



IDENTIFICATION

Department	Position Title	
Infrastructure	Structural Standards Engineer	
Position Number	Community	Division/Region
33-12582	Yellowknife	Transportation/HQ

PURPOSE OF THE POSITION

The Structural Standards Engineer provides leadership and technical expertise in support of the Highways and Marine Division's development of bridge structures design guidelines, design of standard bridges, standard bridge components and bridge rails. The incumbent reviews consultant designs and advises on conformance with structural and safety standards and effectiveness in cost and performance. In house consulting services are provided on structural engineering issues to Government of Northwest Territories (GNWT) – Department staff and the incumbent also works as an effective team member with all stakeholders in providing safe and high quality bridge structures for the traveling public.

SCOPE

The Structural Standards Engineer is located in Yellowknife and reports to the Manager Structures Section - Bridges.

The Department of Infrastructure is highly decentralized in the delivery of its programs and services and is responsible for territory-wide government programs such as the operation and maintenance of public buildings and transportation infrastructure and systems, project management, facilities planning, design and technical support services, environmental assessment and remediation, property management, procurement shared services, information technology, information management, disposal of surplus property and goods motor vehicle and mechanical/electrical regulatory services and fleet management.

The Department is also responsible for programming aimed at increasing the use of domestic energy resources and reducing energy costs in the NWT (Northwest Territories), delivering renewable energy solutions, providing energy supply services to non-market communities, and leading efforts in energy conservation and efficiency.

On behalf of the GNWT, the Department of Infrastructure also carries the responsibility for strategic planning for the GNWT's (Government of the Northwest Territories) long term investment in the development of public transportation and energy production and distribution systems for the Northwest Territories, as well as the continuity of marine transportation services for the provision of fuel and dry goods to northern destinations.

There is a significant, territory-wide impact affecting quality of designs provided by consultants, quality and safety of bridge structures, efficient use of resources and Infrastructure dollars. High quality bridges will be safer for the travelling public. This has an impact on tax dollars saved in capital investment and long-term maintenance costs by ensuring the longevity of the Northwest Territories' (NWT's) infrastructure investment. Project size can range from small culverts costing \$200,000 dollars to major river crossings costing up to \$180 million dollars.

Throughout the NWT, clients and stakeholders include GNWT-Department staff, consultants, contractors, suppliers and the general public.

RESPONSIBILITIES

1. Identify needs, investigate, develop and update structural engineering design standards and guidelines to ensure safe, economical and durable bridge structures. Evaluate new developments in design procedures and bridge technologies for performance in the NWT. Evaluate performance of new and existing bridges as well as design and construction practices in the NWT to ensure that bridge designs continue to improve and provide better value.

- Identify new design practices and deficiencies in current standards.
- Develop and keep up-to-date design guidelines to provide guidance for consultants working for the department.
- Lead development of new technology that will result in better design and cost effectiveness.
- Review new developments in design codes from CSA, Ontario; American Association of State Highway and Transportation Officials (AASHTO); ACI, etc., technical journals and magazines and represent the GNWT at industry technical seminars.
- Review bridge inspection reports and perform routine field trips and site inspections to evaluate current standards.
- Liaise in frequent consultation with other experts within and outside of the Departments.
- Prepare and make presentations promoting understanding and proper interpretation of design guidelines, standards and best practices for effective and durable bridges.

2. Provide in-house consulting and structural engineering support to staff to ensure quality assurance. Provide structural assessments of difficult situations that arise during the design, fabrication and construction phases to ensure safety and maximize the life of bridge structures.

- Respond to queries on the GNWT-Department standards and structural engineering issues.

- Review proposed design alternatives and advise on appropriate structure type and rehabilitation strategy.
 - Review final detailed designs and attend design review meetings.
 - Provide structural assessments as requested on fabrication and construction problems.
 - Carry out or assist in technical audits as required.
- 3. Identify deficiencies and update GNWT-Department standards drawings as needed, covering standard bridges, bridge girders, bridge rails, approach guard rails, deck joints, etc.**
- Conduct structural design for standard bridges and components.
 - Incorporate new products and practices where appropriate.
 - Manage and guide consultants on production of standard designs and drawings.
 - Obtain and assess feedback from consultants, contractors and suppliers on standards design features.
 - Review design of specialized bridge components submitted for approval by supplier.
- 4. Provide structural engineering expertise to other staff in support of their effort to provide safe and reliable bridges and highways for the public.**
- Provide structural design input to bridge fabrication and construction standards specialist and assist in the development of bridge specifications.
 - Provide structural design expertise on the use of new bridge materials.
 - Provide structural engineering support to the Highways and Marine Division for safety guard rails, breakaway traffic sign supports etc.
- 5. Provide information to design consultants, contractors and universities in support of their efforts to provide efficient services to the Department.**
- Respond to queries on Department' bridge designs standards and practices.
 - Assist in the interpretation of bridge design codes.
 - Provide information on past experience and performance of bridges.
 - Provide liaison with academics and consultants on research projects.

WORKING CONDITIONS

Physical Demands

No unusual demands.

Environmental Conditions

No unusual demands.

Sensory Demands

No unusual demands.

Mental Demands

The position involves fieldwork along the highway system or in remote areas 10% of the time. This may involve up to four weeks travel per year. Urgent or emergency projects may be assigned on very short notice.

KNOWLEDGE, SKILLS AND ABILITIES

- Proven knowledge and understanding of complex structural design and analysis such as three-dimensional finite element analysis, soil structure interaction, dynamics, vibration, wind and seismic analysis.
- Proven knowledge and understanding of crash-tested bridge rail guard rail systems, crash cushions, breakaway sign supports, etc.
- Extensive working knowledge of related engineering areas including materials, fabrication, construction, corrosion, hydro technical, geotechnical, highway functional requirements, roadside safety, geometrics and environmental issues.
- Ability to make judgment decisions that balance cost and benefits, factoring in safety issues.
- Proven analytical, consulting, problem-solving skills, combined with common sense and creativity.
- Ability to create innovative made-in-NWT solutions for NWT bridge problems.

Typically, the above qualifications would be attained by:

Degree in Civil Engineering, professional membership with Northwest Territories and Nunavut Association for Engineers and Geoscientists (NAPEGG), and a minimum of 10 years of experience in bridge design.

A Master's Degree in Structural Engineering is preferred.

ADDITIONAL REQUIREMENTS

Position Security (check one)

- ☐ 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 applicable)

- ☐ 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