

New

Ministry

Transportation and Economic Corridors

Describe: Basic Job Details

Position

Position ID

Position Name (30 characters)

Bridge Engineer

Requested Class

Engineering & Related Level 2

Job Focus

Supervisory Level

Agency (ministry) code

Cost Centre

Program Code: (enter if required)

Employee

Employee Name (or Vacant)

Organizational Structure

Division, Branch/Unit

☐ Current organizational chart attached?

Supervisor's Position ID

Supervisor's Position Name (30 characters)

Supervisor's Current Class

Design: Identify Job Duties and Value

Job Purpose and Organizational Context

Why the job exists:

Reporting to the Bridge Manager, this position is responsible for assisting with the day to day administration and project delivery of the bridge construction and rehabilitation program consistent with national codes and department guidelines, standards, policies, acts and technical/functional requirements.

The Regional Bridge Engineer provides the leadership to ensure the safe, efficient and timely delivery of the projects by consultants and contractors as well as to meet the needs of the traveling public.

Projects may include new construction of system interchanges, grade separation structures, river crossings, municipal bridge projects, railway bridges, underpasses and culverts. Specific tasks may include development of standards/guidelines, preparation of bridge specifications, delivery of bridge program, mentoring of junior staff, stakeholder liaison, reviewing designs, tender packages and reports.

Working within the Region, the Bridge Engineer will assist other team members in meeting regional priorities and efficient delivery of the bridge projects. This position will require the use of broad skills and knowledge associated with bridge planning, design and construction including contract and project management. This position is also responsible to provide assistance in the review of Municipal submissions.

Responsible for the selection, assessment and evaluation of engineering consultants. All engineering works done by the consultants are reviewed throughout all phases of the project. The construction phase of the project is monitored to ensure the work is completed safely and in accordance with department requirements and contract specifications.

Responsibilities

Job outcomes (4-6 core results), and for each outcome, 4-6 corresponding activities:

1. Consultants are engaged to provide a full range of engineering services for the delivery of the Region's bridge construction and rehabilitation program.

Activities:

- Assist Regional Bridge Manager in the planning, programming and prioritization of bridge projects.
- Review functional planning, bridge inspection and assessment reports and complete site visits to identify and determine the scope of the project.
- Prepare Terms of Reference within the required schedule for variable assignments including bridge planning, structural design for water crossings, grade separation structures, retaining walls and other highway transportation structures.
- Act as a resource for questions and concerns from consultants during the proposal advertising period.
- Liaise with Department Construction Engineers and prepare the bridge component of the Terms of Reference for combined road and bridge projects.
- Review and evaluate consultant proposals and serve as a member of Consultant Selection Committee to provide recommendations to the Contract Review Committee (CRC) for the award of the project.
- Provide comments and concerns for feedback to unsuccessful consultants and identify items for clarification and negotiation with the successful consultant.
- Select consultants for sole source and service agreement assignments, review and evaluate proposals and provide comments and recommendations to Regional Bridge Manager.
- Provide technical expertise for the resolution of bridge design issues. Provide guidance to project team in the technical reviews or development of technical strategies to resolve technical issues
- Work with the Consultants to obtain required regulatory permits and ensure design and construction is in compliance and environmental protection is ensured.
- Maintain effective communication with the consultants, regulatory agencies, local road authorities, departmental staff and other stakeholders regarding the delivery of assigned bridge projects, ensuring all parties are kept informed of all relevant matters in relation to the project.
- Effectively manage and deliver assigned projects on time and budget, while ensuring quality.
- Provide support to the Consultants during all stages of the work. Review and evaluate engineering services provided by the Consultants.

2. Bridge and culvert structures are constructed in accordance with department standards and specifications.

Activities:

- In the absence of the project sponsor, chair and record the minutes for construction pre-commencement meetings.
- Coordinate public advisory of bridge construction activities with department's Communication Branch, Motor Transport Branch, road construction, maintenance and operations staff.
- Attend weekly, monthly or other progress meetings to review the contractor's progress. Ensure effective accommodation of traffic and safety of the travelling public during all stages of bridge/highway construction. Identify issues requiring attention and ensure safety, environment and quality issues are addressed promptly.
- Assist in the final inspection of the work; review the adequacy and accuracy of the deficiency lists; monitor the final completion of the work.
- Develop, build and maintain effective communication and professional relationships with clients and customers. Provide assistance and support to team members and coordinate with different sections of the department.
- Monitor progress of construction to ensure the work of consultants and contractors, including deliverables and milestone schedules, are in accordance with department guidelines, standards, policies, specifications and

contract requirements. This includes review of shop drawings, project reports, progress estimates, shop drawings, claims/extra work orders in addition to day to day construction administration/project management, stakeholder liaison etc.

- Ensure all regulatory permits, approvals and authorizations issued for the project are adhered to.
- Ensure traffic accommodation measures are in place and maintained throughout construction period for the safety of the traveling public.
- If required, assist in the resolution of claims/disputes between contractors, consultants, landowners, municipalities and stakeholders.
- Address public concerns and problems related to bridge activities.
- Participate in the final inspection of the project and advise the Regional Bridge Manager of any significant problems or concerns.
- Regularly update information in PMA, such as costs and schedule, and on the department's web-pages. Ensure that the information is up to date, accurate and complete.
- Work individually and as part of a team to coordinate and deliver bridge construction and rehabilitation projects.

3. Engineering services provided by consultants are in accordance with department guidelines, standards and policies.

Activities:

- Ensure consultant submissions for the conceptual design, preliminary engineering, choose design, detailed design and tender documents are complete.
- Review designs, drawings and tender packages for capital projects prepared by the Consultant and ensure completeness. This will include the review of calculations, checking bid items/quantities/estimates, special provisions, life cycle cost/net present value analysis and ensuring value for money.
- Review bridge inspection reports, engineering assessments, load evaluations of all types of highway structures for current codes and standards. Utilize bridge engineering concepts and exercise judgment on design details. Utilize knowledge and create strategies that increase safety, are cost effectiveness and have economic and environmental benefits.
- Review all engineering reports, designs, drawings and tender documents to ensure the work completed by consultants meet department guidelines, standards, policies and provide the best value.
- Review design documents to ensure that the design is durable, most functional and cost effective.
- Review all applicable permits, approvals, authorizations, licenses and certificates obtained for the project by the consultant.
- Ensure work is within scope, meets department requirements, is practical, constructible, maintainable and cost effective.
- Liaise with and provide technical support and advice to municipalities.
- Complete final review of engineering services provided by consultants and sign off recommending acceptance of the work.

4. Department's technical guidelines, standards, specifications and policies are reviewed and updated on a regular basis to ensure their effectiveness, efficiency, practicality, achievability and cost effectiveness.

Activities:

- Develop and maintain individual expertise in the area of bridge engineering, including planning, design, construction and project management, through applied experience, courses, seminars and self-study.
- Identify technical or operational issues that need to be addressed for future improvement.
- Provide input during the revision and enhancement of department guidelines and manuals.
- Participate and contribute in cross-functional department teams to develop design and construction standards and specifications.
- Regularly update information in PMA, such as costs and schedule, and on the department's web-pages. Ensure

that the information is up to date, accurate and complete.

- Work individually as well as part of a team to coordinate and deliver bridge construction and rehabilitation projects.
- Serve on technical committees as Regional representative such as Bridge Inspection and Maintenance, Bridge Inspection Certification, Bridge Construction Specifications Review, Infrastructure Management System and Standards and Design.

5. Regional bridge projects are coordinated, administered and delivered effectively, on schedule and on budget.

Activities:

- Administer and coordinate the delivery of bridge projects from project inception to final completion.
- Ensure department funding estimates are accurate and up-to-date.
- Ensure project milestone schedules are submitted, tracked and met.
- Review all project expenditures including consultant invoices, municipality payments, contractor progress estimates and provide recommendation for payment.
- Administer consultant agreements and review and evaluate consultant Staff Substitution and Change of Scope requests, providing recommendations to Regional Bridge Manager for acceptance or rejection.
- Review and evaluate the need and cost of extra work orders and provide recommendation to Regional Bridge Manager.
- Ensure the receipt of all project deliverables from consultants and ensure delivery of corporate information to the department's Technical Standards Branch.
- Prepare or review memos, proposals, reports, policies, processes, guidelines, standards, specifications and manuals.
- Contributes to projects from initial concept, through the planning process to implementation. Assist in the establishment of work plans, regional bridge program and budget development.
- Follow instruction of the Bridge Manager and work under his/her supervision.
- Carry out other duties as assigned.

Problem Solving

Typical problems solved:

This position is responsible for performing engineering tasks related to bridge capital rehabilitation and replacement to ensure good bridge condition and functionality in the region, and to manage the delivery of bridge capital projects. This is paramount in ensuring the safety of the highway network. A high degree of education and training is required to perform such tasks, and there is a high degree of responsibility in performing these tasks and to take appropriate actions as required. Prioritizing and assessing workloads on multiple project is key to successfully managing a wide range of bridge projects and coming up with a wide range of alternatives and finding creative solutions. Project management skills are required to make sure bridge capital projects are done on time, within budget, and with appropriate quality.

Types of guidance available for problem solving:

While established practices, guidelines, specifications, and policies are referenced, there is considerable variety in the problems encountered and their complexity varies greatly. Evolving practices, lessons learned, and new materials must be combined with technical creativity and innovative solutions in the daily delivery of the linear infrastructure capital programs. This position has considerable freedom to act, basing decisions on engineering principles and fiscal responsibilities. Some decision making is collaborative with input from contractors, consultants, and senior manager. Project management principles, contract law, Department specifications, and the Technical Standards Branch are all resources at the disposal of the incumbent.

Direct or indirect impacts of decisions:

This position has the ability to influence the outcome of the direction of the projects on which they are engaged, take responsibility for the outcomes of the project delivery and partnering initiatives with industry, and overall day to day management of the project(s) on which they are engaged. The ability to problem solve and make informed decisions in a timely manner will have direct impacts on the ability to deliver projects on time and within the program budget. This may also have lasting impacts on

relationships with local stakeholders, First Nations, regulatory agencies, etc.

Key Relationships

Major stakeholders and purpose of interactions:

Bridge Manager, Bridge Engineers, Bridge Technologists, Regional Environmental Coordinator, Safety Officer, Consultants, Contractors, Municipalities, Regulatory Agencies, Other Departmental Staff and Public

Required Education, Experience and Technical Competencies

Education Level

Applied Degree

Focus/Major

Engineering

2nd Major/Minor if applicable

Designation

If other, specify:

B.Sc. in Civil Engineering eligibility for membership in APEGGA

Job-specific experience, technical competencies, certification and/or training:

- B.Sc. in Civil Engineering with membership in APEGGA.
- Minimum 5 years of experience in bridge or highway related work.
- Knowledge about basic and advanced concepts of civil/bridge engineering especially related to piling, earthworks, concrete works and structural steel work. Contract administration and project management experience is required.
- Willing to learn and perform structural analysis of existing and proposed bridge and earth retaining structures.
- Knowledge of software that aid in structural design and drawing will be considered an asset.
- Familiar with the department's standards, specifications, bridge codes and understanding of environmental management/safety issues.
- Capable of running projects from conception to completion and managing engineering consultants. This requires demonstrated interpersonal and communication skills combined with a focus on customer service.
- Must be self-motivated, result oriented, and work efficiently under tight schedules in a fast paced environment. This position requires superior planning and organization skills combined with ability to prioritize multiple tasks, demonstrating a flexible approach to work assignments.
- Intelligent, innovative and forward thinking professional with good initiative and attention to details
- Strong decision making, problem solving and negotiation skills are required to deal effectively with the consultants/contractors in the resolution of project related issues.
- Team player, able to share thoughts openly, accept new ideas and get the job done
- Efficient in the use of Outlook, Excel, Word and Powerpoint.
- Valid Class 5 driver's license.

Behavioral Competencies

Pick 4-5 representative behavioral competencies and their level.

Competency	Level					Level Definition	Examples of how this level best represents the job
	A	B	C	D	E		
Systems Thinking	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Considers inter-relationships and emerging trends to attain goals: <ul style="list-style-type: none">• Seeks insight on implications of different options• Analyzes long-term outcomes, focus on goals and values• Identifies unintended consequences	Needs to consider their role and projects in the broader context of the Southern Region bridge program. Evaluation of the options both during design and construction and consider the short term (1-3 years) impact to the program and the long term (5-30 year) impacts to operations of the infrastructure. Reviewing cost benefit

			<p>analyses completed by the contractor and recommending a suitable option based on lifetime costs as opposed to capital cost alone.</p> <p>Review and recommend infrastructure options based on intended use and capital cost.</p> <p>Incorporate lessons learned on the projects in which they are engaged.</p>
Creative Problem Solving	○ ○ ● ○ ○	<p>Engages the community and resources at hand to address issues:</p> <ul style="list-style-type: none"> • Engages perspective to seek root causes • Finds ways to improve complex systems • Employs resources from other areas to solve problems • Engages others and encourages debate and idea generation to solve problems while addressing risks 	<p>The nature of construction projects often requires creative solutions to resolve issues. This may include researching topics, contacting industry experts, outside of the box thinking, etc. Liaise with the public and consultants in support of the Department's positive public image.</p> <p>Work with Alberta Environment to ensure that the legislative requirements are met with respect to reclamation and close out requirements.</p>
Drive for Results	○ ● ○ ○ ○	<p>Works to exceed goals and partner with others to achieve objectives:</p> <ul style="list-style-type: none"> • Plans based on past experience • Holds self and others responsible for results • Partners with groups to achieve outcomes • Aims to exceed expectations 	<p>Ensures that lessons learned are incorporated on the projects under their supervision.</p> <p>Work with external stakeholders to ensure that mutual concerns are addressed.</p> <p>Deliver projects within the approved budget, on time, and employ sound project management principles to guard against predatory claims against the Province.</p>
Build Collaborative Environments	○ ○ ● ○ ○	Collaborates across functional areas and	Direct consultant resources in the

		<p>proactively addresses conflict:</p> <ul style="list-style-type: none">• Encourages broad thinking on projects, and works to eliminate barriers to progress• Facilitates communication and collaboration• Anticipates and reduces conflict at the outset• Credits others and gets talent recognized• Promotes collaboration and commitment	<p>completion of the projects to meet the Department goals</p> <p>Work with Alberta Justice and Alberta Environment to ensure that Capital Projects are delivered in a manner that is consistent with the applicable law, standards and specifications for the Government of Alberta and Government of Canada as is applicable.</p>
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Benchmarks

List 1-2 potential comparable Government of Alberta: [Benchmark](#)

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