



# INTERNAL AUDIT REPORT

## **Construction Audit of Carrville Community Centre, Library and District Park: Phase 2**

**September 2025**

## **CONSTRUCTION AUDIT OF CARRVILLE COMMUNITY CENTRE, LIBRARY AND DISTRICT PARK: PHASE 2**

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### **CONCLUSION AND SUMMARY**

This audit represents Phase 2 of the three-phased construction audit of the Carrville Community Centre, Library and District Park. Phase 1, which focused on planning, design, and procurement, was presented to the Audit Committee on September 19, 2022. Phase 2, now completed, reviewed the construction phase of the project. The audit focused on evaluating the effectiveness of internal controls and project management practices during construction. Substantial performance was achieved in December 2024, with the facility officially opening to the public on June 30<sup>th</sup>, 2025.

While we conclude that management has demonstrated operational improvements in this phase of the construction, the following opportunities for improvement would further strengthen project delivery, fiscal oversight, and governance, to mitigate future project-related risks:

- Mature the Project Contingency Estimation Process
- Appropriately Utilize the Cash Allowances and Change Order Process
- Ensure Invoices are Submitted on a Timely Basis
- Enhance Project Management Continuity and Key Project Documentation Requirements
- Ensure the Fair Wage Policy and Fair Wage Schedule are Up-To-Date

The City applies a flat 10% construction contingency rate across all construction projects, regardless of project-specific risks. This one-size-fits-all approach does not adequately reflect the unique complexities and uncertainties inherent in large-scale projects, like Carrville. For example, the project experienced significant cost overruns due to unforeseen site conditions, including unsuitable soil and a high-water table, which required extensive dewatering and filtration efforts. Adopting a risk-based methodology for estimating construction contingency, informed by factors such as site conditions, project complexity, contract type, and market volatility would facilitate enhanced precision in the estimation process, and facilitate appropriate budgetary planning for future projects.

The audit examined the use of cash allowances and found that funds initially allocated for specific items were reallocated to cover unexpected dewatering and filtration costs. At the start of the project, a \$2.4 million cash allowance was established, including \$500,000 for anticipated dewatering and filtration. However, due to the unforeseen volume of water encountered, \$1.294 million of the allowance was ultimately used for dewatering and filtration. This depleted the allowance and necessitated change orders for other planned items, such as security and IT equipment (which had initially been set up to be paid for through the cash allowance account). While the expenditures were justified and appropriately procured, the audit recommends that cash allowances be capped at their original budgeted amounts, with overruns processed through formal change orders. This approach would preserve budget integrity, ensure funds remain available for all planned scope items, and enhance financial oversight.

Project cost oversight was generally well managed; however, the audit identified a significant delay in billing from the contractor for a portion of backfill excavation work, totaling \$821,616.

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Although the work was verified and supported by delivery tickets and reviewed by the Contract Administrator, the billing was not submitted until the end of the project. This delay reduced the effectiveness of financial oversight. Timely billing aligned with work completion is essential to ensure that invoiced amounts reflect actual progress, enable early detection of discrepancies, and maintain transparency throughout the construction lifecycle. Although the primary risk is the contractor billing in advance of work being performed, we recommend that management require contractors to confirm, on a periodic basis, that all costs incurred to date have been billed in a timely manner.

Project management continuity was challenged by four different Infrastructure Development project managers being assigned over the course of planning and construction. While staff departures do occur, and those assigned to the project worked diligently to minimize disruptions, the audit identified instances where key documentation was not consistently maintained on the department's shared drive. Although the documents were eventually located, the lack of a standardized documentation process poses risks to future projects, in the event that critical documents are not maintained. We recommend implementing a key project documentation checklist and requiring that all critical documents be uploaded to a centralized repository as they are received.

While no infractions to the City's Fair Wage Policy were observed, the audit noted that the Fair Wage Policy and Schedule had not been reviewed in accordance with its standard review cycle. The policy is intended to ensure that contractors and subcontractors pay wages that meet or exceed prevailing industry standards. Although no complaints or violations were reported during the construction of Carrville, the lack of a timely review poses a risk that the policy may become outdated and misaligned with current labour market conditions. We recommend that management prioritize the review and update of the Fair Wage Policy and Schedule to ensure continued compliance, fairness, and alignment with industry norms.

Internal Audit will follow up on the status of outstanding management action plans related to this audit and will report the status to a future Audit Committee meeting.

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### **BACKGROUND**

Capital projects are generally funded, planned and executed as individual, discrete projects. Four objectives which are common to every construction project are: scope, cost, schedule and quality. The primary focus of project management is to plan and execute a project in such a manner as to maximize the ability to meet those four primary project objectives.

Individual capital projects can represent a significant investment for the City. Audits of individual projects can provide assurance that risks are appropriately managed. Projects that are not appropriately managed increase the risk of deliverables not being met in a timely and cost-effective manner, and/or not meeting the expectations of Vaughan residents.

The project team and specifically the project manager's focus during the construction phase shifts from project planning efforts, to participating in, observing, and analysing the construction work being performed. It is during this construction phase that the project plan is put into motion and the work of the project is performed on site. Progress is continuously monitored, and appropriate adjustments are made and recorded as variances from the original plan. Infrastructure Development's project managers are responsible for keeping the project moving according to plan. The goal is to manage the project so that it finishes on schedule and within budget, while still meeting building codes, plans, and specifications.

The four main City of Vaughan internal stakeholders for the project include (but are not limited to): Recreation Services Department (Community Centre), Vaughan Public Libraries (Branch Library), Parks Development Department (District Park and Trail) and Facility Management (Maintenance of the Building).

Some of the reasons why construction projects do not meet their objectives is that they are often saddled with poor communication protocols and inadequate controls around scope change management. Project management plans, even for relatively small construction projects, should exhibit a level of detail greater than might be deemed appropriate for other types of projects of equivalent cost and duration.

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## **OBJECTIVES AND SCOPE**

The objective of the audit was to evaluate the adequacy and effectiveness of the internal controls, processes and procedures in place to mitigate the business risks associated with construction projects. This included policies and procedures related to the fiscal, operational, and administrative controls over construction activities, including project scope, cost, schedule, and quality.

Construction of the Carrville Community Centre, Library and District Park commenced in the Spring of 2022, with a substantial performance achieved on December 16, 2024. The facility, located at 655 Thomas Cook Avenue, was officially opened to the public on June 30, 2025. The Community Centre amenities include a double gymnasium, indoor running track with space for fitness equipment, program rooms, a teaching kitchen, a dance studio, lockers and change rooms, and 25-meter lap pool and small instructional pool. The Library includes quiet study areas, spacious reading area for children, and various physical media resources. The District Park features several outdoor amenities, including a playground, splash pad, pickleball and tennis courts, multi-use sports courts, and an outdoor ice-skating loop.

Auditing a construction project from beginning to end can provide added assurance, identify problems as they arise, and help improve outcomes. Since the scope of the audit will encompass the complete lifecycle of the project, audit reports will be issued after the completion of the following project phases:

- Planning and Design, Bid and Procurement Phase (Phase 1). This Phase 1 report was presented to the Audit Committee on September 19, 2022.
- Construction Phase (Phase 2).
- Close Out Phase (Phase 3).

Phase 2 included a review of:

- Construction Project Management and Progress Reporting.
- Contract Accounting Management Process.
- Change Order Management Process.
- Schedule Management Process.

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**DETAILED REPORT**

**1. *Mature the Project Contingency Estimation Process***

The success of construction projects is often hindered by uncertainty. These may include (but are not limited too) unexpected site conditions, material price fluctuations, schedule delays, or design modifications. No two projects are alike, and the nature of unexpected events are diverse across different construction types, locations and construction complexity. However, not preemptively planning and accounting for unforeseen events significantly impacts cost-effective and timely completion of projects.

To plan for uncertainty and unforeseen events, the construction industry has developed the concept of construction contingency. Construction contingency refers to a budgeted reserve of funds set aside to address unforeseen costs or changes that may arise during the course of a construction project. Having a well-defined and accurately estimated construction contingency is critical to effective project management and fiscal oversight. Without a sound methodology for estimating contingency, there is a risk of either underfunding - leading to budget overruns and project delays - or overfunding, which can tie up public resources unnecessarily. A transparent, data-driven approach to contingency estimation enhances accountability, supports informed decision-making, and ensures that public funds are managed prudently throughout the project lifecycle.

According to the Royal Architectural Institute of Canada, construction overruns typically range between 5-10% of the original construction cost.<sup>1</sup> However, contingency percentages may be higher (15-20% or more) in scenarios such as complex projects, unexpected construction site conditions requiring remediation, or projects in volatile markets where material costs fluctuate significantly.<sup>2</sup>

Recent practice in the construction industry has seen project contingency estimation based on the assessment of key project risk factors, specific to the project. For example, i. Project Complexity, ii. Site Conditions, iii. Contract Type, iv. Market Volatility, and v. Construction Type. This risk assessment facilitates determination of the overall risk of the project (for example, low, medium and high risk), and aids in estimating an appropriate project specific construction contingency range, in an attempt to approximate uncertainty.

During the construction, when unforeseen events, design changes or other circumstances arise that require modification to the original project scope, cost or schedule, construction change orders are issued to capture formal amendments to the construction contract and are paid for from funds set aside in the construction contingency.

Currently, the City estimates project contingency at a flat 10% of the original contract amount for all project types, across the City. This approach was applied for the construction of the Carrville Community Centre, Library and District Park. Although project specific risks are identified during the construction planning phase, this information is not assessed in a

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<sup>1</sup> Royal Architectural Institute of Canada – Construction Project Cost Planning and Control.

<https://chop.raic.ca/chapter-4.2>

<sup>2</sup> Construction Contingency: Typical Fees, Uses & Best Practices. <https://www.mastt.com/blogs/construction-contingency>

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systematic manner to estimate the potential impacts to the project, to estimate construction contingency.

At the time of this report, change orders amount to 18% of the original contract cost. The primary reason for the majority of the change order costs stem from unexpected unsuitable soils encountered during excavation (which required removal and replacement with suitable backfill), along with the ongoing dewatering and filtration efforts (as a result of the high-water table) throughout the construction, in order for the project to proceed. This led to project timeline delays, additional expenditures on winterization proofing, and extension of contractor oversight on the project, to completion.

Although the City's Infrastructure Development team tracks change orders in a Change Order Log as they were incurred throughout the project and categorize the nature of the change orders into construction disciplines (Electrical, Architectural, Mechanical, Structural, Geothermal and Land), there is no formal process to review total change order costs by discipline with the original contract budget. Performing this analysis assists in understanding the true cost of completing a project. This information can be leveraged to develop thematic risk profiles that will assist in future project risk factor assessments, and the estimation of project specific construction contingency.

Applying a project specific contingency estimation methodology based on assessing project specific risk factors serves in making data-driven decisions, in that both quantitative and qualitative factors are used in the assessment. This ensures that contingency funds are neither underestimated, nor excessively overestimated. Transparency and accountability is also encouraged in that project-specific risk assessment provides a documented rationale for the contingency estimate, which can be communicated clearly to stakeholders, enhancing project governance.

### **Recommendations**

We recommend that management:

- Adopt a methodology to estimate project specific construction contingency, based on the assessment of project specific risk factors.
- At the conclusion of the construction, review and compare total project costs incurred by construction discipline with the original contract cost, to inform future project contingency estimation.

### **Management Action Plan**

Management agrees with the recommendations

A risk-based methodology for estimating project-specific construction contingency will be developed and implemented for high-risk projects. This methodology will consider factors such as site conditions, project complexity, contract type, and market volatility.

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At the conclusion of each construction project, Infrastructure Development will conduct a post-project analysis comparing total costs incurred by construction discipline against the original contract budget. This data will be used to inform future contingency estimates and develop thematic risk profiles.

The new methodology will be piloted on upcoming capital projects starting in Q3-2026, with full implementation targeted for Q2-2027.

**2. *Appropriately Utilize the Cash Allowances and Change Order Process***

Construction projects are often complex, spanning long periods of time. During the planning and tendering stages, it is common for certain elements of the project to be identified as necessary, even though their exact specifications or costs are not yet known. To account for these uncertainties, contracts may include cash allowances; predefined sums set aside to cover specific items or scopes of work that are expected but not fully detailed at the outset of the project. These allowances provide flexibility to address evolving project needs without delaying progress. In contrast, a change order is a formal amendment to the contract that adjusts the scope, cost, or timeline, due to unforeseen conditions or client-directed changes.

While both tools help manage financial adjustments, cash allowances are proactive and built into the contract from the start, whereas change orders are reactive and require approval as new information emerges. The two often work together when the actual cost of an item covered by a cash allowance becomes known, prompting a change order to reconcile the difference in cost.

At the start of the project, a \$2.4 million cash allowance was set up to cover the cost of specific work items, where the complete cost details could not be defined at the time of the bidding. Of this amount, \$500,000 was estimated for the anticipated dewatering and filtration costs that would be incurred as part of the excavation process. However, as the excavation work commenced, it became apparent that the dewatering and associated water filtration costs would exceed the original planned cash allowance (due to the unanticipated volume of the dewatering and filtration efforts). Management decided to use \$1.294 million of the cash allowance to pay for the required dewatering and filtration. As a result, later in the project when funds were required to pay for security and I.T. equipment (which had been set up as a cash allowance at the start of the project), no funds were available as the cash allowance account had already been depleted by other expenditures. This required issuance of change orders to pay for the security and I.T. equipment.

Although support and appropriate procurement practices justified the required expenditures, and a tracking process to log cash allowances was followed, industry better practice suggests limiting the use of cash allowance funds to their originally set budget, and to request a change order when actual costs exceed those estimates. Following this approach aids in upholding budget integrity - it ensures that a single expenditure does not deplete all or the majority of a cash allowance balance. It also supports risk management, in that by capping the cash allowance spend to the original budget and requiring the usage of change orders for overruns, project managers can better assess and manage financial risks, and ensure funds are available to pay for expenditures that had originally been planned for.

**Recommendation**

We recommend that management implement a process to ensure expenditures charged to cash allowance categories do not exceed their original budgeted amounts. Where actual costs surpass the allocated allowance, the excess should be addressed through the issuance and approval of a formal change order. This is to ensure that funds remain available for all planned allowance items.

**Management Action Plan**

Management agrees with the recommendation.

A formal process will be established to ensure that expenditures charged to cash allowance categories do not exceed their original budgeted amounts.

Project Managers will be required to initiate a change order when actual costs surpass the allocated allowance, ensuring that funds remain available for all planned scope items.

Training and updated guidelines will be provided to all Infrastructure Development staff by Q1-2026 to reinforce best practices in cash allowance and change order management.

### **3. *Ensure Invoices are Submitted on a Timely Basis***

It is common practice in the construction of large projects for the Construction Manager (the General Contractor) to bill the Owner monthly, based on the work completed during the month. These Certificate of Payment draws are accompanied by details of progress made against the construction schedule, subcontractor invoices, inspection support, field observation reports, project progress photos and other pertinent documentation to support the payment application. This information is reviewed for accuracy by the Consultant Architect and authorized to be paid (Payment Certification) by the Owner if appropriate (a realistic distribution of cost during the period).<sup>3</sup>

The payment certification process is an important aspect of project cost oversight, in that it provides vital monitoring to ensure spending aligns with the approved budget and actual work completed. This oversight helps ensure that resources are being utilized appropriately, progress of the project remains on track and financially viable throughout the construction lifecycle.

From the start of the project, unsuitable site conditions, notably unsuitable soils requiring excavation and backfill replacement created challenges from an incremental cost and additional time perspective. Despite environmental site assessments being performed, the magnitude of the unsuitable soils requiring removal and replacement were unexpected. The Contractor took steps to ensure the project progressed in as timely a manner as possible and mitigated delays by continuing the excavation and backfill as required.

Although the Contractor submitted haulage bills and associated support for the excavation of unsuitable soils in a timely manner as the work was being performed, the billing for a large portion of backfill was not received until the end of the project - this amounted to \$821,616. Despite delivery tickets and supporting documentation being received and reviewed by the Contract Administrator to confirm the performance of the work, it would have been appropriate to receive those billings in a timely manner as at the time the respective work was performed, rather than receiving a bill at the end of the project.

While the primary risk is for the contractor to bill in advance of work being performed (in this case the Contractor missed billing for work until the end of the project), from a project cost oversight perspective, ensuring that the contractor is billing for work that is performed in a timely manner, rather than waiting until the end of the project, provides several key benefits that support effective financial oversight and project management. Timely billings allow for timely verification that invoiced work aligns with actual progress on-site, enabling the Contract Administrator and project managers to detect discrepancies, overbilling, or delays early in the process. This approach also ensures that payments are tied to measurable deliverables, and reduces the risk of large, lump-sum payments being made without adequate supporting documentation. It also encourages ongoing communication and accountability between the contractor and the City, ultimately contributing to better cost control and project transparency.

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<sup>3</sup> Ontario Association of Architects – Certifying Payment. [Practice Advisory Knowledge Base - 2.8 Certifying Payment](#)

**Recommendation**

We recommend that management ensure invoices are received and reconciled in a timely manner as per the contract.

**Management Action Plan**

Management agrees with the recommendation and will amend the existing supplementary conditions to CCDC 2 to require that 1) the Contractor provide the City with a written declaration that confirms it has included all work performed (whether performed by the contractor, subtrades or suppliers) in its invoice; and 2) the Consultant withhold payment certification until it has received the written declaration from the Contractor. Target completion date is expected Q2-2026.

**4. Enhance Project Management Continuity and Key Project Documentation Requirements**

Large and/or complex construction projects often span multiple years. Project Manager continuity is preferable over the duration of a construction project, from the design phase to the construction and closeout. Project Manager continuity leads to better communication, improved efficiency, and a higher likelihood of successful project outcomes. However, there are times when new Project Managers need to be assigned to a project before its completion.

While no two construction projects are alike, compliance to minimum documentation requirements is necessary to ensure all key project documentation is retained and accessible. These minimum requirements also help to establish a basic level of uniformity among all project managers. This assists in the review of records by others and promotes greater efficiency when staff turnover or reassignment between projects occurs. A well-defined, systematic record keeping process reduces the effort required to produce final contract records upon completion of the project and ensures that all relevant project related documentation is retained and accounted for.

The construction of the Carrville Community Centre, Library and District Park has had four different Infrastructure Development Project Managers assigned to it. Although City staff worked admirably to minimize project delays related to staff transitions, there were instances of key project documentation not saved on the departments shared drive.

Despite the supporting documentation eventually being located, implementing a consistent process whereby key project documentation is uploaded to the shared drive as it is received, ensures that information is not misplaced and is readily accessible. This would be further aided through the adoption and completion of a key project documentation checklist, to ensure all key project documentation has been received and is current.

To mitigate the risk of project delays and loss of critical legacy project knowledge from unplanned Project Manager departures, management may wish to consider instituting periodic knowledge sharing sessions amongst Project Managers, in which the overall status of projects, challenges and milestones are discussed. This ensures that if the primary Project Manager departs or is reassigned, staff with an understanding of the overall project status can efficiently transition into the role as the primary Project Manager.

**Recommendation**

We recommend that management:

- Develop a key project documentation checklist and require that it be completed on future construction projects.
- Adopt periodic knowledge sharing sessions amongst Project Managers, in which the overall status of ongoing projects, challenges and milestones are discussed.

**Management Action Plan**

Management agrees with the recommendations.

A standardized key project documentation checklist will utilize lessons learned from previous similar projects for use on all future construction projects. This checklist will ensure that critical documents are uploaded to a centralized repository as they are received.

Infrastructure Development will implement quarterly knowledge-sharing sessions among Project Managers to discuss project status, challenges, and milestones. This will support continuity and reduce the impact of staff transitions.

These measures will be rolled out and piloted beginning Q3-2026, with full compliance expected by Q2-2027.

**5. *Ensure the Fair Wage Policy and Fair Wage Schedule are Up-To-Date***

The City's Fair Wage policy came into effect on April 1, 2021. It was developed to ensure that no contractor or sub-contractor performing construction work for the City of Vaughan secures an unfair competitive advantage over other construction employers, by paying wages that are below prevailing norms.

On construction projects with a procurement value of \$500,000 or more, every contractor and sub-contractor shall pay wages to workers that are equal to, or greater than, the wage rates set out in the City's Fair Wage Schedules. Failure to comply with the City's Fair Wage policy may result in restricted ability to bid on future City construction work. The Fair Wage policy serves the interests of residents through the promotion of City work that is based on contractors' efficiency, quality and productivity while, at the same time, ensuring that all workers are treated fairly.

As the construction contract at Carrville was over \$500,000 and commenced after the effective date of the Fair Wage Policy coming into effect, the contractor and sub-contractors are subject to meeting the requirements of the Policy. Per review of the Fair Wage Policy requirements, the responsibilities of the contractor and subcontractor have been achieved. The General Contractor completed the Contractors Statement of Compliance with the Fair Wage Policy and Fair Wage Schedule after substantial performance was achieved, including completion of required sections and attesting to paying wages, benefits and hours of work in accordance with the Fair Wage Policy and the Fair Wage Schedule of the City of Vaughan. No complaints were submitted to the City alleging non-compliance with the Fair Wage policy and Fair Wage Schedule, between the term of the construction and 21 calendar days following substantial performance of the construction.

Although no issues related to adherence with the Fair Wage Policy and Fair Wage Schedule were identified during the audit, review of the Policy is required every 3 years (the scheduled date of review was April 1, 2024). As of the date of this audit report, the Fair Wage Policy and Fair Wage Schedule have not been reviewed. Procurement noted that staffing challenges, focus on mitigating risks associated with tariff concerns and updating other policies resulted in prioritization of those items. They are aware that the Fair Wage Policy and Fair Wage Schedule requires review.

It is important that the Fair Wage Policy and Fair Wage Schedule remain up-to-date and current. This ensures that contractors and subcontractors have current requirements and obligations to adhere to. An outdated Fair Wage Policy and Fair Wage Schedule may not be aligned with industry norms and standards, posing the risk of workers being paid below prevailing industry wage rates.

**Recommendation**

We recommend that management review and update the Fair Wage Policy and Fair Wage Schedule in a timely manner.

**Management Action Plan**

Management agrees with the recommendation.

The Fair Wage Policy and Fair Wage Schedule will be reviewed and updated by Q2-2026.