



IDENTIFICATION

Department	Position Title	
Infrastructure	Senior Project Engineer – Electrical	
Position Number(s)	Community	Division/Region(s)
33-7579	Yellowknife	Design and Technical Services/HQ

PURPOSE OF THE POSITION

The Senior Project Engineer - Electrical (Senior Engineer), manages, coordinates and provides the planning and program development for airport electrical works, including airfield lighting and building/site electrical systems to ensure that airport electrical projects and programs are efficiently planned, constructed and maintained, in accordance with regulations and standards to meet certification by Transport Canada and to ensure safe air carrier operations and transportation of air travelers in the NWT (Northwest Territories). The position is responsible for stamping and sealing all electrical contract and constructions drawings and specifications.

SCOPE

Located in Yellowknife, and reporting to the Manager, Facilities Design & Technical Services, the Senior Engineer manages and implements the Airports Lighting Maintenance Management System for 6 paved and 21 gravel surfaced airports located in 27 communities in the Northwest Territories. The incumbent manages a multi-year program plan involving 10 to 15 projects in different stages of development, with an annual project value of up to \$4 million and monitors project implementation and accepts, on behalf of the Airports Program, all completed construction and rehabilitation of airport electrical works at NWT Airports. This is done in accordance with Canadian Aviation Regulations, the *Canadian Aeronautics Act*, Aerodrome Standards & Recommended Practices (TP312), Canadian Electrical Code and a variety of other design, evaluation and construction standards.

The incumbent is responsible for the airport electrical works Capital and O&M (Operations and Maintenance) programs and related technical programs by monitoring project costs, completion dates and resource allocations during all project phases and approving expenditures of up to \$100,000 for contract initiation and up to \$250,000 for contract performance.

The Senior Engineer provides professional engineering and airport specialist expertise and direction to the Airports Program in respect of all electrical lighting systems while overseeing the application of the associated regulatory and technical standards. The incumbent reviews and approves airport electrical lighting project designs, and provides Professional Engineering stamp on design work prepared under the incumbent's direction and control and provides ongoing functional direction and technical support to Regional Superintendents and Regional Airport Managers.

The incumbent will liaise with communities, staff of the Department of Infrastructure and other GNWT Departments, including Municipal and Community Affairs, Transport Canada, Environment Canada (federal regulatory agencies) and air carriers on matters of airport certification, flight operations, facility conditions and safety in order to implement the required projects. The incumbent also retains and manages consultants to accomplish specific airport studies and investigations, as required (normally 2 to 5 times per year).

RESPONSIBILITIES

1. Manages the investigation, research, development and implementation of technical programs for all airport electrical lighting systems.

- Monitors designs, standards, and facility life-cycles, in order to determine appropriate maintenance, rehabilitation, restoration and replacement strategies.
- Directs, coordinates and supervises the on-going development and implementation of the Territorial Airport Lighting Maintenance Management System, and provides inspections, condition evaluations and reporting for electrical lighting system at NWT airports.
- Manages, coordinates, reviews and develops policies, design standards and procedures for the operation, maintenance, rehabilitation and replacement of all airport electrical lighting systems.
- Recommends quality and cost-effective changes to Departmental policies and standards.
- Manages and coordinates the upkeep of a current inventory of airport lighting systems, with emphasis on their condition, capacity and life-cycles.
- Directs and coordinates the collection of technical information and research of expertise required to assess the feasibility and practicality of proposed engineering designs, products or equipment; supervises confirmation testing and evaluation.
- Recommends changes to design standards and criteria which may improve safety, appropriateness or efficiency of designs, and economy of operations at NWT Airports.
- Attends related professional and technical conferences, workshops and seminars and maintains Professional Engineering (P. Eng.) status.
- Prepares technical and management reports and recommendations

2. Contributes toward, evaluates and recommends acceptance of the airport electrical lighting system recommendations contained in airport master plans and land use development plans prepared for the Airports Program, in order to ensure continued cost-efficient and effective growth and development of NWT Airports.

- Develops Terms-of-Reference and manages technical studies to assess electrical lighting systems in terms of facility demands, performance and operational evaluations by analyzing aircraft, passenger, cargo, and ground vehicle movement statistics.
- Defines and recommends changes to life-cycle management and replacement standards and criteria for electrical lighting systems.
- Develops parameters for planning and feasibility studies, benefit-cost analysis and data collection for technical, quantitative and/or comparative analysis of plan/design alternatives for projects.
- Participates in Departmental Steering Committees and in technical staff consultations to provide feedback to consultants contracted to undertake planning and development studies.

3. Develops and manages a Capital and O&M Program, for all airport electrical lighting systems to ensure community needs are met.

- Directs, coordinates reviews, evaluates and recommends approval of technical requirements for projects, including their scope, concept, engineering and economic feasibility, design, scheduling, logistics and tender documents, including design drawings and technical specifications.
- Directs and participates in the definition of operational requirements, and development of proposal calls, and contracts for professional and technical services, in consultation with Headquarters, Regional and Airport Management staff.
- Determines priorities for, and recommends, rehabilitation, restoration, reconstruction and replacement of airport electrical lighting systems, in terms of a 20-year strategic investment plan and revolving 5-year Capital and O&M program plans.
- Reviews and evaluates plans and criteria for airport lighting system projects that may be implemented on airport property by other government departments and non-government agencies.
- Develops planning submissions and technical justifications for Capital and O&M projects.
- Develops, coordinates and compiles applications for Federal Airport's Capital Assistance Program (ACAP) funding and completes project completion and audit documentation.
- Integrates recommendations of Airport Master Plans, Airport Development Plans, and the Airport Lighting Maintenance Management System, regarding requirements for electrical lighting systems, into strategic and capital plans.
- Directs, coordinates and analyzes projects in terms of effective life-cycle management, involving assessment of replacement criteria, determination of viable project alternatives, preliminary and final design solutions, specifications, transportation and construction logistics, project schedules, project cost estimates, and short and long-term impact on Capital and O&M program budgets.
- Reviews, evaluates and recommends approval of Capital and O&M project proposals submitted by Headquarters (HQ) staff, Regional Superintendents, Regional Managers and Airport Managers, for inclusion in Capital and O&M programs, and ensures that projects are compatible with operational requirements, Departmental objectives, policies, standards and criteria.

4. Develops and maintains O&M and Capital program budget estimates and project cost control procedures related to all airport electrical lighting systems to ensure their timely and cost-effective development.

- Directs and coordinates development of preliminary cost estimates and consolidates capital and O&M budget requirements.
- Coordinates and participates in development of budgets and procedures for reporting expenditures, commitments and projected resource requirements.
- Coordinates, reviews, prepares and recommends approval of Capital Project Substantiations and ensures that budget requirements are appropriate and reasonable.
- Prepares monthly status/variance reports for all current Capital and O&M related projects the incumbent is responsible for.
- Assists in the preparation of budgetary documents, contribution agreements and service contracts, required to appropriate Capital and O&M funds for projects within the department.
- Develops Minister and Deputy Minister Authorizations and Financial Management Board submissions, as required.

5. Directs and monitors the implementation of approved plans, programs and processes associated with all airport lighting systems to ensure proper completion within specifications.

- Collaborates with applicable peers and clients to determine project requirements.
- Prepares project Terms-of-Reference to meet Departmental requirements for infrastructure rehabilitation, restoration, replacement or new electrical lighting systems.
- Identifies project land requirements, and assists in development of submissions for regulatory approvals and applications for land-use, right-of-way and quarry permits.
- Provides advice, comments, and recommendations to the Manager in respect of project designs completed by divisional staff and Consultants during the design phase.
- Monitors project implementation, and oversees physical progress and financial status.
- Reviews project change requirements (i.e. scope of work, resources and timeframes).
- Participates in project reviews and interim and final project acceptance inspections; identifies deficiencies; advises on actions required to deal with deficiencies.
- Recommends acceptance of completed consultant contracts and construction projects.

6. Provides technical expertise to Regional Superintendents, Airport Managers, and Airport/Municipal/Private Contractor staff to ensure that electrical lighting systems may be operated and maintained within Canadian and International standards and recommended practices, and that expected life-cycles are achieved.

- Oversees and provides functional advice, support, and direction in respect of airfield lighting maintenance standards, annual maintenance programs and procedures at all airports to ensure that operating requirements and certification standards are met.
- Investigates, assesses and diagnoses problems and issues identified by site and regional personnel and develops recommended solutions and repair strategies in airfield lighting systems.

- Interprets and implements policy and regulatory requirements and advises on development of Terms-of-Reference, proposal calls, technical specifications, contract documentation, and airport Plans of Construction Operations.
- Advises on appropriate preventative maintenance programs, performance monitoring procedures, and determination of O&M resource requirements.
- Establishes criteria, and conducts contractor and consultant ratings and evaluations, and makes recommendations for contract/project awards.
- Participates in Regional and Divisional workshops and provides technical advice to airport contractors.
- Provides technical briefs and presentations to Regional and Airport Managers and staff, municipal councils, air carriers and other government departments.

WORKING CONDITIONS

Physical Demands

The incumbent is required to walk considerable distances, and carry out physical investigation on gravel surfaces, during inspections for approximately 20 days a year, for 6 to 8 hours each day.

Environmental Conditions

The incumbent is exposed to adverse weather conditions and insects during inspections approximately 20 times per year, for 6 to 8 hours per occurrence. Exposure to aircraft noise requiring hearing protection occurs 10 times per year for 1 to 4 hours. Exposure to hazardous or flammable materials and vapours occurs approximately 24 times per year for a period of $\frac{1}{2}$ hour. This work is conducted in restricted and/or construction areas where heavy equipment is operating and safety apparel and equipment is required

Sensory Demands

No unusual demands.

Mental Demands

Summer and fall travel to the communities is required. This occurs approximately 12 times per year, for a period of 2 to 5 days.

KNOWLEDGE, SKILLS AND ABILITIES

- Thorough and current working knowledge of design standards and engineering practices including: Canadian Electrical Code, Aerodrome Standards and Recommended Practices (TP-312), Canadian Standards and Recommended Practices, Airfield Lighting System Design and Rehabilitation, Construction Methods and Inspection, Construction Materials and Testing, and ICAO Annex 14, Aerodromes.
- Specialized technical knowledge of construction standards including: airport lighting system design, maintenance and management, aircraft landing aids, airside signage, airfield marking systems, and geotechnical and environmental conditions.

- Knowledge of project management, construction and project administration within the Arctic and Sub-Arctic environment including factors affecting northern construction.
- Knowledge of management principles and practices.
- Knowledge of capital planning, budget planning, financial control systems and project implementation processes.
- Knowledge of airport planning, airport master plans and development plans, airport operations, safety regulations and zoning requirements.
- Knowledge of electrical lighting systems design and evaluation.
- Knowledge of the terminology and functional knowledge of the operation of airports.
- Knowledge of northern air transportation facilities, air carrier operators and their services, aircraft characteristics and performance.
- Knowledge of engineering design, cost estimating, cost control and construction contract law.
- Knowledge of contract management and administration.
- Knowledge of project management and program administration in a matrix style management environment including skills in information management and project control.
- Conflict resolution and negotiation skills and ability to recognize the early signs of conflict and be able to adopt conflict resolution strategies.
- Knowledge of and proficiency in the use of databases, word-processing, spreadsheets and communications software (e-mail, modem and fax).
- Proven ability to communicate both orally and in writing is regularly required to communicate complex concepts to both technical and lay audiences.
- Ability to organize competing technical and personal interests while applying approved standards and procedures to achieve successful project completion.
- Ability to develop technical solutions that identify and resolve unique electrical engineering problems.
- Ability to work in a cross-cultural environment.

Typically, the above qualifications would be attained by:

Degree in Electrical Engineering and 10 years progressive experience in the planning, design, implementation and project management of electrical engineering projects.

The incumbent requires at least 5 years of experience in a northern setting, or in regional conditions similar to those found in the NWT (isolated, limited resources, transportation logistics challenges), with specialized training in airport infrastructure design, lighting system, maintenance and management.

Registration as a Member of the Association of Professional Engineers and Geoscientists of the NWT (NAPEG) is required and must be completed within six months following appointment.

The incumbent will be required to obtain appropriate airside security clearances.

ADDITIONAL REQUIREMENTS

Position Security

- No criminal records check required
- Position of Trust – criminal records check required
- Highly sensitive position – requires verification of identity and a criminal records check

French language (check one if applies)

- French required (must identify required level below)

Level required for this Designated Position is:

ORAL EXPRESSION AND COMPREHENSION

Basic (B) Intermediate (I) Advanced (A)

READING COMPREHENSION:

Basic (B) Intermediate (I) Advanced (A)

WRITING SKILLS:

Basic (B) Intermediate (I) Advanced (A)

- French preferred

Aboriginal language: Choose a language

- Required
- Preferred