

## 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, the Bridge Engineer coordinates and administers the design and construction of the Region's bridge construction and rehabilitation program consistent with national codes and department guidelines, standards, policies, acts and technical and functional requirements.

The Bridge Engineer provides the leadership to ensure the safe, efficient and timely delivery of the projects by consultants and contractors.

Responsible for the selection, assessment and evaluation of consultants, all engineering work is 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 Bridge Manager in the planning, programming and prioritization of bridge projects.

- Review functional planning studies, 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 the project and act as a resource for questions and concerns from consultants during the proposal preparation 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 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 Bridge Manager.
- Review and evaluate engineering services provided by consultants and provide input to department's Consultant Performance Evaluation Process.

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

### **Activities**

- Schedule and attend construction pre-commencement meetings to ensure that the Department's guidelines and standards will be followed during construction.
- Coordinate public advisory of bridge construction activities with department's Communication Branch, Motor Transport Branch, road construction, maintenance and operations staff.
- Monitor progress of construction to ensure the work of consultants and contractors are in accordance with department guidelines, standards, policies, specifications and contract requirements.
- Complete construction site inspections to ensure the consultant enforces and adheres to all regulatory permits, approvals and authorizations issued for the project.
- Complete construction site inspections to ensure the traffic accommodation measures and construction safety procedures are in accordance with the approved plans and industry standards.
- If required, assist in the resolution of 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 Bridge Manager of any significant problems or concerns.

## **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 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 all applicable permits, approvals, authorizations, licenses and certificates that are obtained for the project by the consultant.
- Ensure work is within scope, meets department requirements, is practical, constructible, maintainable and cost effective.
- Complete final review of engineering services provided by consultants and sign off recommending acceptance of the work.
- Administer consultant agreements and review and evaluate consultant Staff Substitution and Change of Scope requests, providing recommendations to Bridge Manager for acceptance or rejection.

## **4. Department's technical guidelines, standards, specifications and policies are followed and feedback is given to the Technical Standards Branch when problems are encountered.**

### **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.
- 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.
- Review and evaluate the need and cost of extra work orders and provide recommendation to Bridge Manager.
- Ensure the receipt of all project deliverables from consultants and ensure delivery of corporate information to the department's Technical Standards Branch.
- Includes the coordination and administration of approximately 10 to 15 consulting engineering agreements with upset limits ranging from \$5 000 to \$2,000,000, approximately 5 to 10 construction contracts ranging from \$100,000 to \$8,000,000.
- Projects include major river crossings and highway interchange structures containing complex and multi-disciplinary elements such as hydro technical, environmental, structural, materials fabrication and construction engineering.
- Technical experience, knowledge and background is required to review and evaluate engineering services, completed by professional consultant engineers and provide meaningful feedback.
- Provide technical input and alternatives in the solution of complex engineering problems.
- Stakeholders include consultants, contractors, landowners, municipalities, railways and the general traveling public.
- Other significant stakeholders include Provincial and Federal Environmental regulatory agencies.
- Department programs include Bridge Construction Maintenance Programs for primary and secondary highways.

### **Problem Solving**

Typical problems solved:

- Provide guidance to engineering consultants during design phase and make decisions on scope of work
- Make direct impact decisions on scope, schedule and cost of projects
- Resolve construction disputes regarding scope, cost and schedule
- Provide guidance on field change orders during construction operations

Types of guidance available for problem solving:

- Cost Benefit Analysis
- Long term planning and asset management
- Engineering guidelines and practices
- Field knowledge and experience

Direct or indirect impacts of decisions:

- Direct impact on financial outcomes of projects
- Direct impact on quality and longevity of projects
- Direct impact on stakeholders including local landowners, municipalities and indigenous communities

### **Key Relationships**

Major stakeholders and purpose of interactions:

- Oversee typically 10 to 15 bridge projects, ranging in size from contracts worth \$150,000 to \$20 million, including CE agreements ranging from \$50,000 to \$2,000,000, as well as smaller regional service

agreements

- Stakeholders include contractors, consultants, landowners, utilities, environmental agencies (provincial and federal), various interest groups, highway users, other government departments, MLA's, and the general public
- Geographic area includes BC border east to Hwy 88 and from the NWT border to S of Grande Cache
- Programs include provincial bridge capital and rehabilitation program.

### Required Education, Experience and Technical Competencies

| Education Level            | Focus/Major | 2nd Major/Minor if applicable | Designation |
|----------------------------|-------------|-------------------------------|-------------|
| Bachelor's Degree (4 year) | Engineering |                               |             |

If other, specify:

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

- Extensive knowledge of bridge planning, design, and construction processes, including the application of project management techniques
- Thorough knowledge and understanding of bridge contract documents, bridge specifications, and contract claims
- Detailed knowledge of roles and responsibilities of the department, consultants, and contractors in the delivery of highway construction projects
- Knowledge of roles and responsibilities of the design team in a multi-faceted project setting
- Knowledge and skill to utilize computer aided design applications so as to recognize the weaknesses and limitations inherent in certain design applications to ensure a quality design review to facilitate in recognizing errors
- Demonstrated ability to perform the role of designer and project manager so as to have an effective and knowledgeable role in evaluating consultant performance, quality of contractors work, and credibility of requested work orders, design changes, and claims requests
- Detailed knowledge of departmental and national highway design standards and guidelines
- Ability to use recognized design procedures to estimate quantities and a clear knowledge of road building component costs to facilitate the credible expenditure forecasting of projects
- Knowledge of departmental consultant guidelines, contract administration manual, project administration manual, traffic accommodation manual, geometric design manual, etc.
- Strong oral and written communication skills
- Leadership and interpersonal relationship skills
- Computer software application skills
- Ability to resolve conflicts
- Ability to analyse complex situations and problems and provide innovative solutions
- Ability to negotiate
- Eligible for membership in APEGGA

### 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 type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <b>Takes a long-term view towards organization's objectives and how to achieve them:</b> <ul style="list-style-type: none"><li>• Takes holistic long-term view of challenges and opportunities</li><li>• Anticipates outcomes and potential impacts, seeks stakeholder perspectives</li><li>• Works towards actions and plans aligned with</li></ul> |                                                    |

|                   |                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                             |  |
|-------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                   |                                                                                                                          | APS values <ul style="list-style-type: none"> <li>• Works with others to identify areas for collaboration</li> </ul>                                                                                                                                                                                                                                                                                        |  |
| Drive for Results | <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | Works to exceed goals and partner with others to achieve objectives: <ul style="list-style-type: none"> <li>• Plans based on past experience</li> <li>• Holds self and others responsible for results</li> <li>• Partners with groups to achieve outcomes</li> <li>• Aims to exceed expectations</li> </ul>                                                                                                 |  |
| Agility           | <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | Works in a changing environment and takes initiative to change: <ul style="list-style-type: none"> <li>• Takes opportunities to improve work processes</li> <li>• Anticipates and adjusts behaviour to change</li> <li>• Remains optimistic, calm and composed in stressful situations</li> <li>• Seeks advice and support to change appropriately</li> <li>• Works creatively within guidelines</li> </ul> |  |
| Develop Networks  | <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> | Leverages relationships to build input and perspective: <ul style="list-style-type: none"> <li>• Looks broadly to engage stakeholders</li> <li>• Open to perspectives towards long-term goals</li> <li>• Actively seeks input into change initiatives</li> <li>• Maintains stakeholder relationships</li> </ul>                                                                                             |  |

## Benchmarks

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