



# INFORMATION REPORT

<b>TO:</b> Chair and Members Audit, Finance and Administration Committee	<b>WARD(S) AFFECTED:</b> CITY WIDE
<b>COMMITTEE DATE:</b> May 14, 2012	
<b>SUBJECT/REPORT NO:</b> Addendums to Construction Contracts in a One Year Period (FCS12025(a)) (City Wide) (Outstanding Business List Item J)	
<b>SUBMITTED BY:</b> Antonio D. Tollis Treasurer Corporate Services Department	<b>PREPARED BY:</b> Rick Male (905) 546-2424 ext. 4157
<b>SIGNATURE:</b>	

## Council Direction:

At the March 19, 2012, Audit, Finance and Administration Committee meeting, the following resolution was approved:

(e) Addendums to Construction Contracts in a One Year Period (FCS12025) (City Wide) (Item 5.5)

(i) Report FCS12025, respecting the Addendums to Construction Contracts in a One Year Period, was tabled.

(ii) That the appropriate staff be directed to prepare a more detailed report respecting the high number of addendums, as outlined in Appendix A' to Report FCS12025, and the reasons for each, and report back to the Audit, Finance & Administration Committee.

## Information:

Staff prepared a listing of addendums made to construction projects in 2011. It was reported that there were 16 instances where Expanded Works was requested on a construction project. However, only 14 of the 16 projects were presented in the original report.

This report compiles the additional information provided by the various Client Departments for all 16 projects. The two projects that were inadvertently missed are presented at the end of this report.

- **PW-10-51: Courtcliffe Park Development (Phase 3)**

**Additional Funds: \$60,000**

There is little additional information that can be added. The individual isolated boreholes did not reflect the depth or nature of the materials across the entire area of the proposed parking lot and additional depth of excavation and granulars were required to undertake the work.

- **PW-08-42: Puslinch Townline Bridge #147 - Structural removal and reconstruction of bridge**

**Additional Funds: \$43,000**

The design required the footings to be installed on bedrock. The original geotechnical report indicated refusal due to bedrock conditions at a given elevation. Upon excavation, large boulders were found rather than solid contiguous bedrock at the given elevation giving a false indication of competent rock. The footings design was revised, and additional depth of excavation was required, even further below the water table level, (immediately adjacent to a cold water stream). This now necessitated additional pumping/dewatering and a permit to take water from the Ministry of Environment (MOE) was required. The Conservation Authority also required additional water quality control. The increased duration and quantity of pumping, increased water quality control activities, increased excavation and concrete for the revised footing necessitated the extension to the contract.

- **C13-28-11: Renovations to the Kenilworth Public Library**

**Additional Funds: \$140,000**

The original scope of this work included replacement of windows, entrance doors and the barrier free ramp. In addition to the original scope, the Kenilworth Library required three separate Policy 11s for additional works required to repair flooding damage in the basement, from three different events.

September 23, 2011 Policy 11 for \$50,000

During the original work the library had some flooding in the basement through a leak in the foundation. This leak was adjacent to where a new barrier free ramp was to be installed. The installation of the new ramp would have made it impossible to access the foundation after installation. Therefore a request was made to fund these additional repairs to the foundation prior to ramp installation. In order to prevent the growth of mould, due to excess moisture this work was completed as quickly as possible. The original scope was completed by Triple Crown under PO 60606.

October 20, 2011 Policy 11 for \$40,000

In October the library had another significant flood in the basement due to rain leaking through the front basement window. This was a new leak different from the one event on September 23rd. Some of the flooring work already performed by Triple Crown needed to be redone due to damage to the new floor coating. To investigate this leak some drywall had to also be removed to confirm the source of water. The window and drywall were replaced. This work needed to be addressed quickly to prevent possible mould growth in the basement of the library.

November 8, 2011 Policy 11 for \$50,000

In November, the library had another significant flooding event in the basement due to rain leaking in a different area. It was anticipated that repairs to drywall and flooring were required as well as repairing the foundation. The third Policy 11 estimate was too high and was not fully utilized because the repairs to the flooring and drywall were minimal.

The original project contract price was \$266,690, plus a contingency of \$33,310 (\$300,000 total). The final contract total with the Policy 11's was \$406,125. The actual total funds used from the Policy 11's were \$106,125 for the repairs to the foundation, window wells, drywall and flooring replacement.

- **Demolition of 16, 26, 28 and 30 Tiffany Street**  
**Additional Funds: \$25,380**

Once demolition began at these locations, it was discovered that the drywall joint compound had additional asbestos that was not identified in the earlier survey. This compound was hidden behind paint and was missed in the original survey. Ferro was required to complete the demolition under Type 2 asbestos condition assessment (the original was a type one) and additional funding was required to account for this unforeseen situation.

- **PW-11-23 (P): Gage Park Redevelopment (Phase 2)**  
**Additional Funds: \$120000**

AMEC is the engineering and design consultant on the Gage Park Greenhouse Redevelopment.

The Building Department and various Utilities (water, gas, hydro) required additional information before issuing building and demolition permits.

Due to the age of the Park and no accurate records or plans of the existing location and size of the water services available, AMEC was required to do additional on site investigations to find the existing water service that serviced the Greenhouse.

Meetings with the gas company were required to reroute the gas line to the Greenhouse. The existing gas line was routed beneath the existing Tropical house,

however, the gas company required that due to safety reasons the existing gas line be disconnected and rerouted to the new Greenhouse.

Before issuing a Building permit the Building Department required the installation of a fire hydrant on the Greenhouse site. This required additional design and engineering work to design and coordinate the meter chamber, water supply line and backflow prevention system, including the decommissioning of existing services on site.

Once the demolition of the existing Greenhouse was completed, it was discovered that the subsoil as it sat was not suitable to support the new structure. As a result, additional engineering work was required to determine the solution to remediate the subsoil and then monitor the remediation work.

- **Installation of Flow Meter and PVC Pipe Drain at Rennie Street Landfill**  
**Additional Funds: \$11,681**

This project involved the installation of a leachate flow meter and a new drain pipe from the meter chamber back to the pumping station at the Rennie Street landfill- the purpose of which is to prevent flooding within the chamber. This work was required in order to remain in compliance with the site Certificate of Approval. The quoted value of this work was \$4,950.

During the course of the work 2 policy 11s were completed which is a result of unexpected issues. The first one was due to the contractor hitting plastic conduits during the course of the work. The conduits were hit because they were not indicated on any drawings nor were they picked up by locates. As a result a Policy 11 had to be completed to repair the damage and maintain the collection of leachate. The value of this work was \$3,122.

The second Policy 11 had to do with the flow meter replacement. When the contractor went in to do the work they noticed that the flow meter valve was seized. Secondly, the wiring in the existing conduit could not be pulled through due to potential kinking of the wire in the existing conduit. It was concluded that this may have been the reason for the original malfunction. In order to pull the new wire a new conduit with pull boxes had to be installed. The value of this work was \$8,559. The total of the two change orders = \$11,681.

- **C13-65-10: Heating and Ventilation Upgrades at Bernie Courtyard**  
**Additional Funds: \$24,000**

Originally this scope was part of a previously issued contract C13-26-09 "Heating and Ventilation Upgrades Required at Mountain Transit Centre Garage and Bernie Court Yard". Three HVAC units for Bernie Courtyard were removed from C13-26-09 due to budget constraints and was re-tendered under C13-65-10 approximately a year a half later (the following budget cycle).

No changes were made to the tender package other than reformatting of the documents. Connection to the City's Building Automation System (BAS) was not included in these original documents. The additional funding request was to hook-up the new HVAC units to the BAS system at a cost of approximately \$18,000. Connection to the City's BAS will improve operations/ control of the units and reduce energy consumption. In addition, further energy efficiency features were added to the Air Handling units, these features were not included in the original tender. These features cost an additional \$4,950. The payback on this installation is estimated to be 3-5 years. These funds were approved through a Policy 11 (May 24, 2011).

- **C14-42-10: Stone Church and Garth Street Water Pumping Station**  
**Additional Funds: \$475,000**

- Alberici's claim due to unanticipated delays to the Contract.
- For successful completion of the Contract, the following unexpected issues were addressed:
  - Design features were deleted from the contract due to building code issues and as a result, equipment required relocation.
  - The City's latest SCADA standards came into effect after award of Contract which resulted in changes to equipment control.
  - Modifications to the pre-purchased equipment were required in order to appropriately phase the new equipment into the existing pumping station, while maintaining the station in operation.
  - Additional changes were required to the original design in order to comply with Technical Standards and Safety Authority (TSSA).
  - More than anticipated asbestos was found during equipment demolition and was subsequently removed and disposed of.
  - It was been determined that the utility work required exceeded the cost estimated during design (with respect to Horizon Utilities connection charges).
- As further unanticipated issues occurred on this project, contingency was added to allow completion of this complex ISF project and avoid any further construction delays.

- **C11-80-08: Engineering Consulting Services for the Design and Contract Administration of the New Highland Gardens Park Pumping Station**  
**Additional Funds: \$225,000**

- Due to unanticipated delays with the Ministry Approvals for endangered species (Butternut Trees), the Consultant (GENIVAR) incurred additional costs associated with the following:

- During design, it became evident that various Butternut Trees (endangered species) needed to be removed to facilitate construction activities. In order to remove the impacted trees, additional discussions and site visits with Canadian Wildlife Services (Environment Canada) and MNR were required. Subsequently, the service of an Ornithologist was required (qualified bird species expert which reviewed the impact on nesting bird species and associated mitigating factors).
- Increased public communications were required to provide information on the impacted area and associated environment safeguards implemented on site.
- As further unanticipated issues occurred on the approximately 82 year old facility, contingency was added to allow completion of this complex ISF project to avoid construction delays.

- **C13-24-11: Veevers Estate – Foundation and Drainage Repairs**  
**Additional Funds: \$20,000**

The nature of traditional masonry is that it is composed of many components that are hidden. Test samples can be taken to determine conditions but they do not always give an accurate picture of the conditions throughout the masonry structure. Foundation conditions can vary from one side of a building to another and from top to bottom. Sometimes the true extent of the repair is unknown until the masonry structure is opened up. In the following cases, water damage had occurred where the effects could not be easily seen. Once the assemblies were exposed, the larger scope of work became apparent.

When the project was being planned, the estimate was based on the full set of specs was written by AMEC which indicated that approximately 25% of the wall below grade needed re-pointing. Once the soil was removed, it became apparent that the damage to the foundation was greater than had been estimated. The building needed 100% re-pointing on 3 sides. This required a further \$20,000 to complete.

- **Dundurn Curatorial Wall Conservation**  
**Additional Funds: \$24,900**

This project was to repair the stucco on the wall but the brickwork underneath the stucco top coat was far more deteriorated than expected. Water had damaged the underlying bricks and caused the need for more brick replacement. Also the discovery of a hidden vent created another item to be repaired. The extent of the damage was not visible during planning stages for this project.

- **C13-38-10: Coronation Arena & reconstruction of the outdoor pool**  
**Additional Funds: \$45,000**

The extra costs for Coronation included the following items. The project was designed, tendered and constructed in 16 months to meet the ISF deadline. As a result of this compressed schedule there were several details that were not fully resolved and included in the construction contract. The costs associated with these extras were unforeseen but necessary for the project for maintenance, health and safety, security, user requirements and to create a positive public impression of the finished product.

Coronation Arena- The contract included a new forced main which has successfully been installed. The new forced main requires a back water prevention valve to prevent any flooding of the mechanical room. This work was requested as a preventive measure as the forced main can become clogged if items such as hockey tape enter the sanitary system. The back water prevention valve in conjunction with the new floor drain in the mechanical room will help ensure that any malfunction in the forced main will not jeopardize the new refrigeration system.

Coronation Pool- Modifications to the lockers were required to close gaps between locker banks that were large enough to accumulate garbage and become an entrapment hazard. Panels were installed to close the gaps. Modifications to the toilet partitions were required to provide complete privacy to occupants by sealing the gaps between the doors and their supports. Privacy panels were required for the top and bottom of partition doors as the family change room serves members of both sexes. Concrete furniture has been provided as part of the base contract. This furniture should be permanently installed using brackets to ensure that it is not moved for the safety of pool occupants. The structural engineer provided a detail to ensure occupant safety. Infill landscaping was required to provide additional landscaping to exposed areas around the pool. A composite security screen was installed to provide security to the exposed window between the arena and the pool. This was required to provide a barrier to entering the pool enclosure and provide security. Additional painting was required to improve the arena wall which borders the pool enclosure. The paint provided a finished wall to complement the brand new facility right next to it.

- **C14-14-10: Sir Allan MacNab Pool Renovation**  
**Additional Funds: \$100,000**

1. This project was renovations and upgrades to the existing building as part of the ISF projects (Infrastructure Stimulus Fund) which dictated completion by March 31, 2011. This deadline added extra pressure on the design and construction process to accomplish this deadline.

2. To my knowledge the project was on the books from few years earlier with a rough budget estimate for limited renovations and upgrades to the building. The budget was set for that limited scope of work and wasn't updated for the escalations of the pricing especially for the ISF project surge.

3. From when the project budget was set, to the construction completion (and even during the design and construction phase) several new acts, by-laws and code

upgrades came into effect without being accounted for in the budget. Some of these regulatory upgrades include, AODA requirements, Hamilton Bulletin# 10-01, Hamilton energy saving policy and several changes to the OBC and OFC. These changes added additional costs for the project budget and had to be completed to get the building permit and the occupancy letter.

4. The building (MacNab pool and recreation centre) is attached the high school and share most of their services with the school, including the fire panel, gas, telephone, hydro and parking lot. These shared services added additional difficulties to the execution of the work and therefore cost to the contract.

5. Since the project was renovations and upgrades to the existing building and the "as built" drawings weren't available or updated (by the school board), several concealed items and issues were impossible to predict or to be included in the design. These items were addressed during the construction as change orders. For example the way the core slabs were running were not clear; there were no wall flashings in the exiting walls that needed to be addressed; the wall joints were all open and very irregular in the main pool area that was concealed by the acoustic insulation; many wires and cables running through the interior walls that shouldn't have been there and many other items that were addressed during this project.

6. The building was constructed with the school in the late 1970's and several construction issues and concealed problems were discovered and had to be corrected during this project. For example we discovered there wasn't a sub base below the pavement in our portion of the parking lot. Once we removed the pavement we discovered the sub base was just a mix of construction rubble and disturbed soil that was also contaminated according to the current environmental standards. The top 18" of what was thought it was the "sub base" was removed to the appropriate disposal sites out side the City limits and replaced with clean and adequate sub base material. This item alone cost the project around \$70,000. Another example is the cable that feeds the adjacent tennis court was buried very shallow and wasn't marked on any plan. This cable was damaged during the excavations for the parking lot. The cable had to be adequately fixed and installed in the appropriate depth.

7. There were about 68 change orders in total for the entire project that addressed various issues in the project, from gaps in the specifications and drawings to removing asbestos from the building and many other concealed items. These change orders also addressed the compatibility issues between different old and new systems and equipments in addition to trouble shooting the systems to this date.

8. Due to the budget limitations and to complete the project within the budget the design team decided to keep some of the equipment and electrical systems that deemed to be in working order during design stage. Some of this equipment and systems did not work after the long shut down period during construction. For



example the heat exchanger started to leak after connecting to the new system. Several motors and circuit breakers did not even start after the long shut down and had to be replaced.

9. Due to the space limitation in the basement and the extent of the mechanical equipment and new additions, several ducts and conduits had to run for long distances. These long distances created head/pressure loss and affected the capacities of these equipments. Correcting these issues as part of the trouble shooting are also additional costs that had to be absorbed by the project.

10. Due to the addition of new Heating Ventilation and Air Condition system (HVAC), the building started to expand and contract at different rates and configurations than what it used to. This resulted in new cracking and tile damages throughout the pool and the change rooms that had to be fixed. These additional costs were impossible to predict and had to be absorbed by the project.

11. Several issues and conflicts arose during and after the construction between the energy, health, fire and environmental requirements that needed to be addressed to obtain the occupancy letters. Resolving these conflicts added extra costs to the project that wasn't accounted for.

- **C13-11-11: Hammill House Landscaping**  
**Additional Funds: \$15,000**

During the latter stages of the major restoration work of 2010 a serious foundation waterproofing issue as evidenced by water ingress into the only fully excavated basement area that was now housing all the new mechanical and electrical equipment. Because the issues with Corporate Construction, staff elected to defer the work until after they were completed and off site. Although the architect recommended interior waterproofing and drainage, staff rightly decided that it was the exterior that needed to be addressed if the problem was to be properly solved for the long term. Knowing that landscape construction was scheduled immediately afterwards in the spring of 2011, it decided to have it wrapped into that contract (under David Zimmer in Downtown Renewal). The work was successfully completed by Heritage Brick & Stone as a sub-contractor to the Landscape General Contractor; and included deep re-pointing of the rubble stone walls and waterproofing with loose laid ethylene propylene diene monomer (M-class) rubber (EPDM). The basement is now dry and continues to be so.

- **C11-77-09: New Fluoride Building and Metering System**  
**Additional Funds: \$24,428**                      **Original Purchase Order Value: \$274,855**  
**Purchase Order: 51379**                      **Contractor: Genivar Ontario Inc.**  
**Division: Water and Wastewater, Public Works**

**Original expanded works explanation:** Additional engineering services due to City's standard changes to SCADA programming and to rectify a number of unknown site conditions once construction started

**Additional information:**

- Changes to SCADA programming - The City released new SCADA Standards subsequent to the award of the RFP which resulted in changes to SCADA programming.
  - Security System Coordination - It was discovered that the fluoride building was host to three different aspects of the Woodward WTP security system. The fluoride building's own security system was included in the project's scope; however, the building's incorporation into the plant's security system as a whole, including the ground vibration system was not expected. The security system was installed by a contractor no longer working for the City. As a result, Genivar would have to investigate, review information, provide direction and incorporate proposed works into the existing construction contract.
  - Filtered Water Conduit (FWC) #2 Drawing Generation and Process Piping Layout Changes - Subsequent to the award of the RFP, Genivar became aware that there were chlorine dosing lines in the area between the chlorine building and FWC #2 which was new information, not provided at the RFP stage. In order to avoid crossing these active chlorine lines and risk breaking them, Genivar recommended routing the fluoride feed lines to clear well #2. Extra effort was also required to generate as-built drawings of the clear well #2 chamber as existing drawings did not exist.
- **C14-27-10: New Ferguson Avenue Water Booster Pumping Station Upgrades**  
**Additional Funds: \$800,000**      **Original Purchase Order Value: \$15,336,176**  
**Purchase Order: 55716**      **Contractor: Alberici Constructors Ltd.**  
**Division: Water and Wastewater, Public Works**  
**Original expanded works explanation:** Unanticipated conditions, poor soils, offsite disposal of poor soils and yard piping issues (\$400,000). The existing site and facility is approximately 100 yrs old and there are a significant number of unknown conditions. Based on staff's review of site construction risks and recognizing that the project is 50% complete, \$400,000 in additional contingency to avoid construction delays.

**Additional information:**

The following two items were identified as areas for expanded works:

- A claim from the General Contractor (Alberici) for the following unanticipated conditions: poor site soil conditions, protection of existing shallow large diameter trunk watermains and isolation valves on Ferguson Avenue from the potentially damaging effects of heavy construction activities, offsite disposal of poor soils and large diameter yard piping issues in a congested site, which resulted in design modifications and contract delays. Cost of claim \$400,000.
- The existing site and facility is approximately 100 years old and it became evident that there are a significant number of unknown conditions. Virtually no

- accurate "as built" documentation or records exist for this very old facility, and a seemingly endless and ongoing stream of unknown site conditions was exposed that required reworking, relocating or avoiding in order to maintain the critical schedule. Therefore, additional contingency of \$400,000.00 was required to allow completion of this complex ISF project to avoid construction delays.