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STANDING COMMITTEE ON PUBLIC ACCOUNTS

MINISTRY OF TRANSPORTATION – ROAD INFRASTRUCTURE CONSTRUCTION CONTRACT AWARDING AND OVERSIGHT

(SECTION 3.10, 2016 ANNUAL REPORT OF THE OFFICE OF THE AUDITOR
GENERAL OF ONTARIO)

2nd Session, 41st Parliament
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The Honourable Dave Levac, MPP
Speaker of the Legislative Assembly

Sir,

Your Standing Committee on Public Accounts has the honour to present its Report and commends it to the House.

Ernie Hardeman, MPP
Chair of the Committee

Queen's Park
Decembre 2017

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**STANDING COMMITTEE ON PUBLIC ACCOUNTS
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2nd Session, 41st Parliament

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INTRODUCTION

On May 17, 2017 the Standing Committee on Public Accounts (the Committee) held public hearings on the audit (section 3.10 of the Auditor General's 2016 Annual Report) of Road Infrastructure Construction Contract Awarding and Oversight administered by the Ministry of Transportation. Senior officials from the Ministry of Transportation participated in the hearings. (For a transcript of the Committee proceedings, please see Committee Hansard, May 17, 2017.)

The Committee endorses the Auditor's findings and recommendations and presents its own findings, views, and recommendations in this report. The Committee requests that the Ministry of Transportation provide the Committee Clerk with written responses to the recommendations within 120 calendar days of the tabling of this report with the Speaker of the Legislative Assembly, unless otherwise specified.

ACKNOWLEDGEMENTS

The Standing Committee on Public Accounts extends its appreciation to officials from the Ministry of Transportation for their attendance at the hearings. The Committee also acknowledges the assistance provided during the hearings and report writing deliberations by the Office of the Auditor General of Ontario, the Clerk of the Committee, and staff in the Legislative Research Service.

BACKGROUND

The Province's transportation infrastructure is made up of road infrastructure and public transit infrastructure, both falling under the responsibility of the Ministry of Transportation (Ministry). (Municipalities have their own road and public transit infrastructure for which the Ministry is not responsible.)

Ontario's road infrastructure is valued at \$82 billion. It consists of about 40,000 km of highway lanes covering a distance of about 17,000 km, and almost 5,000 bridges and culverts.

Ontario's public transit infrastructure is valued at \$11 billion. Metrolinx, an agency of the Ministry of Transportation, is responsible for operating a network of train and bus routes across more than 11,000 square km in the Greater Toronto and Hamilton Area (GTHA). Metrolinx uses about 680 km of railway track on seven train lines, 66 train stations, and 15 bus terminals.

The Ministry enters into construction contracts for work either to rehabilitate existing infrastructure or to create new infrastructure to expand capacity. The road network, most of which was originally built by the 1990s, requires considerable ongoing maintenance. The Ministry expects to spend about \$14 billion over the next 10 years for road and bridge rehabilitation and about \$4 billion for road and bridge expansion.

The Ministry awarded about 600 large construction contracts (> \$1 million each) totalling about \$5.5 billion from 2010/11 to 2015/16. These contracts are for projects such as re-paving sections of highways, expanding highways,

rehabilitating existing bridges, or building new bridges. The average contract was valued at \$9.1 million. The Ministry also awarded about 1,450 minor construction contracts totalling about \$580 million. Minor work usually involves less significant repairs on existing structures. The average value of these contracts was about \$400,000. Figure 1 shows that 10 contractors accounted for 73% (\$4.4 billion out of \$6.1 billion) of all construction work awarded by the Ministry over the five-year period.

Figure 1: Value of Contracts Awarded to Top 10 Contractors vs. Other Contractors, 2010/11–2015/16

Contractor	Total Value of Contracts Awarded (\$ million)	% of \$6.1 Billion in Total that Ministry Awarded to Contractors
Miller Group Inc.*	963	16
Dufferin Construction Company*	866	14
Aecon Construction and Materials Limited*	738	12
Coco Paving Inc.*	402	7
Pioneer Construction Inc.	345	6
Teranorth Construction & Engineering Limited	318	5
J&P Leveque Bros. Haulage Limited	271	4
R.W. Tomlinson Limited	186	3
Bot Construction Limited	175	3
Cruickshank Construction Limited	163	3
Subtotal	4,427	73
Other	1,653	27
Total	6,080	100

* Asphalt cement supplier.

Source: AG's 2016 Annual Report, p. 526.

The road construction industry in Ontario is primarily represented by two groups: the Ontario Road Builders' Association (ORBA) and the Ontario Hot Mix Producers Association (OHMPA). They consult with the Ministry on technical matters and lobby on behalf of their members' interests.

AUDIT OBJECTIVES AND SCOPE

The audit objective was to assess whether the Ministry of Transportation had effective policies and procedures in place to ensure that

- contractors were selected in a competitive, fair, open and transparent manner that resulted in contracts being awarded to qualified bidders only, with due regard for economy;
- there was sufficient oversight of the contractors during construction; and
- final construction resulted in a high-quality asset that meets the needs of Ontarians.

The Auditor interviewed staff involved in procurement, administration, and oversight of construction contracts, and examined related data and documentation (focusing on the 2010/11 to 2015/16 period), including Ministry reports on the quality of construction work done by contractors. The Auditor researched construction contract administration in other jurisdictions, met with Ministry staff involved in the research and development of asphalt standards and testing requirements, and examined related documentation, including research the Ministry has conducted on poor-performing pavements. A professor at Queen's University (who has been performing research on asphalt and asphalt quality since the 1990s) was consulted to learn how proper testing can aid the Ministry in predicting whether roads will crack early. Representatives from municipalities and the 407 ETR (the privatized highway consortium) were also contacted to find comparisons to Ontario's asphalt standards and testing requirements. Also, the ORBA and OHMPA were consulted to obtain their perspectives on the challenges they face in delivering construction contracts.

MAIN POINTS OF AUDIT

The audit found that in 2000 the Ministry began identifying significant problems throughout the province with premature pavement cracking, resulting in increased cost to taxpayers for highways having to be repaired or repaved sooner than expected and increased inconvenience and time lost for drivers due to more frequent road work. In 2004 the Ministry confirmed that poor quality asphalt cement was the primary cause of premature cracking. In 2007 two tests for assessing the quality of asphalt and the likelihood of it cracking prematurely were developed. Specific observations in this audit include the following:

- **Premature cracks in highways:** The audit identified highway projects in all regions of the province where pavements had to be fixed for cracks much earlier than their expected life of 15 years—and some as early as only one year after the highway was open to the public. Although sufficient data is lacking to determine the full extent of this issue, the Auditor was able to examine five highway projects where all repair costs due to premature cracking were tracked. The audit found that the Ministry paid \$23 million to repair these highways on top of the \$143 million originally paid to pave them. The highways had to be repaired just one to three years after the pavement was laid.
- **Delays in implementing tests:** The Ministry extensively studied two tests that would allow it to detect, before asphalt was laid, whether pavement is likely to crack early. Suppliers persuaded the Ministry to delay implementation of these tests—one test was implemented five years late while another still had not yet been implemented across all contracts at the time of the audit.
- **Bonus payments:** The Ministry pays contractors bonuses (\$8.8 million in 2012) simply for providing asphalt as specified in the contract, even though contractors have in the past been able to substitute lower-grade asphalt when paving highways. The Ministry was aware of sample switching, but has neither

investigated it to impose fines, nor implemented controls to ensure that sample switching does not occur.

- **ORBA and internal Ministry policies:** Senior Ministry officials have allowed the Ontario Road Builders' Association (ORBA), which represents the contractors that could financially benefit from the changes, to significantly influence its internal operational policies, so that recent policy changes benefit contractors rather than taxpayers.
- **Quality verification engineers (QVEs):** Engineers who certify that structures are built correctly are hired by the contractor, and have provided certifications in all five regions of the province on infrastructure that has later been confirmed to have problems.
- **Poor-performing contractors:** The Ministry's selection process is fair and transparent, but the Ministry is lenient with contractors who perform poorly. Contractors that have received unsatisfactory ratings are allowed to continue to bid for and win significant amounts of work from the Ministry. In addition, the Ministry has paid to repair the contractors' substandard work even when the work was covered by the contractors' warranty.
- **Penalties for breaching safety regulations:** The Ministry continues to award projects to contractors that breach safety regulations. Its penalties for these contractors are ineffective at preventing contractors from bidding on future work.

ISSUES RAISED IN THE AUDIT AND BEFORE THE COMMITTEE

Significant issues were raised in the audit and before the Committee. The Committee considers the issues below to be of particular importance.

Bonus Payments

The Auditor recommended the Ministry review the practice of paying bonuses for meeting contract specifications and assess whether contract amounts should be withheld when contract specifications are not met.

In its response, the Ministry informed the Committee that for the 2017 construction season it had modified the End Result Specification (ERS) System to encourage better quality, durability, and workmanship of asphalt pavements. The Ministry added that payment incentives for asphalt mix properties and compaction were suspended for contracts tendered after March 20, 2017.

The Ministry stated that the specification requirement for asphalt compaction has been raised for all contracts. It added that the new requirement is in line with many US states and is expected to promote a longer pavement life and improved durability.

The Ministry noted that higher requirements for pavement smoothness have also been introduced for all new contracts. It added that Ontario continues to have

some of the most stringent requirements for smoothness in North America. Payment incentives remain in place to promote high quality workmanship from contractors while providing good value and environmental benefits.

The Ministry expects to complete its review of the ERS System based on data obtained during the 2017 construction season. This review, to be completed by the end of 2018, will identify further enhancements to the Ministry's asphalt pavement requirements and payment procedures. The Ministry added that training is being developed on the ERS payment system including the changes made for the 2017 construction season.

Asphalt Testing

The Auditor recommended the Ministry incorporate the Extended Aging test into its standard testing methodology for asphalt.

The Committee heard that the Extended Aging, or Extended Bending Beam Rheometer (ExBBR), and the Double Edge Notched Tension (DENT) tests for asphalt cement have been included in all contracts and for all grades of asphalt cement tendered after March 1, 2017. These tests, which are used for acceptance purposes, will promote higher quality asphalt cement and asphalt pavements.

Further, new documentation and sampling requirements for asphalt cement have also been included in new contracts. This includes the requirement for a bill of lading and a certificate of analysis to confirm that the grade of asphalt cement being supplied is in accordance with the contract requirements.

Changes have been made to the Ministry's Construction Administration and Inspection Task Manual for items such as asphalt cement sampling and acceptance reviews. This manual details the level of oversight for the Ministry's construction contracts. Additional training for staff involved in oversight and testing was planned for spring 2017.

The use of reclaimed asphalt pavement and roof shingles in surface course pavement has been suspended where long lasting pavement is required. More restrictive test limits have been introduced for the use of recycled engine oil in asphalt cement. The ash content test acceptance limits have been reduced from 0.8% to 0.6% by mass which is in line with many Ontario municipalities and the Ministry of Transportation of Quebec.

As part of ongoing work the Ministry stated it will conduct further research into new and emerging tests that can be used to better predict the performance and durability of asphalt pavement. The Ministry will continue to review and implement additional initiatives to improve the quality of asphalt cement and other materials used on Ontario highways.

ORBA and Internal Ministry Policies

The Auditor found that the Ontario Road Builders' Association (ORBA)'s success in influencing the Ministry to change policies on late fines, highly litigious contractors, and dispute resolution has weakened the tools the Ministry has to manage contractors' performance, is increasing Ministry costs, and

unnecessarily adding to staff and management workloads. As a result, the Auditor recommended the Ministry undertake the following:

- evaluate industry best practices on the collection of liquidated damages and determine whether to re-implement its original policy of collecting liquidated damages at the field level to be in line with industry best practices;
- re-incorporate the provision for excluding highly litigious contractors from bidding on further contracts, and appropriately exercise it when needed;
- pilot and fully assess the use of reviews of referee decisions as an alternative to escalating to litigation before this process is included into policy and procedures;
- re-implement its original dispute-resolution process if it determines that the use of referees will not be incorporated into its policies and procedures; and
- ensure that whenever committees are established to review and make policy implementation decisions that the committee members are not in a conflict of interest.

In its response, the Ministry stated that as part of its Action Plan, the Ministry will establish an expert panel to provide independent advice regarding administrative practices and contract provisions including best practices and approaches from other jurisdictions. The Ministry has developed the terms of reference for the panel and, at the time of the hearings, was in discussions with potential panel members.

The Committee heard that the Ministry is continuing with the practice of collecting liquidated damages immediately after completion of the contract dispute resolution process. The Ministry added that ongoing monitoring of the dispute resolution process is underway to identify any trends and potential improvements to the process.

The establishment of the expert panel was planned for summer of 2017, to be followed by a final report later in the year. The Ministry will review and implement, as appropriate, any changes arising from the final report for the 2018 construction season. Contract language is being finalized to introduce interest charges on liquidated damages. By the end of 2017, a review of how the Ministry develops policy, standards, and specifications related to the Ministry's construction contracts will be completed. This review will focus on best practices for stakeholder involvement while adopting the principles of openness, transparency, and avoidance of conflict of interest.

As an update in November 2017, the Ministry stated that an independent expert panel has been assembled to review and provide recommendations to the Ministry regarding the administrative practices and contract provisions used in the Ministry's highway construction contracts. The panel consists of a representative from provincial transportation ministries in Alberta, Saskatchewan, New Brunswick, and Nova Scotia, and the City of Vancouver. The panel

members are experienced in highway design and construction, contracting and procurement. Completion of a final report regarding the panel's findings and recommendations is planned for the end of 2017 or early 2018.

Committee Recommendations

The Standing Committee on Public Accounts recommends that:

- 1. The Ministry of Transportation provide the Committee, by February 13, 2018, with**
 - a) the final report of the Expert Panel; and**
 - b) identify and provide explanations for implementing or not implementing the recommendations from the Expert Panel's final report.**
- 2. The Ministry of Transportation provide the Committee, by February 13, 2018, with the results of the Ministry's review on how it develops policy, standards, and specifications related to construction contracts.**

Sample Switching

The Auditor found that contractors had the opportunity to tamper with asphalt samples to obtain bonuses. As a result, the Auditor recommended the Ministry ensure that controls over asphalt samples are in place to prevent the risk of sample switching.

The Committee heard that since December 2016 the Ministry has assumed responsibility for the care, control, and oversight of asphalt samples for all new contracts. The Ministry added that this approach has improved the integrity of the process and greatly reduced the risk of sample switching. The Ministry is also incorporating this approach into 27 existing contracts. Also, a tip-line has been established to allow for the reporting of suspected fraud or any other violations or inappropriate activity related to Ministry of Transportation construction contracts.

A fraud prevention training course is being developed for staff which will be delivered during the summer of 2017. By the end of 2018, the Ministry expects to complete an independent risk-based audit of the new sample collection and delivery system to ensure integrity of new practices and procedures. Also, the Ministry will expand the fraud prevention training to external service providers by the end of 2018.

Committee Recommendations

The Standing Committee on Public Accounts recommends that:

- 3. The Ministry of Transportation establish formal policies to guide contract administrators and supervisors who become aware of evidence of fraud. These policies should include directions on who must be notified and when, including notification of the police and other authorities.**
- 4. The Ministry of Transportation provide the Committee with a report on how it addressed evidence reported by the Auditor General of improper tampering with asphalt samples by contractors, including which authorities were notified, and if no authorities were notified, the reason for not notifying.**

Quality Verification Engineers (QVEs)

The Auditor recommended the Ministry hire or contract its own engineers who are independent from the contractors to perform verification activities.

The Committee heard that Quality Verification Engineer (QVE) requirements for certain components, including structure excavation, reinforcing steel, and some electrical items, have been removed and replaced with acceptance reviews conducted by the Ministry. As of April 2017, as an initial step, seven contract specifications have been modified to incorporate these changes.

The Ministry has also identified 15 contracts that will be subject to owner-led reviews for the 2017 construction season. Owner acceptance reviews, completed by Ministry staff or consultants working for the Ministry, will replace the QVE process and will be undertaken on three contracts in each of the five regions across the province.

By the end of 2018, the Ministry is expected to finalize its review of the QVE process and implement recommended changes to the certification process. This review will involve key stakeholders and current contract requirements to ensure independence. The Ministry added that it will also be auditing QVE requirements in summer 2017 for several contracts.

Committee Recommendations

The Standing Committee on Public Accounts recommends that:

- 5. The Ministry of Transportation provide the Committee, by February 13, 2018, with**
 - a) an estimate of the number of contracts that have incorporated the Ministry's acceptance reviews;**
 - b) an estimate of its total number of contracts; and**
 - c) its plan for its use of acceptance reviews for all contracts going forward.**

- 6. The Ministry of Transportation provide the Committee, by February 13, 2018, with the interim results of its audits of**
 - a) the Quality Verification Engineer (QVE) requirements from summer 2017; and**
 - b) the new sample collection and delivery system.**

Contractors' Warranties

The Auditor recommended the Ministry change its warranty provisions regarding the burden of proof and enforce its warranty provisions for costs to be borne by the contractor for all contracts with warranties.

In its response, the Ministry stated that a province-wide tracking system is under development and will be in place before the end of 2017. The Ministry added that improved staff communication and training is underway regarding the administration of existing warranties.

Further, the Committee heard that by the end of 2017, the Ministry intends to improve contract warranties by clarifying contract requirements and incorporating the use of automated and objective data for evaluating pavement performance. For the 2018 construction season, the Ministry will create a Pavement Warranty Guideline that can be used by staff across the province to consistently administer and oversee the warranty provisions used in Ministry contracts. Also for 2018, the Ministry will complete a review and consider the use of other types of warranty provisions in its contracts.

Committee Recommendations

The Standing Committee on Public Accounts recommends that:

- 7. The Ministry of Transportation provide the Committee, by February 13, 2018, with**
 - a) details of the training that is planned, and already underway, for its Pavement Warranty Guideline; and**
 - b) a copy of the guideline.**
- 8. The Ministry of Transportation provide the Committee, by February 13, 2018, with an update of how the Ministry has improved contract warranties through clarifying its contract requirements.**

Penalties for Performance Issues

The Auditor recommended the Ministry establish appropriate penalties for contractors with unsatisfactory ratings; incorporate stricter rules around excluding non-compliant contractors; establish appropriate penalties for contractors that report inaccurate financial information; and implement policies to exclude smaller contractors from bidding in all regions if performance issues are noted in one or more regions.

The Committee heard that the Ministry is undertaking a jurisdictional scan of other road authorities to identify potential enhancements to the current qualification process for contractors including new safeguards and sanctions. This information will be used to complete its review by the end of 2017.

As of April 1, 2017, the Ministry has implemented new financial security requirements for all designated contracts with a value greater than \$250,000. Designated contracts now require a performance bond and a labour and material payment bond.

The Ministry added that, by the end of 2017, it intends to complete a review on how it can prohibit smaller contractors with performance issues from bidding on contracts. Further, by the end of 2018, the Ministry expects to implement measures to enhance the current contract tendering process by factoring the contractor's past performance regarding safety, quality, and timeliness into the selection process. Beyond 2018, the Ministry intends to assess whether the improvements have had the desired outcome of ensuring contractors who bid have the appropriate finances, staff, and equipment necessary to undertake the work.

Committee Recommendations

The Standing Committee on Public Accounts recommends that:

9. The Ministry of Transportation

- a) describe the new financial security requirements for designated contracts; and**
- b) provide the Committee with the total number of designated contracts that exceed the \$250,000 threshold.**

10. The Ministry of Transportation provide an overview of the jurisdictional scan completed on other road authorities as it relates to safeguards and sanctions.

11. The Ministry of Transportation provide the Committee with the results, when available, of its review on prohibiting contractors with performance issues from bidding on contracts.

CONSOLIDATED LIST OF COMMITTEE RECOMMENDATIONS

1. The Ministry of Transportation provide the Committee, by February 13, 2018, with
 - a) the final report of the Expert Panel; and
 - b) identify and provide explanations for implementing or not implementing the recommendations from the Expert Panel's final report.
2. The Ministry of Transportation provide the Committee, by February 13, 2018, with the results of the Ministry's review on how it develops policy, standards, and specifications related to construction contracts.
3. The Ministry of Transportation establish formal policies to guide contract administrators and supervisors who become aware of evidence of fraud. These policies should include directions on who must be notified and when, including notification of the police and other authorities.
4. The Ministry of Transportation provide the Committee with a report on how it addressed evidence reported by the Auditor General of improper tampering with asphalt samples by contractors, including which authorities were notified, and if no authorities were notified, the reason for not notifying.
5. The Ministry of Transportation provide the Committee, by February 13, 2018, with
 - a) an estimate of the number of contracts that have incorporated the Ministry's acceptance reviews;
 - b) an estimate of its total number of contracts; and
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 - a) details of the training that is planned, and already underway, for its Pavement Warranty Guideline; and

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 11. The Ministry of Transportation provide the Committee with the results, when available, of its review on prohibiting contractors with performance issues from bidding on contracts.