultants on a day-to-day basis to advance energy management goals set from the University’s Strategic Energy Management Plan (SEMP).

Works with contractors, consultants, and suppliers when conducting the testing and inspections required for the commissioning of new construction work for EMS alterations or expansion.
Under the supervision of the Energy Manager, carries out studies; prepares reports; and maintains system documentation and related records.

Provides input to the Energy Manager on costings for the preparation of the budget and makes recommendations to reduce costs and/or improve conservation of energy while maintaining building environment comfort levels; recommends, designs and implements programming changes as required.

Provides training and direction to tradespersons in the use of EMS and provides feedback to the Energy Manager with regard to their suitability and trainability.

Provides input to the Energy Manager for the preparation of written reports detailing EMS upgrade projects scope, progress, costs, status, effect and results achieved.

Writes HVAC system operating programs in general control language which integrates from C++ platform and SQL database templates with protocol primarily for Building Automation & Control Networking protocol (BACnet) compliant communication capability.

Monitors electrical metered data for all utilities; importing hourly MJ reports in MS Access table forms; exporting through ODBC to SQL database; and troubleshooting data;

Imports energy metered data and weather report into SQL database for analyzing the energy usage

Develops and implements the schedules for HVAC service to ensure appropriate environmental conditions in classrooms, labs, offices, and other facilities in use for teaching or events.

Ensure as built drawings related to the controls systems are kept up-to-date.

Provides technical support in the maintenance and functioning of the EMS computer system hardware and software by installing and upgrading software and determining user access to the system, etc.

**Weekly**

Provides ongoing support to system users from a functional perspective by responding to system problems, investigating errors, reviewing configurations, analyzing data, and developing specifications for technical personnel to correct problems.

Initiates and ensures the diagnostic analysis of connected electrical and mechanical building systems is completed.

Maintains the integrity, operation, and programming for the DDC panels and monitors where there are cases in excess of 22,000 DDC Control Points.

Specifies and recommends priorities for hardware, software repairs, and upgrades to the Energy Manager.

Determines best method to maintain the integrity for the building automation system by doing extensive testing and analysis with the database system.
Monthly

Works with the Energy Manager and in-house staff to implement the Energy Management Plan. Provides technical input and feedback to the Energy Manager on proposed energy conservation projects, the development of long range plans for energy conservation and implementation strategies, and the development of campus energy standards, policies, and procedures designed to maintain an effective conservation program. Assists the Energy Manager in the review of new projects during all phases of design and construction by ensuring that the necessary information is available, and coordinating activities.

Researches and analyses existing building automation systems and makes recommendations to the Energy Manager regarding the optimization of system function and ways to reduce costs. Assesses performance of the existing systems and makes recommendations to the Energy Manager regarding various options to improve system performance.

Identifies and recommends to Energy Manager control strategies to reduce operating costs while improving the safety, comfort and energy efficiency of the Heating, Ventilation and Air Conditioning (HVAC) equipment.

Provides technical information on the university’s EMS to Project Teams and external consultants during the design phase of new construction projects and major renovations. Visits the construction sites intermittently to provide on-going technical expertise to the Project Teams. At completion of the construction or renovation project, inspects the completed work to ensure that the installations have been properly executed.

Assists the Energy Manager in the delivery of capital projects related to EMS expansion, alterations, and upgrades to the existing system and projects designed to increase energy efficient operation of the campus mechanical/electrical systems by: reviewing drawings and specifications for new projects; and providing feedback to the Energy Manager. Assists the Energy Manager in the co-ordination of any alterations or extensions. Conducts tests and inspections required for the commissioning of new construction work for EMS alterations or expansion to ensure that all HVAC systems are fully operational and that they meet the design intent.

Attends meetings of the Energy Committee including the Energy Manager, the Senior Project Managers and Project Managers of Facilities Planning & Development, the Directors and Superintendents of Facilities Operations and Maintenance, and the Director, Sustainability.

Reviews CISCO router for security of all DDC panels monthly; maintains the energy management front-end Ethernet network.

Assists in the start-up of new building systems and the fine-tuning of control strategies by reviewing, evaluating, and recommending software and hardware solutions and by assessing their impact.

Assists consultants with their designs or retrofits of existing buildings by providing base data information.

Monitors the activities of the controls contractors to ensure that the DDC system is maintained properly.
4. MINOR FUNCTIONS
List duties and responsibilities that occur annually and periodically throughout the year.

Provides input on recommendations regarding methods and procedures for the operation of all HVAC equipment consistent with acceptable comfort levels, occupancy schedules, and load-shedding principles (reducing electrical peak demands)

Provides input on recommendations regarding selection of EMS controls equipment, computer and networking equipment, and software consistent with the requirements of the users

Provides input on recommendations regarding selection of alternate fuels to reduce energy expenditure

Maintains up-to-date technical knowledge and participates in technical seminars, workshops, and courses, and conferences. Participates in soft-skills training, mentorship, and coaching programs.

5. LEVEL OF INDEPENDENCE
Check one box that best describes the level of independence that can be exercised within the position by a fully trained employee.

☐ a) Work is provided with specific instructions describing how and when it should be completed.

☐ b) Work is provided with general instructions. The employee makes choices about how the work will be completed within deadlines.

☒ c) Work is self-directed by the employee. The employee determines what work needs to be completed and when it should be completed to meet deadlines.

☒ d) Work is assigned on a project-by-project basis in the form of broad objectives. The employee evaluates what work needs to be completed within general time frames. Provide examples of project work:

6. TRAINING EXERCISED
If the position provides training, check each description that applies.

☐ a) Not required to provide training to other individuals.

☒ b) Explains how work is performed in his/her own position to individuals in other positions performing the same or similar work (includes training replacement employees).

☒ c) Provides one-on-one specialized training to other individuals. Considered a specialist in a particular area or field of study. Positions at this level may be designated as the resident department expert.

☐ d) Provides one-on-one training to individuals in other positions. Must have a good understanding of the work of the other positions. Positions at this level may be designated as group leaders or work leaders.

☐ e) Conducts training seminars for groups. Training seminars are normally scheduled and follow a prescribed format. May also develop or assist in the development of training seminars.
7. DIRECTION EXERCISED
Check each description that applies.

☐ a) Not required to provide direction to other individuals.
☒ b) Assigns and/or checks work of other individuals.
☒ c) Schedules, assigns, and checks work of other individuals.
☐ d) In addition to C, establishes work priorities for a unit.
☒ e) In addition to C and D, guides project teams.

8. INTERNAL AND EXTERNAL CONTACTS
List internal and external contacts (i.e., specific positions within own department, other departments, students, faculty, on/off campus vendors, etc.), the duration of each contact (i.e. less than 1 hour at a time, 1-2 hours at a time, more than 2 hours at a time), and the frequency of each contact (i.e. occasional, frequent, or continuous).

<table>
<thead>
<tr>
<th>Type of Contact</th>
<th>Duration</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tradesmen</td>
<td>1-2 hours</td>
<td>frequent</td>
</tr>
<tr>
<td>University administrators, faculty and staff</td>
<td>1-2 hours</td>
<td>frequent</td>
</tr>
<tr>
<td>Contractors, suppliers</td>
<td>&lt; 1 hour</td>
<td>frequent</td>
</tr>
<tr>
<td>Superintendents, Managers</td>
<td>&lt; 1 hour</td>
<td>frequent</td>
</tr>
<tr>
<td>Students</td>
<td>&lt; 1 hour</td>
<td>occasional</td>
</tr>
<tr>
<td>Governmental authorities, consultants</td>
<td>&lt; 1 hour</td>
<td>occasional</td>
</tr>
</tbody>
</table>

9. IMPACT OF ERRORS
Common Errors: Provide a few examples of the most common errors which normally occur in the performance of the work.

• Misdiagnosed problems due to insufficient data.
• Improper programming of controls.
• Missing scheduled event programming.

Uncommon Errors: Provide a few examples of most uncommon errors which infrequently occur in the performance of the work.

• Improper operation of control instrument resulting in errors and damage to instrument.
• Information not being communicated from requesting department.

10. EFFORT
Describe concentrated periods of auditory (hearing/listening); visual (seeing); perceptual (understanding/comprehending); and physical dexterity (finger/hand movements, eye/hand coordination, lifting, carrying, pushing, pulling, reaching etc.). For each example of effort, indicate the concentrated duration (less than 1 hour at a time, 1-2 hours at a time, more than 2 hours at a time) and frequency (occasional, frequent, continuous).

<table>
<thead>
<tr>
<th>Type of Effort</th>
<th>Duration</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working on computer/updating database files</td>
<td>1-2 hours</td>
<td>frequent</td>
</tr>
<tr>
<td>Writing letters, memos and reports</td>
<td>1-2 hours</td>
<td>occasional</td>
</tr>
<tr>
<td>Responding to client inquiries/complaints (auditory)</td>
<td>&lt; 1 hour</td>
<td>frequent</td>
</tr>
<tr>
<td>Non-confined sitting</td>
<td>1-2 hours</td>
<td>Frequent</td>
</tr>
<tr>
<td>Standing, walking (outside work sites)</td>
<td>1-2 hours</td>
<td>occasional</td>
</tr>
<tr>
<td>Crouching/climbing to reach equipment</td>
<td>&lt; 1 hour</td>
<td>occasional</td>
</tr>
<tr>
<td>Lifting, carrying, moving equipment</td>
<td>&lt; 1 hour</td>
<td>occasional</td>
</tr>
</tbody>
</table>
11. WORKING CONDITIONS

a) Describe the place(s) where work is performed such as office environment, laboratory, outside work site, etc. Also identify the number of hours (of the total hours worked per week) spent in the place(s).

<table>
<thead>
<tr>
<th>Location</th>
<th>Hours spent as a total of hours worked per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>General office</td>
<td>25 hours/35 hours</td>
</tr>
<tr>
<td>Outside work site</td>
<td>10 hours/35 hours</td>
</tr>
</tbody>
</table>

b) Describe any uncomfortable and/or distracting conditions in the work place(s) which an incumbent is exposed to on a regular basis and the frequency of the exposure. (e.g. interruptions, distracting noise, unpleasant odours, dust, drafts, inks, dyes, cleaning agents, toner for printers, temperature extremes, heavy dust conditions, wetness, fumes, vibrations, etc.)

<table>
<thead>
<tr>
<th>Uncomfortable Conditions</th>
<th>Frequency of Exposure (Occasional, Frequent, or Continuous)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interruptions</td>
<td>frequent</td>
</tr>
<tr>
<td>Mechanical rooms (noise, fumes, vibrations)</td>
<td>occasional</td>
</tr>
</tbody>
</table>

c) Describe any potential health or safety hazards etc. and the frequency of exposure of each hazard. (e.g. dealing with complaints and/or verbal/physical abuse; noise levels that interfere with normal speech/hearing; toxic gases or materials; dangerous chemicals, combustibles, radioactive material; repetitive arm, finger, wrist movements or other activities that may result in a physical injury; high speed, pressurized equipment; high voltage; heights above five feet; bio-hazardous wastes, body fluids, etc.)

<table>
<thead>
<tr>
<th>Potential Health or Safety Hazards</th>
<th>Frequency of Exposure (Occasional, Frequent, or Continuous)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dealing with complaints and/or verbal abuse</td>
<td>occasional</td>
</tr>
<tr>
<td>Repetitive arm, finger, wrist movements</td>
<td>frequent</td>
</tr>
<tr>
<td>Noise level that interfere with normal speech/hearing</td>
<td>occasional</td>
</tr>
</tbody>
</table>

12. CONTINUING EDUCATION

Check each description that applies.

- [ ] a) Does not require any continuing education.
- [x] b) Requires learning new university/department related procedures and/or methods.
- [x] c) Requires learning new procedures and/or methods acquired through reading non-university/department publications.
- [x] d) In addition to B and C, requires registration in formal seminars, training sessions, workshops, conferences, etc.
- [ ] e) In addition to B, C, and D, requires registration in post-secondary courses (one semester/equivalent).
13. QUALIFICATIONS
Minimum required to satisfactorily perform the work.

Formal education qualifications: identify the highest level of formal schooling required.

High school graduation and two years of post-secondary education in Engineering (i.e., Electrical, Mechanical or Electronics) or related field or program (i.e., Certified Energy Management).

In addition to formal education, identify the certification or program of study required.

In addition to the above qualifications, the number of years of minimum experience are:

4 Years

Check one:

☑ An equivalent combination of formal education, certificate/program of study and experience is acceptable.

☐ An equivalent combination of education, certificate/program of study and experience is not acceptable because: (please explain)

Occupational Skills: Identify skills specifically required to perform the work of the position.

Excellent knowledge of heating, ventilation, and air conditioning (HVAC) mechanical, instrumentation, and electrical building management systems.

Excellent knowledge of computer-aided building heating and ventilation controls (HVAC) systems controlling the supply of heating, cooling, and ventilation.

Excellent knowledge of dynamic and pneumatic controls, transmission control and internet protocols (TCP/IP) and the Building Automatic and Control network (BACnet) open protocol.

Excellent knowledge of building code requirements.

Good knowledge of computer aided design (CAD) and business applications for project management and cost-estimating work.

Good familiarity with energy efficiency and energy management principles.

Ability to program in using English Controls Language based on C++ and structured query language (SQL) and a good familiarity with open database connectivity (ODBC) configurations.

Ability to use e-mail, spreadsheet and word processing applications (e.g., Outlook, Excel, and Word) at an intermediate level.

Ability to organize and direct the work of technical staff and consultants.

Ability to exercise mature judgment and initiative.

Ability to work independently and as a member of a team.
Excellent communication (both oral and written), organizational, interpersonal, and customer service skills.

Excellent analytical reasoning, problem-solving, facilitation, co-ordination, and client liaison skills.

**Occupational Requirement(s):** Identify non-skill requirements to perform the work such as ability to work shifts and/or be on-call; ability to travel periodically outside the lower mainland; have a valid driver's license; ability to lift, move or carry equipment or materials over 10 kg; etc.

Ability to work flexible/extended hours based on operational requirements.
Ability to attend off-campus seminars and conferences as required.
Ability to lift, move or carry equipment or materials up to 10 kg.
14. APPROVAL AND REVIEW

**Evaluating Supervisor Approval:** Information provided in the job description accurately reflects the requirements of the position.

<table>
<thead>
<tr>
<th>Name of Evaluating Supervisor</th>
<th>Signature of Evaluating Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date

**Employee Review:** I have read and understand the requirements of the position.

<table>
<thead>
<tr>
<th>Name of Employee</th>
<th>Signature of Employee</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date