

# Transportation—Managing the Structural Safety of Bridges Follow-up

## SUMMARY

In 2012<sup>1</sup> we reported the results of our audit of the Department of Transportation's systems to manage the structural safety of bridges. We made nine recommendations to the department to improve processes related to inspection contracting, quality and frequency; contractor certification; bridge information system access; maintenance activity reporting; and capital planning submissions.

In 2015<sup>2</sup> we reported the results of our follow-up audit and concluded that the department had implemented seven of the recommendations, but we repeated two recommendations for the department to:

- improve processes to contract inspections to independent third parties
- improve processes to determine if contracting inspections is cost effective

In 2016 we did a follow-up on the two outstanding recommendations. As the follow-up focused on contracting, we neither examined nor found evidence of unsafe bridges when completing our audit procedures.

## Overall conclusion

The department implemented effective contracting processes to manage the structural safety of bridges. The department improved processes for contracting out bridge inspections and determining if contracting out inspections is cost effective.

## What we found

The department has implemented both repeated recommendations by:

- improving processes to contract inspections by formalizing improved criteria as to how proposals are scored and contracts are awarded
- developing and performing an analysis to determine if contracting out inspections is cost effective

## Why this is important to Albertans

The Department of Transportation is responsible for ensuring the safety of bridges across Alberta. Well-maintained bridges are necessary to ensure the safety of Albertans and protect their investment. Many of Alberta's major industries rely on the highway system to move goods.

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<sup>1</sup> *Report of the Auditor General of Alberta—October 2012*, pages 17–33.

<sup>2</sup> *Report of the Auditor General of Alberta—July 2015*, pages 97–105.

## AUDIT OBJECTIVE AND SCOPE

Our audit objective was to determine if the department had implemented our two remaining recommendations. To perform the audit, we:

- interviewed management to learn what actions they took in response to our recommendations
- examined the department’s processes for contracting inspections

We conducted our work from February 2016 to March 2016. We substantially completed our audit on May 13, 2016. Our audit was done in accordance with the *Auditor General Act* and the standards for assurance engagements as set out in the CPA Canada Handbook—Assurance.

## BACKGROUND

The department is responsible for building and maintaining provincial highways, including the approximately 4,400 bridge structures on the highway network. Bridge structures managed by the department consist of major bridges, standard bridges and culverts.<sup>3</sup> Bridges and culverts on local roads are generally the responsibility of municipalities.

The department has an inspection program to assess the condition of bridges to determine if maintenance is needed and if bridge structures should be rehabilitated or replaced. The department has two levels of bridge inspections.

LEVEL	DESCRIPTION
1	visual assessments of the bridge’s condition, using basic tools and equipment, performed on all bridges and culverts with a diameter of 1,500 mm or larger
2	in-depth inspections using specialized equipment, conducted on bridges with known structural defects or those in need of frequent monitoring due to age, design or traffic

The department outsources bridge inspections. All bridge inspectors must complete the department’s training and certification program. Two levels of certification are available: class A inspectors can inspect all bridges while class B inspectors can inspect only standard bridges and culverts. External specialists are required on level 2 inspections given the specialized equipment and examinations needed for the specific defects identified.

Contracts for level 1 inspections are for three years and include performing the inspections, reviewing the results for completeness and compliance with standards, and data entry. For the three-year period 2015–2018, the department will use four contractors at a total cost of approximately \$3.2 million.

<sup>3</sup> Major bridges are typically river crossings, highway interchanges or railway crossings built from site-specific drawings or standard girder drawings. Standard bridges are typically river crossings built from standard bridge design drawings and composed of standard precast girders with steel or concrete substructure elements and supported on steel or concrete piles. Culverts are metal or concrete cylindrical structures with a diameter of at least 1,500 mm, made to manage the water flows under roadways.

## FINDINGS

### **Contracting level 1 bridge inspections—implemented**

#### **BACKGROUND**

We made the original recommendation in 2012<sup>4</sup> because without a rigorous, fair and transparent contracting process, the department may not be obtaining the best services for the best price.

In 2015<sup>5</sup> we repeated our recommendation because we found the department did not:

- document how it selected criteria for assessing contract proposals
- establish how it awards points for each criteria requirement
- demonstrate that it had applied criteria consistently

#### **OUR AUDIT FINDINGS**

The department has implemented this recommendation. It has established specific criteria as to how points are awarded for each evaluation category for contract proposals. Each category now has its own subcategory, with the scoring guide providing clear guidance for each. There is guidance for marking high, middle and low scores. The points awarded for the past performance and current bid categories are based on past work performed by the contractors that the department has evaluated and a clear calculation based on the cost indicated in the contract bid. To prevent contractors from being excluded, first-time bidders are awarded the average score on the past performance category.

We conclude that the department's design improvements to this process are effective. The department, however, will not be able to apply these process improvements until its next level 1 bridge inspection contracting cycle begins in late fiscal 2018. We will assess the operating effectiveness of the process during our fiscal 2018 financial statement audit of the department.

### **Assessing whether to contract out inspections—implemented**

#### **BACKGROUND**

We made the original recommendation in 2012<sup>6</sup> because the department had not since 1997 made an assessment of the costs and benefits of contracting out bridge inspections to know if it was getting value for the money it spent on these services. In 2015,<sup>7</sup> we repeated our recommendation because the department had yet to complete an analysis.

#### **OUR AUDIT FINDINGS**

The department has implemented this recommendation. Department management completed an analysis in late 2015 assessing the cost effectiveness of outsourcing level 1 inspections. The analysis evaluates both quantitative and qualitative factors to reach a conclusion and includes relevant factors such as the risks and benefits, documented cost assumptions and consideration of the staffing costs. The analysis also includes consideration of other jurisdictions and how they approach bridge inspection activities. The department formalized the process by incorporating it into the annual bridge inspection report template for senior management.

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<sup>4</sup> *Report of the Auditor General of Alberta—October 2012*, no. 6, page 27.

<sup>5</sup> *Report of the Auditor General of Alberta—July 2015*, no. 10, page 99.

<sup>6</sup> *Report of the Auditor General of Alberta—October 2012*, no. 5, page 26.

<sup>7</sup> *Report of the Auditor General of Alberta—July 2015*, no. 11, page 101.

The department calculated that performing the inspections with internal staff would result in savings of approximately one million dollars over a three-year term when compared to outsourcing to external inspectors.<sup>8</sup> The department also considered risks and benefits of the two options including staffing, cost escalation, inspection errors, inspection standards, training, knowledge loss and sharing of work duties.

Considering both qualitative and quantitative factors, the department concluded that the historical policy of outsourcing bridge inspections requires further review. The department will conduct a detailed cost-benefit analysis when the current contract is approaching renewal. The department will also consider a pilot project involving one region to assess the impact of using internal staff. It will also examine anticipated market conditions for contract inputs in the year of renewal as these costs fluctuate annually. The outcome of the updated cost-benefit analysis and any pilot project will provide direction on the best method for the department to deliver the bridge inspection function.

We will examine the department's updated cost-benefit analysis as part of our department financial statement audit work prior to the next bridge inspection contracting cycle in 2018. As identified by the department, the time required to recruit and train internal staff may be significant. Consequently, we would anticipate that the department's conclusion on bridge inspection delivery will be required well in advance of 2018.

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<sup>8</sup> The analysis was completed using 2015 costs (Government of Alberta wage ranges for staffing costs, fuel costs for transportation to and from sites, and hotel costs for overnight stays).