



**Office of the Auditor General: Audit of Roads  
Services Branch – Contract Management, Tabled  
at Audit Committee – November 30, 2017**



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**Acknowledgments**

The team responsible for this audit, comprised of Suzanne Bertrand, Janet Onyango, Louise Proulx, Joe Kyte and Vivien Kaye, under the supervision of Ed Miner, Deputy Auditor General and the direction of Ken Hughes, Auditor General, would like to thank those individuals who contributed to this project, and particularly, those who provided insights and comments as part of this audit.

Original signed by:

Auditor General

## Executive summary

### Purpose

The audit examined the management of the Roads Services branch's non-winter contracts.

### Rationale

The City of Ottawa Road Services branch (RSB) within the Public Works and Environmental Services department (PWES) is responsible for operations and maintenance of the City's street, sidewalk, walkway and trail system. The City has approximately 5,661 km of roads, 2,195 km of sidewalks and 233 km of Transitway and Highway 174 to maintain.

The focus of this audit is RSB's non-winter operations including:

- Roadway maintenance (asphalt repairs including pothole repair, sweeping, ironworks adjustments, shoulder maintenance)
- Right-of-way maintenance (grass cutting, graffiti removal, litter baskets, drainage and roadway cross culvert repairs, guide rails)
- Sidewalk/pathway maintenance (sweeping, concrete repairs, bus pad repairs, decorative brick repairs)

Major road, bridge and sidewalk rehabilitation and renewal activities are carried out by and are the responsibility of Infrastructure Services and are not included in the scope of this audit.

The City's 2016 budget for Roads Services non-winter operations was \$31.5 million, and expenditures were \$31.8 million (see Table 1 below). Services are delivered from 17 yards spread across five zones in four geographic areas and use both City crews and contractor crews. There are approximately 520 employees in RSB.

Table 1: Non-winter operations (in millions)

Cost element group	Budget	Actual
Labour (City)	\$17.3	\$18.2
Material	4.4	3.6
Internal equipment (and services)	6.7	6.9
External contracted services	3.1	3.1
Total	\$31.5	\$31.8

The focus for this audit is material (used by City and contracted crews) and external contracted services and the related City supervision.

The City supervises both City crews and contractor crews. Contracts specify which materials are to be supplied by the City and those that are to be supplied by the contractor. City supplied materials are provided either from inventory stored in City yards or via direct deliveries to job sites from asphalt plants and gravel pits.

## Findings

The audit focused on processes, practices and controls in four key areas which were selected based on risk:

- Ensuring contractors delivering the goods and services they are contracted to provide in the manner specified in the contract
- Selecting the correct contractor
- Use of warranties where re-work is required
- Efficiency of processes

The key findings associated with each area are as follows:

### 1. Ensuring contractors delivering the goods and services they are contracted to provide in the manner specified in the contract

The audit focused on material quality (e.g. asphalt, gravel, concrete), processes and procedures for identifying unsatisfactory work, the quantity of contractor work performed and billed, calibration of contractors’ weigh scales for materials and controls over materials.

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In 2016, RSB purchased \$1.4 million of gravel and \$845,000 of asphalt. RSB uses asphalt for milling and paving jobs and asphalt patching jobs that are generally less than 200 square metres and for pothole repairs. The audit found that the City is not testing the asphalt being used by RSB in its non-winter program. We had two asphalt samples from different suppliers tested; and in both cases, they did not meet the specifications defined in the contract. While this is a very small sample size, a 100% failure rate is concerning. Using poor asphalt can compromise the quality and longevity of City road repairs. RSB did recently test a sample of the asphalt used in its 2016-17 winter operations. This sample also did not meet the contract specification, supporting a decision to re-tender that contract.

The OAG acknowledges that testing asphalt can be both complicated and expensive with laboratory costs of roughly \$3,000 per sample. However, not conducting any tests means that there is no assurance that the asphalt being purchased by the branch meets the City's specification. These findings do not apply to Infrastructure Services branch (ISB) which uses significantly more asphalt than RSB and although we did not review it as part of this audit, they have an asphalt testing program in place. RSB and ISB management also indicated that the asphalt grades being purchased by RSB will be reviewed and that part of the problem may be the type of asphalt that the City is requesting.

The audit found that RSB has processes in place to establish if a supplier is able to supply gravel (also known as granular material) that meets the City's standard. The processes also address situations where the quality of gravel supplied deviates from the standard.

The audit expected to find a process in place to identify unsatisfactory work. This includes determining whether the contractor was using appropriate construction methods and delivering the specified goods and services in accordance with the terms of the contract. The audit found that overall these processes are adequate although improvements can be made. We visited five worksites and interviewed a cross-section of RSB staff, supervisors and managers. We found that experienced City supervisors are assigned to oversee the work of contractors and inspect road repair work and where a supervisor is not available, another RSB employee is assigned to inspect the work. The process includes sign off of the contractor's work by a supervisor on the paper Maintenance Activity Sheets (MAS) and supporting contractor ticket(s). Details regarding unsatisfactory work are to be documented in the City supervisor's notes. Supervisors escalate issues up through their chain of command. We did find that the degree of detail in supervisor's notes varied.

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The audit expected to find that the City verifies the quantity of work done by contractors. This would include estimating appropriate measurements for the job in advance, verifying the quantity done and confirming that the correct quantity has been billed. This would help ensure that contractors are only performing and billing the amount of work that the City requires.

The audit found that there are established practices for quantifying work; however, they vary across the yards and were not always adequate to document planned work in advance or to compare to work completed and billed. The audit also found that MAS and job tickets used as evidence of work completed were not always adequate to support payment for services.

For asphalt repairs, which include pothole repairs and paving, the contractor provides a handwritten job ticket at the end of the call-up shift to reflect the work completed. This ticket contains the quantity (i.e. hours or surface area as per the applicable standing offer) and is signed off by a City supervisor. Although the standing offer indicates that invoices are to be provided, in practice, the contractors only provide the job ticket.

Most of the daily event tickets/job tickets that we reviewed were missing some of the information required by the standing offer such as the vehicle license number, operator's name or operator's signature. The supervisor signing off then records the work and quantity from the job ticket onto the MAS. Payments are then made based on the MAS and not the job tickets or invoices. Although there is a reconciliation process in place, given the manual paper based processing, errors will occur which could result in incorrect payments being made to contractors. We found minor errors with each of the five sample worksites we visited. Processes related to MAS and the associated tickets generally need improvement. Efficiency issues related to MAS processes are addressed below.

The audit expected to find that supplier weigh scales are properly calibrated for asphalt and gravel which the City purchases based on weight. Accurate scales help ensure that the City pays only for the materials that it receives because as is common industry practice, the City does not re-weigh the materials once they are taken from the supplier. The contract for gravel requires suppliers to provide a "Government of Canada Certification of True Weights" for its weigh scales. The accuracy of weight and measurement devices is federally regulated under the Weights and Measures Act.

The City's gravel contracts state that suppliers should provide a certificate of true weights on the 15<sup>th</sup> of each month. However, we found that suppliers were not providing these certificates and the City was not following-up. We asked RSB to

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request certificates from suppliers. Out of 25 scales used by suppliers of asphalt and gravel, two did not have a current calibration certificates and another six scales, had certificates that were issued after the expiry of the previous certificate. Given that we found that not all suppliers were diligently obtaining their calibration certificates, more City oversight is warranted.

The audit expected to find adequate controls to prevent theft and waste of materials purchased by RSB. This includes ensuring that job estimates for materials are accurate and that leftover materials, whether used or new, are returned to the City and not used by the contractor on other non-City sites. The audit found that the controls to protect ironwork materials (catch basins, catch basin covers, etc.) from theft could be improved. Ironworks materials removed from inventory are not properly tracked. This has resulted in unexplained differences in inventory that could be due to error, waste or theft.

In 2016, the City purchased approximately \$590,000 of ironworks materials. Ironworks materials unlike gravel and asphalt materials are generally not used the same day that they are purchased. These materials are also not always used the same day that they are removed from inventory in the yards. Controls over ironworks supplied to contractors were also called into question by a Fraud and Waste Hotline report that the OAG received in 2016. The reporter provided pictures of new “Ottawa” branded storm water covers in a commercial parking lot. The resulting investigation was unable to determine if the ironwork was purchased from a foundry or if a City contractor took it out of a City yard and diverted it to the site.

Generally, there is reliance on supervision, and honesty to ensure that ironworks taken from the City yards is used on City jobs or returned. Staff indicated that ironworks taken by contractors is monitored; however, materials withdrawn by City crews are not. RSB staff at the three yards we visited use their own methods to monitor inventory. OAG completed a physical inventory count on a sample of seven different types of ironworks items in mid-June 2017. We found that there were 207 units missing compared to the financial record with an estimated value of \$22,500. This amounts to roughly 40% of the value of this type of ironworks material that should have been at the yard at that time according to the financial records.

The audit also expected to find that recovered components (used materials) such as maintenance covers and metal and concrete frames are salvaged and returned to the City for future use or recycling as required. The audit found that scrap iron is being recycled by City yards and controls are adequate.



## **2. Selecting the correct contractor**

The audit focused on ensuring the low-cost contractor is selected, that contractors are not selected if they have performed deficient work in other areas of the City, taking advantage of prompt payment discounts and conflicts of interest.

RSB uses contractors pre-selected through the competitive standing offers and tender processes. For each of the six standing offers/tenders that we reviewed, suppliers are ranked for each specific type of work by each geographic area and RSB's procedure is to select contractors based on this ranking. We found instances where the highest ranked contractor was not selected and the reason, such as the first contractor not being available when RSB required the work to be done, was not documented.

Although it is not required under the standing offers/tenders, we believe it is important to explain why a more expensive contractor is selected.

The audit expected to find that the City has a process to confirm that contractors are not selected if they have performed deficient work in other areas of the City. Supply Services manages the process where suppliers are barred from bidding on City work. Unless the contract has been terminated, or the supplier has been barred, there is no basis for RSB not to use a contractor.

The audit found that the City normally takes advantage of prompt payment discounts offered by RSB vendors. However, we did observe cases where PPDs were not taken advantage of, costing the City approximately \$2,200.

The audit expected to find that RSB has a process to minimize the risk that its staff are not in conflicts of interest. RSB staff are issued memos twice per year reminding them of their responsibilities including those under the Employee Code of Conduct which requires written disclosures of potential Conflicts of Interest. Management indicated that there are no current disclosures of conflicts of interest.

## **3. Use of warranties where re-work is required**

The audit focused on how RSB identifies and uses warranties where they are available. The audit expected to find that RSB processes ensure that the City is not expending internal or external resources for work that is covered under a warranty. The RSB's contracts include a one-year warranty period unless otherwise stipulated. Work done under a road cut permit has a three-year warranty. We found that to determine whether or not a job might be redoing work that was done within a warranty period, the practice is to informally rely primarily on the knowledge and experience of staff. We found RSB staff to be very familiar with their areas and as such this approach is reasonable.

Technically, pothole repairs contracted under the Standing Offer for Unscheduled Asphalt Repairs also have a one-year warranty period. However, in practice City supervisors treat pothole repairs as having no warranty. The OAG concurs that this approach is reasonable. There are many factors that can impact the life of a pothole repair such as traffic volume, drainage issues, the condition of asphalt around the pothole. As there are more than 150,000 pothole repairs per year, many of which are done by City crews, there is no cost-effective mechanism to track them individually. However, the lack of an effective warranty is inconsistent with the terms in the standing offer; and some contractors may have considered a pothole warranty in their bid submission decisions.

#### **4. Efficiency of processes**

The audit focused on RSB's processes to manage its contracts. As mentioned above, RSB's processes are generally paper heavy and manual. MAS are manually prepared, approved, matched to paper vendor job tickets and filed. Additional work is created when the operations clerks have to resolve errors or incomplete paperwork. RSB is not using mobile systems in the field as is done in other parts of the City. Management indicates that there is an active PWES Mobility Project and it intends to implement it in all operational areas of PWES including RSB. However, there is currently no approved schedule to commence and complete implementation in RSB.

## **Conclusion**

Overall, we found that key systems, practices and procedures are in place to manage Roads Services branch contracts.

Contractors performing road work are being adequately monitored, by an employee designated to monitor the work and/or a supervisor conducting inspections. However, we did note a lack of procedures for work inspections. As well, practices to quantify the work were not consistently applied and were not formally documented and approved. This impacts the ability to subsequently check that the required quantity of work was done and billed.

We found that practices to ensure that the City receives the quantity and quality of asphalt and gravel it is ordering and paying for need to be improved. The quality of asphalt was unacceptable in the two samples we had tested, and RSB has not done its own testing in a number of years. Similarly, RSB is not obtaining contractors' weigh scale calibration certificates, and there were issues with some of the ones that we subsequently obtained. Tracking ironwork held as inventory also needs to be improved.

RSB uses standing offers for its contracted road work. We observed many instances when the number one ranked (i.e. lowest cost) supplier was not used to conduct the work. There can be valid reasons for this; such as, the number one supplier not being available; however, RSB staff do not document these reasons.

Lastly, we found that RSB's processes could be more efficient. Processes are paper heavy and manual. Implementing planned mobile automated systems, such as those used in the field by other City departments, could streamline processes if cost effective to do so.

## **Recommendations and responses**

### **Recommendation #1**

That the City establish and implement a testing approach for asphalt materials to ensure that the quality of asphalt purchased by RSB meets the City's specifications.

#### **Management response:**

Management agrees with this recommendation.

Roads Services has engaged Infrastructure Services' Quality Assurance and Standards Unit to begin discussions regarding appropriate testing procedures for asphalt quantities and specifications required by Roads Services.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

### **Recommendation #2**

That the City establish a procedure for RSB supervision and inspections of contracted work that provides direction on the factors to inspect and the documentation required.

#### **Management response:**

Management agrees with this recommendation.

Management will formalize existing practices and procedures, which will include documentation and inspection requirements.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

**Recommendation #3**

That the City ensure that Road Service supervisors overseeing contracted jobs confirm that contractors are fulfilling requirements as outlined in the contract including Traffic Control Plans and road cut permits, or amending the contracts' terms and conditions as appropriate.

**Management response:**

Management agrees with this recommendation.

Staff will undertake the review of all contract terms and conditions to ensure they accurately reflect work requirements. In addition, a checklist will be created for Roads Services supervisors to confirm contractors are fulfilling all contract requirements.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018 or upon extension, renewal or expiry of existing contracts.

**Recommendation #4**

That the City formalize and retain documentation of the quantity work to be done (i.e. approved job estimates).

**Management response:**

Management agrees with this recommendation.

Roads Services staff will establish a process for receiving cost and time estimates for each job when a contractor is pulled from the Standing Offer List.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

**Recommendation #5**

That the City ensure:

- a. that contractors are providing the required invoices and information on daily event tickets (job tickets) as required by the contract (standing offer) or modify the contract; and
- b. that the procedures and practices for handling job tickets are consistent.

**Management response:**

Management agrees with this recommendation.

Management will ensure contractors are providing the required invoices and information on daily ticket events as required or modify the contract. Management will also ensure that the practices for handling job tickets are consistent and communicated on a regular basis.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

**Recommendation #6**

That the City ensure that contractors are providing the required service that they have contracted for (i.e. three-person crews, supplying materials).

**Management response:**

Management agrees with this recommendation.

A checklist will be created for Roads Services supervisors to confirm contractors are fulfilling all contract requirements.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

**Recommendation #7**

That the City ensure that MAS are properly reviewed and approved and contain accurate, complete and clear information to support payment of services.

**Management response:**

Management agrees with this recommendation.

Management will ensure that the procedures and practices for reviewing and approving maintenance activity sheets are consistent and communicated on a regular basis.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

**Recommendation #8**

That the City monitor gravel suppliers to ensure that they provide Government of Canada Certification of True Weights for the weigh scales as required per the contract.

**Management response:**

Management agrees with this recommendation.

Staff will undertake the review of all contract terms and conditions to determine if proof of certification is required. Weight and measurement devices are federally regulated under the Weights and Scales Act, which includes the approval and inspection of such weight and measurement devices. Under the legislation, owners and users are legally responsible for the accuracy of their weighing and measurement devices.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018 or upon extension, renewal or expiry of existing contracts.

**Recommendation #9**

That the City review the requirements for certification of weigh scales in the next asphalt contract and ensure that it clarifies how suppliers will confirm that their scales are calibrated.

**Management response:**

Management agrees with this recommendation.

Staff will undertake the review of all contract terms and conditions to determine if proof of certification is required. Weight and measurement devices are federally regulated under the Weights and Scales Act, which includes the approval and inspection of such weight and measurement devices. Under the legislation, owners and users are legally responsible for the accuracy of their weighing and measurement devices.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018 or upon extension, renewal or expiry of existing contracts.

**Recommendation #10**

That the City update procedures for RSB inventory management to track materials removed from inventory.

**Management response:**

Management agrees with this recommendation and has implemented a standardized form across the yards.

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Roads Services are reviewing best management practices around the management of materials, which will support the development of a new process.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

### **Recommendation #11**

That the City reinforce application of RSB's annual inventory reconciliation procedures to better identify and address the cause of discrepancies in inventory.

#### **Management response:**

Management agrees with this recommendation.

Roads Services are reviewing best management practices around the management of materials, which will support the development of a new process that strengthens inventory reconciliation procedures.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

### **Recommendation #12**

That the City implement procedures to document the RSB decisions when choosing other than the first ranked contractor.

#### **Management response:**

Management agrees with this recommendation.

Roads Services staff will work with Supply Services to create a tailored process when administering call-ups.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

### **Recommendation #13**

That the City properly setup Purchase Orders and Equipment Orders in the financial system to automatically take the prompt payment discounts (PPD) that RSB Contractors have offered as part of their bid submission.

**Management response:**

Management agrees with this recommendation.

Staff are trained to ensure payment terms are correctly entered at the time of PO/EO creation in accordance with the SAP PO/EO creation Business Process Procedure. In order to further ensure payment terms are correctly identified for lower dollar value purchases, Supply Services has created Departmental Purchase Order (DPO) procedures for staff that award contracts less than \$15K. The procedures specifically identify the requirement to input prompt payment discount terms into SAP. Subsequent training to staff was also provided by Supply Services to ensure staff were made aware of this requirement.

Any incorrectly identified PO and EO payment terms have now been updated to reflect the correct prompt payment discount terms. In terms of the missed discount opportunity of \$1,000, this represents 4% of the total available discounts for Roads Services contracts and therefore 96% of discounts were correctly received.

**Recommendation #14**

That the City make the pothole repair warranty provision in the Standing Offer for Unscheduled Asphalt Repairs consistent with actual practice in its next tender.

**Management response:**

Management agrees with this recommendation and will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018 or upon extension, renewal or expiry of existing contracts.

**Recommendation #15**

That the City review the costs and benefits supporting the business case for implementing a mobile automated solution in RSB.

**Management response:**

Management agrees with this recommendation.

The Public Works and Environmental Services Mobility Project is an active and ongoing project that seeks to automate current manual work processes.

Management is committed to continuing this work, including within Roads Services as resources permit. In advance of any scheduled work, management will review



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the costs and benefits supporting the business case for implementing a mobile automated solution in Roads Services.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

## Audit of Roads Services Branch – Contract Management

The detailed section of this report is currently available in English only. The French version will be available shortly. For more information, please contact Ines Santoro at 613-580-2424, extension 26052.

La partie détaillée de ce rapport n'existe qu'en anglais. Elle sera disponible en français sous peu. Pour tout renseignement, veuillez communiquer avec Ines Santoro, 613-580-2424, poste 26052.

## Detailed audit report

### **Audit of Road Services Branch – Contract Management**

#### **Introduction**

The Audit of Roads Services Branch – Contract Management was included in the 2017 Audit Plan of the Office of the Auditor General (OAG), approved by City Council on December 14, 2016.

#### **Background and context**

The City of Ottawa Road Services branch (RSB) within the Public Works and Environmental Services department (PWES) is responsible for the safe and efficient maintenance of the City's road right of way and transportation system network and the operational integrity of the road network for all road users. The branch functions as a one-stop shop for operations and maintenance of the City's street, sidewalk, walkway and trail system on a 24/7 basis.

The City has approximately 5,661 km of roads, 2,195 km of sidewalks and 233 km of Transitway and Highway 174 to maintain on a regular basis.

The focus of this audit is non-winter operations.

The non-winter operations responsibilities include the following:

- Operations and maintenance of all city roadways and sidewalks/pathways;
- Hard surface maintenance (asphalt repairs including pothole repair, sweeping, ironworks adjustments, shoulder maintenance);
- Right-of-way maintenance (grass cutting, graffiti removal, litter baskets, drainage and roadway cross culvert repairs, guide rails); and
- Sidewalk/pathway maintenance (sweeping, concrete repairs, bus pad repairs, decorative brick repairs).

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Major road, bridge and sidewalk rehabilitation and renewal activities are carried out by and are the responsibility of Infrastructure Services and are not included in the scope of this audit.

All roads and highways are subject to the established City and Provincial standards. These relate to requirements for frequency of inspection of road quality and the length of time to address road issues.

In 2016, the City of Ottawa's annual budget for Roads Services non-winter operations was \$31.5 million, and expenditures were \$31.8 million (see Table 1 below). Services are delivered from 17 yards spread across five zones in four geographic areas and use both City crews and contractor crews. There are approximately 520 employees in Roads Services branch of which 85 are managers and supervisors.

Table 1: Non-winter operations (in millions)

<b>Cost element group</b>	<b>Budget</b>	<b>Actual</b>
Labour (City)	\$17.3	\$18.2
Material	4.4	3.6
Internal equipment (and services)	6.7	6.9
External contracted services	3.1	3.1
Total	\$31.5	\$31.8

The total budget has increased by approximately 6% from 2013 to 2016, or roughly, 2% per year.

The focus for this audit is material (used by City and contracted crews) and external contracted services and the related City supervision.

The City supervises both City crews and contractor crews. Contracts specify which materials are to be supplied by the City and those that are to be supplied by the contractor. City supplied materials are provided either from inventory stored in City yards or via direct deliveries to job sites from asphalt plants and gravel pits.

The OAG received a number of Fraud and Waste reports relating to Road Services work being performed by contractors. In addition, a 2016 Provincial audit highlighted a Province-wide problem around premature road failure relating to issues around the

quality of asphalt used and supplied by contractors. Both of these factors were considered in developing the audit scope and criteria.

## **Audit objectives and criteria**

The overall objective of this audit was to assess whether the key systems, practices and procedures at the City provide reasonable assurance that the City is efficiently and effectively managing Roads Services branch contracts to meet Road Services branch objectives.

Based on a prioritized assessment of risk, the objectives of the audit are to:

### **Audit objective #1**

Assess the processes that ensure that contractors are delivering the goods and services they are contracted to provide in the manner specified in the contract.

#### **Criteria:**

- City processes and procedures are adequate to identify unsatisfactory work
- City quantifies the amount of work to be done for each job in advance providing appropriate measurements and then subsequently checks that the required quantity is billed
- Contractors' weigh scales for materials are properly calibrated
- Controls are in place to ensure City supplied materials are not stolen either directly from inventory in yards or from third parties such as asphalt plants and gravel pits
- Job estimates for materials are accurate and surplus materials (used or new) are returned to the City
- Material quality (e.g. asphalt, gravel, concrete) provided is what City has contracted for
- Recovered components (e.g. maintenance covers, metal and concrete frames) are salvaged and returned to the City for future use or recycling as required

### **Audit objective #2**

Assess the processes that ensure the correct contractor is selected.

#### **Criteria:**

- City confirms that contractors are not selected that have performed deficient work in other areas of the City

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- City staff are not in conflicts of interest
- City staff select the correct bidder to conduct work

### **Audit objective #3**

Assess the processes that ensure that where re-work is required, any applicable warranty is utilized.

#### **Criteria:**

- City does not do work, either directly or via contract, that is covered under warranty

### **Audit objective #4**

Assess if processes are as efficient as possible.

#### **Criteria:**

- City processes are efficient

Audit objectives and criteria detailed in Appendix A have been developed from material gathered from planning interviews, document review and research.

The source(s) for the criterion include the Purchasing By-law, standing offer and tender contracts, Provincial Minimum Maintenance Standards, City Maintenance Quality Standards, Contract Administration and Reporting Guidelines, Roads Services Field Manual and policies and procedures, as applicable.

## **Scope**

The scope of the audit is Road Services branch – contract management for non-winter contracts for 2016 and 2017.

The scope will include:

- All external contracted services and the associated City supervision
- All materials for non-winter works regardless of whether they were used by City staff or external contracted services
- Contractor/vendor selection from the list of successful bidders from the applicable tender or standing offer

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This audit will exclude the following:

- Winter contracts as they were addressed in the 2015 Audit of Winter – Capacity Planning and Performance Measurement (e.g. snow plowing, snow removal, salt, Sand)
- The bid submission and evaluation phases of the procurement process
- The labour for City staff except for supervision of materials and external contracted services
- Internal equipment
- Road projects conducted by the Infrastructure Services branch

### **Audit approach and methodology**

The audit methodology includes the following activities:

- Interviews with staff members involved in Roads Services branch – contract management and other directly related City departments
- Review of relevant documentation (e.g. the organizational charts, training documents, Provincial legislation, Maintenance Quality Standards, by-laws, policies and procedures, contracts)
- Observation of worksites
- Testing samples of vendor provided asphalt
- Other audit techniques as required

The audit fieldwork was conducted from May to June 2017.

### **Audit observations and recommendations**

#### **Audit objective #1**

Assess the processes that ensure that contractors are delivering the goods and services they are contracted to provide in the manner specified in the contract.

##### 1.1 Material quality

The audit expected to find that material quality (e.g. asphalt, gravel, concrete) provided by suppliers meets the specifications identified in the respective contracts. This would help ensure that the materials are suitable for the City's conditions and therefore help

maintain the durability of road repairs<sup>1</sup>. The audit focused on asphalt and gravel as they presented a higher risk based on the annual purchase value. The Ontario Auditor General also highlighted issues with asphalt quality used on provincial roads in a 2016 audit.

### 1.1.1 Asphalt quality

The audit tested a small sample of the asphalt used by RSB and found that it did not meet the specifications in the contract. As well, the City is not testing the asphalt being used by RSB in its non-winter program. RSB uses asphalt for milling and paving jobs and asphalt patching jobs that are generally less than 200 square metres and for pothole repairs.

The OAG tested two asphalt samples from different suppliers; and in both cases, they did not meet the specifications defined in the contract. One sample was HL3F asphalt from a pothole patching worksite. The other sample was HL3 asphalt from a road paving worksite. We witnessed the collection of the asphalt samples from the worksites which were then taken to the lab by an independent quality assurance City staff member. Of the asphalt attributes examined by the lab, this audit focused on the four attributes<sup>2</sup> which the quality assurance staff viewed as providing a good indicator of asphalt quality and are generally accepted with the industry.

Failing to meet any one of these four attributes renders a sample “unacceptable”. The HL3F sample did not meet minimum acceptable thresholds for 2 of 4 key attributes. The HL3 sample did not meet acceptable thresholds for 2 of 4 key attributes and was borderline on one attribute.

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<sup>1</sup> There are many factors that contribute to the durability of the repairs. These repairs by their nature are not expected to extend the life of the roads. They serve to remove potential hazards and/or improve the travel surface until the road is eventually resurfaced or rebuilt.

<sup>2</sup> The attributes are gradation, asphalt cement content, percentage of air void and Marshall stability flow value. The specifications for these attributes are provided in the standing offer for hot mix asphalt and other Ontario Provincial Standard Specifications (OPSS) referenced in the standing offer.

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Results are presented in Tables 2 and 3 below.

Table 2: Lab results for HL3F PGAC Grade 58-34 sample

<b>Attribute being reviewed</b>	<b>Sample result</b>	<b>Specification</b>	<b>Accept/Reject</b>
Gradation	Aggregate met 9 sieve size tests and was borderline for one sieve test	As listed in OPSS 1150, Table 2	Accept
AC%	5.4	6.5 – 7.0	Reject
% Air void	9.3	3.0 – 5.0	Reject
Flow value	9.0	9 – 18	Accept

Table 3: Lab results for HL3 PGAC Grade 58-34 sample

<b>Attribute being reviewed</b>	<b>Sample result</b>	<b>Specification</b>	<b>Accept/Reject</b>
Gradation	Aggregate met 10 sieve size tests	As listed in OPSS 1150, Table 2	Accept
AC%	4.8	5.3 – 5.8	Reject
% Air void	2.6	3.0 – 5.0, borderline at 2.0 to 2.9	Borderline
Flow value	15.9	8 – 14	Reject

While these test results are for a very small sample of two asphalt deliveries, a 100% failure rate is concerning. Using poor asphalt can compromise the quality and longevity of City road repairs<sup>3</sup>.

<sup>3</sup> The quality of asphalt used for repairs is one factor that can affect the overall quality and longevity of road repairs. Other factors include the quality of the original asphalt, timing of the application, quality of workmanship and pre-existing road conditions.



The audit found that RSB practices to monitor the quality of asphalt is informal and inadequate. Field staff and supervisors rely on visual inspection to identify deficiencies, such as whether the consistency is too liquid or too coarse. However, visual inspection cannot identify all potentially significant deficiencies in asphalt. RSB did recently test a sample of the asphalt used in its 2016-17 winter operations. This sample also did not meet the contract specification, supporting a decision to re-tender that contract.

In addition to visual inspection, the request for standing offer for hot mix asphalt states that the City may take a sample of product at the bidding stage. However, we find this approach to also be inadequate as it is discretionary and testing was not done for the current standing offer. It also provides no assurance of the quality after the standing offer has been put in place.

RSB has not supplemented the visual reviews with formal asphalt tests for its non-winter program since 2013. The OAG acknowledges that testing asphalt can be both complicated and expensive with laboratory costs of roughly \$3,000 per sample. However, not conducting any tests means that there is no assurance that the asphalt being purchased by the branch meets the City's specification.

OAG notes that these findings do not apply to the Infrastructure Services branch (ISB) which is responsible for construction and rehabilitation of roads, bridges and sidewalks. ISB uses significantly more asphalt than RSB and although we did not review it as part of this audit, ISB has an asphalt testing program in place. RSB and ISB management also indicated that the asphalt grades being purchased by RSB will be reviewed and that part of the problem may be the type of asphalt that the City is requesting.

### 1.1.2 Gravel quality

The audit found that RSB has a formal process to establish if a supplier is able to supply gravel (also known as granular material) that meets the City's standard. As described below, the process also addresses situations where the quality of gravel supplied deviates from the standard.

Potential suppliers are required to submit test results for gravel as part of the bidding process. For successful proponents, these results are used as a benchmark for evaluating the quality of subsequent gravel supplied to the City. Additional testing is normally only carried out if RSB staff notice a deterioration in the quality of gravel provided. This process is adequate as visual inspection can identify significant quality issues with gravel, unlike with asphalt.

We found evidence that the City had tested samples of gravel in 2015 from a supplier whose product quality had been inconsistent. The first test result showed that the material did not meet the tender specification. Consequently, the vendor was issued a letter of non-performance by Supply Services. Shortly after, a second sample was tested and passed leading RSB to reinstate this supplier. As a condition to supply product in 2016, the vendor was required to test another sample. RSB witnessed the sampling from three of the supplier's quarries in May 2016. Test results from these samples were deemed acceptable, therefore the vendor was allowed to supply product in 2016.

**Recommendation #1**

That the City establish and implement a testing approach for asphalt materials to ensure that the quality of asphalt purchased by RSB meets the City's specifications.

**Management response:**

Management agrees with this recommendation.

Roads Services has engaged Infrastructure Services' Quality Assurance and Standards Unit to begin discussions regarding appropriate testing procedures for asphalt quantities and specifications required by Roads Services.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

1.2 City processes and procedures for identifying unsatisfactory work

The audit expected to find a process in place to identify unsatisfactory work. This would include determining whether the contractor was using appropriate construction methods and complying with occupational health and safety requirements and other key regulations. A sound review process would ensure that contractors deliver the specified goods and services in accordance with the terms of the contract.

The audit found that overall City processes and procedures are adequate to identify unsatisfactory work but improvements can be made. City supervisors and managers are responsible for identifying and addressing unsatisfactory work. Based on visits to five worksites and interviews with a cross-section of RSB staff, supervisors and managers, we found that experienced City supervisors are assigned to oversee the work of contractors and inspect road repair work. RSB aims to inspect all contracted jobs. Contractor crews are assigned an on-site supervisor, where possible. If a

supervisor is not available, another RSB employee is assigned to monitor the work. The supervisor subsequently performs unscheduled inspections.

The existing oversight process includes sign off of the contractor's work by a supervisor. Once on-site supervisors are satisfied with the completed work, they sign off on the Maintenance Activity Sheet (MAS) and supporting contractor ticket(s). These are then submitted for approval by higher level supervisors and then drive the payment to the contractor.

Details regarding unsatisfactory work are to be documented in the City supervisor's notes. Supervisors escalate issues through their chain of command up to the area manager who addresses significant issues with Supply Services. Any issues addressed by Supply Services require supporting documentation.

We found the degree of detail in supervisor's notes varied. Most supervisor assessments are kept either in a handwritten diary that cannot easily be accessed by others, or on unsigned documents. Some supervisors also record their notes on the MAS which is filed with the financial documents. Also, not all inspections are being recorded.

A contributing factor to the inconsistent approach to handling inspections among RSB supervisors is the lack of standard operating procedure (SOP) for work inspections. Such an SOP could include how to plan the inspection, what to inspect using a risk based approach and how to document the inspection.

### **Traffic Control Plans**

A Traffic Control Plan documents the potential traffic-related hazards that road users, pedestrians and workers would be exposed to on the specific street during road repairs. It then describes the types of precautions that will be put on and around the worksite in order to ensure safety of these individuals. Safeguards include proper signage, specific staff to manage traffic circulation, and police to control traffic, required if within 30 metres of a signalized intersection.

Under the standing offer for Unscheduled Asphalt Road and Pathway Surface Repair Services, the contractor must have a Traffic Control Plan. The City is responsible for ensuring that the contractor has a Traffic Control Plan and confirming that it is updated if traffic precautions put in place are adjusted in response to traffic conditions.

We found that a Traffic Control Plan was missing in two of the five sites visited; although, these sites had traffic control devices and signage in place. In addition, at another site, the City crew leader had prepared the Traffic Control Plan rather than the

contractor. This could result in the City taking on the contractor's responsibility and potentially the risk of liability. Improved communication to City staff and contractors is required to improve compliance in this area.

### **Other Occupational Health and Safety factors**

The audit found no other significant issues related to occupational health and safety (OHS). At all five worksites, staff and contractors were wearing the required personal protective clothing, such as reflective clothing, hard hats and CSA approved work boots. The contractor's foremen were aware of OHS requirements and were reinforcing them with their staff in response to the conditions on and around the worksite.

### **Construction methods**

At all five worksites, we observed appropriate construction methods were being followed as outlined in the standing offer and the City's standard operating procedures for asphalt repairs.

### **Road cut permits**

Road cut permits are needed to provide notice to stakeholders including traffic management, emergency services, OC Transpo, other agencies, utilities and adjacent residents and businesses of the nature and timing of the work. The road cut permit also provides a record of the cuts made in the road and the contractor responsible for warranty purposes. According to the standing offer for Unscheduled Asphalt Road and Pathway Surface Repair Services, contractors are required to obtain a road cut permit.

The audit found that none of the five worksites visited had a road cut permit. City supervisors at the worksites indicated that a road cut permit was not required. This creates the risk that all stakeholders will not be made aware of the work and have an opportunity to plan accordingly. This is also contrary to the requirement outlined in the standing offer and the direction provided by an RSB Operations Planning staff member. RSB management has indicated that the City's practice has been to waive the requirement for the road cut when the excavation is less than one foot deep. RSB management stated that they will work with the City's Right of Way Management group to define when a road cut permit will be required.

### **Recommendation #2**

That the City establish a procedure for RSB supervision and inspections of contracted work that provides direction on the factors to inspect and the documentation required.

**Management response:**

Management agrees with this recommendation.

Management will formalize existing practices and procedures, which will include documentation and inspection requirements.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

**Recommendation #3**

That the City ensure that Road Service supervisors overseeing contracted jobs confirm that contractors are fulfilling requirements as outlined in the contract including Traffic Control Plans and road cut permits, or amending the contracts' terms and conditions as appropriate.

**Management response:**

Management agrees with this recommendation.

Staff will undertake the review of all contract terms and conditions to ensure they accurately reflect work requirements. In addition, a checklist will be created for Roads Services supervisors to confirm contractors are fulfilling all contract requirements.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018 or upon extension, renewal or expiry of existing contracts.

1.2 Quantity of contractor work performed and billed

The audit expected to find that the City verifies the quantity of work done by contractors. This would include estimating appropriate measurements for the job in advance, verifying the quantity done and confirming that the correct quantity has been billed. This would help ensure that contractors are only performing and billing the amount of work that the City requires.

The audit found that there are established practices for quantifying work; however, they vary across the yards and were not always adequate to document planned work in advance or to compare to work completed and billed. The audit also found that MAS and job tickets used as evidence of work completed were not always adequate (i.e. complete, accurate and properly approved) to support payment for services. MAS are the paper forms used by RSB to document the completion and supervision of work.

### **Estimating in advance**

RSB supervisors work with contractors to estimate the cost of a job, including the quantity of work to be done and amount of materials to be used. The supervisor or manager one level higher then reviews the estimate. The discussion is mostly verbal and may be documented in journals or emails, but it is not formally approved. The lack of formal policies and procedures for job estimates has resulted in a variety of informal practices across the yards.

The audit found that at both of the paving operations worksites that were visited there was inadequate advance documentation of the quantity of work to be done. For one site, the quantities were on post-it notes; and for the other site, the Supervisor told us that this was not necessary as they were aware of the work to be done based on their experience. For the three pothole operations worksites visited, documents including service request forms and lists of streets guided the contractors' work; but they were not formally signed off in advance by City staff. In our opinion these practices do not provide an adequate estimate of the work to done and make it more difficult to challenge the contractors' quantities that are billed once the job is complete.

### **Verifying the quantity of work done and billed**

For asphalt repairs, which include pothole repairs and paving, the contractor provides a handwritten job ticket at the end of the call-up shift to reflect the work completed. This ticket contains the quantity (i.e. hours or surface area as per the applicable standing offer) and is signed off by the designated City supervisor. Although the standing offer indicates that invoices are to be provided, in practice, the contractors do not issue an invoice but only provide the job ticket.

Most of the daily event tickets/job tickets that we reviewed were missing some of the information required by the standing offer such as the vehicle license number, operator's name or operator's signature. We did observe that RSB signs off on the type and quantity of work on the job ticket. The supervisor signing off then records the work and quantity from the job ticket onto the MAS and records the Service Master Number<sup>4</sup> which corresponds with the work. Payments are then made based on the MAS and not the job tickets or invoices. Although there is a reconciliation process in place, given the manual paper based processing, errors will occur which could result in incorrect

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<sup>4</sup> Service Master numbers are unique numbers setup by Supply Services and identify the Contractor and their rate for the specific line item of work from the standing offer.

payments being made to contractors. We found errors with each of the five sample worksites we visited:

- In one case, the Supervisor's notes for a paving job which was billed based on surface area had incomplete dimensions. Therefore, it was not possible to confirm that the quantities billed were accurate.
- In another case, time from the job ticket was written on the MAS incorrectly and signed off by the three Supervisory levels. Once notified of the error, RSB adjusted the MAS preventing a small overpayment (\$56) to the contractor.
- For the three pothole repair jobs, we observed that the contractors provided two-person crews. However, the standing offer states that hot mix asphalt pothole repairs are supposed to be three-person crews. This issue was not identified by RSB when supervising the work or signing off the MAS. We would expect that a three-person would be more productive than a two-person crew. Management informed us that they will formally document the expectation and enforce compliance with the standing offer.

In addition to these errors identified for the five sample worksites, we reviewed a sample of 28 MAS and found that they were not always accurate, properly approved and clear and complete. We identified the following examples:

- One example - material that was to have been supplied by the contractor was taken from the City's inventory. This should have been detected when the MAS was verified and approved so that the supplier would not be paid for material provided by the City.
- Five examples - inadequate review as they only had one supervisory signature for submitted, verified and approved and not the two to three different signatures required by the procedures. Without a second set of eyes reviewing the documents there is an increased the chance of error and risk of paying for goods or service that were not delivered.
- Four examples - locations of work were not identified.

The purpose of the MAS is to document that the work performed was satisfactory and to support payments to contractors and employees. The audit found that processes related to MAS and the associated tickets generally need improvement. Efficiency issues related to MAS processes are addressed separately in Section 4.1.

**Recommendation #4**

That the City formalize and retain documentation of the quantity work to be done (i.e. approved job estimates).

**Management response:**

Management agrees with this recommendation.

Roads Services staff will establish a process for receiving cost and time estimates for each job when a contractor is pulled from the Standing Offer List.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

**Recommendation #5**

That the City ensure:

- a. that contractors are providing the required invoices and information on daily event tickets (job tickets) as required by the contract (standing offer) or modify the contract; and
- b. that the procedures and practices for handling job tickets are consistent.

**Management response:**

Management agrees with this recommendation.

Management will ensure contractors are providing the required invoices and information on daily ticket events as required or modify the contract. Management will also ensure that the practices for handling job tickets are consistent and communicated on a regular basis.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

**Recommendation #6**

That the City ensure that contractors are providing the required service that they have contracted for (i.e. three-person crews, supplying materials).

**Management response:**

Management agrees with this recommendation.

A checklist will be created for Roads Services supervisors to confirm contractors are fulfilling all contract requirements.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.



**Recommendation #7**

That the City ensure that MAS are properly reviewed and approved and contain accurate, complete and clear information to support payment of services.

**Management response:**

Management agrees with this recommendation.

Management will ensure that the procedures and practices for reviewing and approving maintenance activity sheets are consistent and communicated on a regular basis.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

**1.4 Calibration of contractors' weigh scales for materials**

The audit expected to find that supplier weigh scales are properly calibrated for asphalt and gravel which the City purchases based on weight. Accurate scales help ensure that the City pays only for the materials that it receives which contributes to the City staying within its materials budget.

As is common industry practice, the City does not re-weigh the materials once they are taken from the supplier and instead relies on supplier weigh bill tickets to provide weight information. The contract for gravel requires suppliers to provide a "Government of Canada Certification of True Weights" for the weigh scales used for City purchased materials. The accuracy of weight and measurement devices is federally regulated under the Weights and Measures Act.

The City's gravel contracts state that suppliers should provide a certificate of true weights on the 15<sup>th</sup> of each month. However, we found that suppliers were not providing these certificates and the City was not following-up. Unlike the gravel contract, the asphalt contract does not require suppliers to provide these certificates, rather, it states that "All materials are to be weighed on a government inspected weigh scale".

As RSB staff had not been obtaining and reviewing weigh scale calibration certificates, we asked them to request certificates from suppliers. Out of 25 scales used by suppliers of asphalt and gravel, two did not have a current calibration certificate.

Another six scales, located at two facilities of one asphalt supplier, had certificates that were issued one to two months after the expiry of the previous certificate. One of more of these scales may have been used to inaccurately weigh materials that were paid for

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by the City. Given that we found that not all suppliers were diligently obtaining their calibration certificates, more City oversight is warranted.

### **Recommendation #8**

That the City monitor gravel suppliers to ensure that they provide Government of Canada Certification of True Weights for the weigh scales as required per the contract.

#### **Management response:**

Management agrees with this recommendation.

Staff will undertake the review of all contract terms and conditions to determine if proof of certification is required. Weight and measurement devices are federally regulated under the Weights and Scales Act, which includes the approval and inspection of such weight and measurement devices. Under the legislation, owners and users are legally responsible for the accuracy of their weighing and measurement devices.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018 or upon extension, renewal or expiry of existing contracts.

### **Recommendation #9**

That the City review the requirements for certification of weigh scales in the next asphalt contract and ensure that it clarifies how suppliers will confirm that their scales are calibrated.

#### **Management response:**

Management agrees with this recommendation.

Staff will undertake the review of all contract terms and conditions to determine if proof of certification is required. Weight and measurement devices are federally regulated under the Weights and Scales Act, which includes the approval and inspection of such weight and measurement devices. Under the legislation, owners and users are legally responsible for the accuracy of their weighing and measurement devices.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018 or upon extension, renewal or expiry of existing contracts.

1.5 Controls over materials

The audit expected to find adequate controls to prevent theft and waste of materials purchased by RSB. This includes ensuring that job estimates for materials are accurate and that leftover materials, whether used or new, are returned to the City and not used by the contractor on other non-City sites. Effective materials management practices play a key role in reducing theft and containing material costs.

Table 4: 2016 estimated RSB dollar purchases of materials by type

Material type	Value '000 (\$)
Gravel	1,440
Asphalt	845
Ironworks	590

**Ironworks materials**

The audit expected to find that there are procedures and practices in place that ensure that ironworks materials taken from City yards are used on City jobs or returned. The audit found that the controls to protect ironwork materials (catch basins, catch basin covers, etc.) from theft could be improved. Ironworks materials removed from inventory are not properly tracked. This has resulted in unexplained differences in inventory that could be due to error, waste or theft.

In 2016, the City purchased approximately \$590,000 of ironworks materials. Ironworks materials unlike gravel and asphalt materials are generally not used the same day they are purchased. These materials are also not always used the same day that they are removed from inventory in the yards. Yard staff said that it is common practice for RSB staff to carry a couple of extra ironwork pieces in case an unplanned replacement is required. Contractors may have City owned ironworks in their trucks during the period of their contract. Any ironworks that is not used by contractors is to be returned at the end of the contract.

Controls over ironworks supplied to contractors were also called into question by a Fraud and Waste Hotline report that the OAG received in 2016. The reporter provided pictures of new “Ottawa” branded storm water covers in a commercial parking lot. The resulting investigation was unable to determine if the ironwork was purchased from a foundry or if a City contractor took it out of a City yard and diverted it to the site.

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Generally, there is reliance on supervision, and honesty to ensure that ironworks taken from the City yards is used on City jobs or returned. Staff indicated that ironworks taken by contractors is monitored; however, materials withdrawn by City crews are not. RSB staff at the three yards we visited use their own methods to monitor inventory. Tracking methods range from visual observation of stocks taken, to recording the number of ironworks materials taken on self-created forms. Some of these records may not include material codes or complete material descriptions which increases the opportunity for error in tracking the inventory.

As at December 2016, total RSB inventory for non-winter and winter-related work was \$4.6 million. The audit found that while RSB has documented procedures for managing materials, they are not complete and do not accurately reflect actual practices at the yards. When consistently applied, sound inventory management procedures help to safeguard the City's inventory.

The RSB field manual provides some guidance on managing materials but does not address how to track materials removed from inventory in yards or how to account for materials that are returned unused or sent for recycling. This gap has led staff to adopt their own practices as explained above. As these informal practices are not documented, there is a risk that the inventory is not tracked. RSB has indicated that the branch is in the process of developing a form to track withdrawal of ironworks inventory to be used across City yards.

The current RSB processes are not effective for tracking ironworks inventory being taken out of inventory. OAG completed a physical inventory count on a sample of seven different types of ironworks items in mid-June 2017. We found that there were 207 units missing compared to the financial record with an estimated value of \$22,500. This amounts to roughly 40% of the value of this type of ironworks material that should have been at the yard at that time according to the financial records. Missing inventory is normally accounted for through the inventory reconciliation process. RSB's written annual inventory reconciliation procedure is sound. However, determining the cause of discrepancies between the physical counts and the quantities recorded in the financial system as described in the procedure is not always done. As a result, there is no follow up by staff at the RSB yards to determine whether these differences are due to error or theft of materials.

Where differences are found during the inventory count, an adjustment is made to the financial system so that the financial record matches the physical quantities in inventory. In 2016, total inventory adjustments relative to purchases amounted to 4% for

ironworks, or a net increase of \$24,264 in inventory. This means that there were more materials in the stores than was recorded in the financial system. The \$24,264 is made up of two offsetting adjustments: a decrease of \$78,325 and an increase of \$102,589. The size of the offsetting adjustments indicates that the documentation for the ironworks is not accurate or complete.

Physical security is important in preventing theft. OAG visited three of the thirteen yards that purchase ironworks. We found that all three yards had physical access controls such as cameras and a perimeter fence. Management explained that access privileges are granted by yard supervisors to their staff based on their delegated authority. Contractors are not provided with access passes. However, these controls are not documented which increases the risk that the controls would not be consistently applied by staff.

### **Gravel and asphalt**

In 2016, RSB purchased \$1.4 million of gravel and \$845,000 of asphalt. For both these materials, RSB relies on the accuracy of the supplier's weigh scales to ensure that the City receives the amount of materials that it purchases as per above. This is an acceptable practice provided that the City monitors the accuracy of the scales. However, RSB has not been confirming that supplier's weigh scales are calibrated as explained earlier.

### **Return of salvaged materials**

The audit expected to find that recovered components (used materials) such as maintenance covers and metal and concrete frames are salvaged and returned to the City for future use or recycling as required. The audit found that scrap iron is being recycled by City yards.

RSB operating procedures and the standing offer for ironworks require that scrap material be recycled. Materials recovered from worksites are assessed for potential re-use and then returned to the City yard for recycling if not useable on-site. Recovered components in good condition are re-used. RSB does not formally monitor this process and the amount of materials to be scrapped is not recorded on the MAS. When scrap containers are full, RSB staff contact Solid Waste staff who in turn arrange with a contractor for pick-up. The salvaged iron materials are not weighed on-site before being picked up, however given that annual revenues for mixed metals obtained from all City facilities were only \$53,000 in 2016 the cost of further controls may out-weight their benefit.

**Recommendation #10**

That the City update procedures for RSB inventory management to track materials removed from inventory.

**Management response:**

Management agrees with this recommendation and has implemented a standardized form across the yards.

Roads Services are reviewing best management practices around the management of materials, which will support the development of a new process.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

**Recommendation #11**

That the City reinforce application of RSB’s annual inventory reconciliation procedures to better identify and address the cause of discrepancies in inventory.

**Management response:**

Management agrees with this recommendation.

Roads Services are reviewing best management practices around the management of materials, which will support the development of a new process that strengthens inventory reconciliation procedures.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

**Audit objective #2**

Assess the processes that ensure the correct<sup>5</sup> contractor is selected.

2.1 Selecting the lowest cost available supplier to conduct work

Supply Services has put a number of standing offers (and a tender) in place for RSB. The audit expected RSB staff to select the highest rated available supplier from the applicable standing offer to conduct contracted work. This ensures that the competitive bidding process to establish the standing offer listing is followed and that the City is getting best value for money.

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<sup>5</sup> Defined as lowest cost Purchasing Policy compliant bidder

RSB uses contractors pre-selected through the competitive standing offer or tender process. For each of the six standing offers/tenders reviewed as part of this audit, there is a spreadsheet with the ranking of the vendors (usually at least three) for each specific type of work by each geographic area. RSB supervisors and staff have access to the spreadsheet. RSB indicates their practice is to select contractors based on their ranking on the standing offer.

The audit found that at two of five worksites visited, the highest ranked contractor was not selected. In both cases, the next contractor on the list was selected; and its hourly rate was 25% higher than the highest ranked firm. RSB management explained that based on a telephone discussion, the first contractor was not available when the City required the work to be done. However, there was no documentation supporting the selection and explaining why the City paid 25% more. Although it is not required under the standing offers/tenders, we believe it is important to explain why a more expensive contractor is selected.

We also reviewed spending by contractor. For three of the six standing offers, consistent with our observations at the worksites, we found three of the contractors that were ranked first for many categories of work and/or zones were either not given any work or only a small portion of the total work. The three standing offers represented \$9 million in orders and \$2.2 million in expenditures for the period from January 2016 to June 2017. RSB indicated that there is no formal or consistent way to capture information as to why the second or third contractor is selected. They noted that supervisors may document this information in their journal. However, as noted above, there was no documentation in the cases we observed.

### **Recommendation #12**

That the City implement procedures to document the RSB decisions when choosing other than the first ranked contractor.

### **Management response:**

Management agrees with this recommendation.

Roads Services staff will work with Supply Services to create a tailored process when administering call-ups.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

## 2.2 Deficient work in other areas

The audit expected to find that the City has a process to confirm that contractors are not selected if they have performed deficient work in other areas of the City. Due to commercial confidentiality, Supply Services manages the process where suppliers are barred from bidding on City work which includes reporting the number of suppliers to Committee and Council but not the names. In 2016, there was one supplier barred by the City; and it did not do any RSB type work.

Unless the contract has been terminated, or the supplier has been barred from doing business as outlined in the Purchasing By-law, there is no basis for RSB not to use a contractor. If a contractor only has a “reputation” for doing poor work for other City departments RCB can more closely review their work, however, it cannot stop using them. This highlights the continued importance of supervision and monitoring of work and formal documentation of performance issues with Supply Services.

## 2.3 Conflict of Interest

The audit expected to find that RSB has a process to minimize the risk that its staff are not in conflicts of interest. This is to help ensure that the selection, monitoring and management of contractors for RSB work is conducted fairly.

We were provided a memo that was issued to RSB staff in the summer of 2016. The memo reminded staff of their responsibilities including those under the Employee Code of Conduct which requires written disclosures of potential Conflicts of Interest by employees. Management indicated that they issue a similar memo twice a year during seasonal transitions in April and November. Management also indicated that there are no current disclosures of conflicts of interest.

## 2.4 Prompt payment discounts (PPD)

The audit found that the City normally takes advantage of prompt payment discounts (PPD) offered by RSB vendors. However, we did observe cases where PPDs were not taken advantage of, costing the City approximately \$2,200. Of this total, \$1,000 related to Purchase Orders and Equipment Orders not setup properly in the financial system to automatically take the PPD that contractors have offered as part of their bid submission.

### **Recommendation #13**

That the City properly setup Purchase Orders and Equipment Orders in the financial system to automatically take the prompt payment discounts (PPD) that RSB Contractors have offered as part of their bid submission.



**Management response:**

Management agrees with this recommendation.

Staff are trained to ensure payment terms are correctly entered at the time of PO/EO creation in accordance with the SAP PO/EO creation Business Process Procedure. In order to further ensure payment terms are correctly identified for lower dollar value purchases, Supply Services has created Departmental Purchase Order (DPO) procedures for staff that award contracts less than \$15K. The procedures specifically identify the requirement to input prompt payment discount terms into SAP. Subsequent training to staff was also provided by Supply Services to ensure staff were made aware of this requirement.

Any incorrectly identified PO and EO payment terms have now been updated to reflect the correct prompt payment discount terms. In terms of the missed discount opportunity of \$1,000, this represents 4% of the total available discounts for Roads Services contracts and therefore 96% of discounts were correctly received.

**Audit objective #3**

Assess the processes that ensure that where re-work is required, any applicable warranty is utilized.

3.1 Warranty

The audit expected to find that RSB processes ensured that the City is not expending internal or external resources for work that is covered under a warranty. The RSB's contracts include a one-year warranty period unless otherwise stipulated. Work done under a road cut permit has a three-year warranty, thus increasing the importance of contractors obtaining there where required (see section 1.2 above).

The audit found that to determine whether or not a job might be redoing work that was done within a warranty period, the practice is to informally rely primarily on the knowledge and experience of staff. If the previous work appears recent or if they recall the work, then documentation can be reviewed, including:

- the Maintenance Activity Sheets on file
- the historical road cut permits
- the concrete and ironworks surveys

## Audit of Roads Services Branch – Contract Management

Supervisors indicated to us that they are very familiar with their areas and as such would remember if a larger (i.e. non-pothole) job was done within the past year and who did it. The OAG concurs that this approach is reasonable.

There is no formal, documented policy/procedure to inspect work for warranty before the end of the warranty period. However, as described above, there are other road inspections for staff and supervisors to identify potential warranty claims. The OAG believes that staff should continue their current practices as the cost of having staff conduct specific inspections for warranty work would likely exceed the benefits.

### 3.2 Pothole warranty

The audit expected to find that the one-year warranty period from the Standing Offer for Unscheduled Asphalt Repairs would apply to pothole repairs contracted under this standing offer. The audit found that in practice City supervisors treat pothole repairs as having no warranty - “A pothole has a ‘tail light warranty’ as it’s good until the contractor leaves the site”.

Management stated that there are too many factors that can impact the life of a pothole repair. Examples include traffic volume, drainage issues, the condition of asphalt around the pothole and presence of cracks where water can seep in. In addition, there are more than 150,000 pothole repairs per year, many of which are done by City crews, and as such there is no cost-effective mechanism to track them individually.

The OAG concurs that it is not reasonable to track individual potholes. However, the lack of an effective warranty is inconsistent with the terms in the standing offer; and it is possible that some contractors may have reflected a pothole warranty in their bid submission decisions.

#### **Recommendation #14**

That the City make the pothole repair warranty provision in the Standing Offer for Unscheduled Asphalt Repairs consistent with actual practice in its next tender.

#### **Management response:**

Management agrees with this recommendation and will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018 or upon extension, renewal or expiry of existing contracts.

## **Audit objective #4**

Assess if processes are as efficient as possible.

### 4.1 Process efficiency

The audit expected to find that RSB's processes to manage its contracts are as efficient as possible.

The audit found that generally RSB's processes are paper heavy and manual. MAS are manually prepared, approved, matched to paper vendor job tickets and filed. Generally, MAS are prepared in the field by crew leaders, verified by crew leaders/maintenance coordinators and approved by the zone supervisors. The approved MAS and signed vendor tickets are then submitted to operations clerks for data entry to generate payments to employees and contractors.

Additional work is created when the operations clerks have to resolve errors or incomplete paperwork. Paper documents are sent back, updated and re-approved.

We also found that there is information manually written on MAS that is not recorded elsewhere in the financial systems so MAS must be manually retrieved when the information is required. For example, activity log details with locations of work and work comments may be needed to support legal and other claims.

RSB is not using mobile systems in the field to record and approve maintenance activities as is done in other parts of the City such as Forestry Field Operations branch and Water Services. In 2011 the Business Systems Integration, Public Works Maintenance Management System project was approved. The project included five Public Works branches, including "Roads Operations" as RSB was then known. The project charter schedule set out that a solution would be implemented in Roads Operations by Q1 2014.

Management indicates that the renamed Public Works and Environmental Services (PWES) Mobility Project is still an active and ongoing project and it intends to implement it in all operational areas of PWES including RSB. However, there is currently no approved schedule to commence and complete the implementation in RSB. We recognize that implementing an automated mobile solution in RSB could be expensive, and the change would have considerable impact on people and processes. Given the time that has passed, the assumptions supporting the original 2011 business case may need to be revisited.

**Recommendation #15**

That the City review the costs and benefits supporting the business case for implementing a mobile automated solution in RSB.

**Management response:**

Management agrees with this recommendation.

The Public Works and Environmental Services Mobility Project is an active and ongoing project that seeks to automate current manual work processes.

Management is committed to continuing this work, including within Roads Services as resources permit. In advance of any scheduled work, management will review the costs and benefits supporting the business case for implementing a mobile automated solution in Roads Services.

Management will develop a project plan for all recommendations to be completed by Q1 2018, with full implementation of all initiatives by the end of 2018.

## Appendix A – Audit objectives and criteria

### Overview of the audit objectives and criteria

<p>Audit Objective 1: Assess the processes that ensure that contractors are delivering the goods and services they are contracted to provide in the manner specified in the contract.</p>	
<p>Criteria :</p>	
1.1	<p>City processes and procedures are adequate to identify unsatisfactory work including:</p> <ul style="list-style-type: none"> <li>a. Required construction methods used</li> <li>b. OHS requirements followed</li> <li>c. Traffic Control plans on-site</li> <li>d. Police traffic control where required</li> <li>e. Road cut permits obtained</li> </ul>
1.2	<p>City quantifies the amount of work to be done for each job in advance providing appropriate measurements and then subsequently checks that the required quantity is billed.</p>
1.3	<p>Contractors' weigh scales for materials are properly calibrated.</p>
1.4	<p>Controls are in place to ensure City supplied materials are not stolen either directly from inventory in yards or from third parties such as asphalt plants and gravel pits.</p>
1.5	<p>Job estimates for materials are accurate and surplus materials (used or new) are returned to the City.</p>
1.6	<p>Material quality (e.g. asphalt, gravel, concrete) provided is what City has contracted for.</p>
1.7	<p>Recovered components (e.g. maintenance covers, metal and concrete frames) are salvaged and returned to the City for future use or recycling as required.</p>

Audit Objective 2: Assess the processes that ensure the correct contractor is selected.	
Criteria:	
2.1	City confirms that contractors are not selected that have performed deficient work in other areas of the City.
2.2	City staff are not in conflicts of interest.
2.3	City staff select the correct bidder to conduct work.
Audit Objective 3: Assess the processes that ensure that where re-work is required, any applicable warranty is utilized.	
Criteria :	
3.1	City does not do work, either directly or via contract, that is covered under warranty.
Audit Objective 4: Assess if processes are as efficient as possible.	
Criteria:	
4.1	City processes are efficient.