

## Update

Ministry

Transportation

### Describe: Basic Job Details

#### Position

Position ID

Position Name (30 characters)

Sr Bridge Maintenance Tech

Current Class

Job Focus

Operations/Program

Supervisory Level

00 - No Supervision

Agency (ministry) code

Cost Centre

Program Code: (enter if required)

#### Employee

Employee Name (or Vacant)

#### Organizational Structure

Division, Branch/Unit

PPTS, Technical Standards, Bridge Engineering

Current organizational chart attached?

Supervisor's Position ID

Supervisor's Position Name (30 characters)

Supervisor's Current Class

### Design: Identify Job Duties and Value

#### Changes Since Last Reviewed

Date yyyy-mm-dd

2004-10-29

Responsibilities Added:

Roughly ten years ago, responsibilities above and beyond those in the 2004 Job Description were added to this role, for conducting bridge inspection audits of consultant bridge inspectors in response to the Auditor General's recommendations.

Responsibilities Removed:

Reduced responsibilities for ferry inspections.

#### Job Purpose and Organizational Context

Why the job exists:

Reporting to Director of Bridge Engineering, this senior technical position provides expertise in specialized inspections and repairs of bridges and ferries; manages and co-ordinates these specialized inspection programs carried out by consultants; coordinates specialized repairs and provides inspection services in emergency situations. This position serves as a specialized technical resource to the department and

industry for the inspections and repairs of bridges in support of Alberta Transportation core business goal of maintaining a safe and efficient transportation system.

## Responsibilities

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

1. To carry out bridge inspection audits of the regional bridge inspection consultants, in support of the Auditor General's recommendations.
  - Identifies bridge audit sites.
  - Coordinates audit inspections with regional bridge staff.
  - Completes audit inspections.
  - Prepares audit inspection reports.
  - Compiles audit results.
2. To manage and coordinate Level 2 Specialized Steel Inspection Program (e.g. Ultrasonic Truss, Pin & Hangar, Cover Plate Weld, Constraint Induced Fracture, etc.).
  - Prepares Terms of Reference for Level 2 inspection programs and reviews consultant proposals.
  - Coordinates consultant inspection schedules with regional bridge staff and safety officers.
  - Carries out quality assurance audits of consultants inspection and testing procedures
  - Reviews the consultant's inspection results, analysis, and recommendations and provides input and comments to regional bridge staff.
  - Manages consultant agreements and budgets.
3. To provide expertise, advice and recommendations to department staff, consultants, contractors and other agencies in inspection and repair of bridge defects and damage.
  - Provide advice and recommendations on repair of collision damage to steel structures.
  - Determine the feasibility of heat straightening or requirement for replacement.
  - Technical expertise on methods for repair of welding defects found in existing structures and also defects that occur during fabrication.
  - Provide advice, strategies and recommendations for repair of collision and corrosion damage on prestressed concrete structures (techniques for splicing and re-stressing broken strands, post tension repairs, composite materials and epoxy injection repairs.)
  - On request of the region will supervise, manage and/or coordinate larger specialized repair projects.
4. To provide inspection services in response to emergency situations.
  - On request of regional bridge/operations staff, inspect and provide condition assessment of bridge sites that may present immediate safety issues.
  - Assess damage and determine need for immediate action, e.g., close bridge, close lane, restrict loading, etc.
  - Determine feasibility and need for immediate repairs and work with bridge or operations staff to carry out these repairs.
5. To provide assistance to department and local road authorities for provincial ferries.
  - Provide recommendations on required maintenance and repairs of these ferries.
  - Response to problems or emergency situations that may occur throughout the year.
6. To provide support and training for bridge inspection.
  - Make presentations at training courses for Class A & B Bridge Inspection Management (BIM) bridge inspectors.
  - Participate in field training camps for BIM inspectors.
  - Sit on review panels for certification of BIM inspectors.
  - Member of BIM Committee which sets standards for the BIM inspection system and inspection training.
  - Assist with training for regional bridge inspectors.
7. To provide assistance in evaluation of new technologies/testing techniques in the inspection and maintenance of bridges, e.g., high load surveillance monitoring, infra red thermography and ground

penetration radar, advance composite materials, computer tablet entry of inspection data, etc.

- With field application test projects, co-ordinates the installation of the technology with consultants and contractors.
- Monitoring of test projects after installation and reports on results.
- In the case of new inspection techniques review inspection using new technology and compare with results from conventional techniques.

**Problem Solving**

Typical problems solved:

- Work with the preservation specialist and team to update inspection standards and processes.
- Assess the condition of deteriorated and/or damaged bridge elements and recommend actions.
- Assess results of specialized inspection programs and recommend actions.
- Identify areas where bridge inspectors are not meeting the expected standards.
- Identify new technologies and how they can be incorporated into inspection practices.

Types of guidance available for problem solving:

- Department standards such as:
  - Repair Manual for Concrete Bridge Elements;
  - Repair of Structural Steel Elements Manual;
  - BIM Level 1 Inspection Manual and Reference Manual; and
  - BIM Level 2 Inspection Manual.
- Published studies and research projects (e.g. heat strengthening requirements)
- Engineering judgement and experience, peer network, Academia

Direct or indirect impacts of decisions:

- Safety of bridges in operation, confidence of travelling public in infrastructure.
- Consistency and reliability of out-sourced bridge condition inspection services.
- Reliability of bridge maintenance work identification to support optimized expenditures.
- Support for economic development with consideration of innovative inspection tools and processes.

**Key Relationships**

Major stakeholders and purpose of interactions:

- Director (bi-weekly) - seek clarity and context, alignment with department goals
- Bridge Preservation Specialist and preservation team (weekly) - technical guidance, assignment of work, monitoring progress and performance
- Regional Bridge Technologists - (weekly) - technical support for challenging issues, technical support in the assessment of safety of deteriorated bridges, monitor implementation of inspection standards, interpret standards and process requirements.
- Regional Bridge Managers (monthly) - address needs and results of specialized inspection programs and audits.
- Regional Operations Managers and staff (quarterly) - to discuss inspection and operations of ferries.
- BIM Committee members (quarterly) - support improvements in bridge inspection processes and new systems/technologies, and certification of new inspectors.

**Required Education, Experience and Technical Competencies**

Education Level	Focus/Major	2nd Major/Minor if applicable	Designation
Diploma (2 year)	Engineering		Other

If other, specify:

Civil engineering technology

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

- Must be Currently certified with Alberta Transportation as a Class A Bridge Inspector and have been certified as a Class A Bridge Inspector for at least the last five years (this would be at least equivalent to 10 years of bridge inspection experience, based on the time required to attain the Class A certification).
- Must be a Certified Engineering Technologist (C.E.T.) with the Association of Science & Technology Professionals of Alberta (ASET), or be sufficiently qualified to obtain this certification with ASET.
- Extensive knowledge of specialized inspection techniques is required (e.g., Concrete Deck Testing,

Specialized Steel Inspection, etc.)

- Extensive knowledge of bridge maintenance and repair methods is required.
- Extensive knowledge of specialized repair techniques is required (e.g., heat straightening, splicing & stressing prestressing strands, post tensioning, epoxy inspection).
- Extensive knowledge of the behaviour of structures particularly with respect to structural damage is required.
- Extensive knowledge of bridge materials, steel, concrete, welding is required.
- Familiarity with other areas of bridge engineering (e.g. repairs/rehabilitation, construction, fabrication) is an asset.
- Experience with other bridge inspection systems is an asset (e.g. FHWA National Bridge Inspection Standards or the Ontario structure inspection manual).

### 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		
Creative Problem Solving	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Engages the community and resources at hand to address issues: <ul style="list-style-type: none"> <li>• Engages perspective to seek root causes</li> <li>• Finds ways to improve complex systems</li> <li>• Employs resources from other areas to solve problems</li> <li>• Engages others and encourages debate and idea generation to solve problems while addressing risks</li> </ul>	Working with the BIM committee, this position will need to be aware of new inspection systems and technologies, and then assess and implement where appropriate.
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>	Working with regional stakeholders will be required to identify the appropriate bridges for specialized inspections and then to ensure that the results of these specialists inspections are communicated to the regions and that appropriate measures are implemented to address any issues.
Build Collaborative Environments	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Collaborates across functional areas and proactively addresses conflict: <ul style="list-style-type: none"> <li>• Encourages broad thinking on projects, and works to eliminate barriers to progress</li> <li>• Facilitates communication and</li> </ul>	Quality control and auditing of internal and external bridge inspectors is a critical function of this position. The longterm goal of this is to ensure all external consultants are inspecting bridges to a high standard. This can involve

		<p>collaboration</p> <ul style="list-style-type: none"> <li>• Anticipates and reduces conflict at the outset</li> <li>• Credits others and gets talent recognized</li> <li>• Promotes collaboration and commitment</li> </ul>	<p>identifying sub-standard inspections, which has the potential to cause conflicts. It's important for the department to maintain good relationships with internal and external bridge inspectors, which requires diplomacy in administering this. This position works with minimal supervision and therefore must work closely with the preservation specialist and team, as well as the regional bridge teams.</p>
<p>Develop Self and Others</p>	<p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/></p>	<p>Encourages development and integration of emerging methods:</p> <ul style="list-style-type: none"> <li>• Shapes group learning for team development</li> <li>• Employs emerging methods towards goals</li> <li>• Creates a shared learning environment</li> <li>• Works with individuals to develop personal development plans</li> </ul>	<p>Individuals within the Bridge Engineering Section of the Technical Standards Branch are expected to be subject matter experts. This requires continued learning throughout their career. For this position, continual learning of new inspection techniques (e.g. drones) and inspection systems is expected.</p>

**Benchmarks**

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

**Assign**

The signatures below indicate that all parties have read and agree that the job description accurately reflects the work assigned and required in the organization.

\_\_\_\_\_  
Employee Name

\_\_\_\_\_  
Date yyyy-mm-dd

\_\_\_\_\_  
Employee Signature

\_\_\_\_\_  
Supervisor / Manager Name

\_\_\_\_\_  
Date yyyy-mm-dd

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Supervisor / Manager Signature

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Director / Executive Director Name

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Date yyyy-mm-dd

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Director / Executive Director Signature

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ADM Name

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Date yyyy-mm-dd

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ADM Signature

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DM Name

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