CITY OF VICTORIA

Governance and Priorities Committee Report
For the January 22, 2014 Meeting

To:	Governance and Priorities Committee	**Date:**	January 15, 2014
From:	Dwayne Kalynchuk, P. Eng., Director of Engineering and Public Works		
Subject:	Johnson Street Bridge Replacement Project Quarterly Update		

Executive Summary
Quarterly reports are prepared on the Johnson Street Bridge Replacement Project throughout the year to keep Council and the community updated on this important Capital Project. This is the first quarterly report for 2015, with the next one scheduled for April.

The last few months have seen significant achievements on site, including changes to the road network on the west side of the bridge, that included realignment of the Esquimalt Road approach, new traffic lights, and landscaping that will form the new public parks area, as well as a new access for the Delta Ocean Pointe Hotel.

The bridge crossing continues to see significant progress on the concrete foundation, including the abutments and rest piers.

Regular quality inspections were routinely conducted by the fabricator and the contractor's quality control consultant on the steel fabrication in China to ensure that the bridge is built to the highest standard of the design. An inspection last July found that some aspects of the steel fabrication had not been undertaken in accordance with the design specifications. The project team is working to get the fabrication restarted and a meeting is scheduled at the plant in China in February to finalize procedures and resume fabrication.

With fabrication tentatively recommencing in March, the project would be approximately ten months late. City staff are reviewing and planning to assure that the existing bridge will continue to operate until the new structure is completed. Staff are communicating with the federal government regarding an extension to the funding agreements. All federal and provincial permits are being reviewed to determine which will require extensions.

As of December 27, 2014 PCL has invoiced $20.65 million, representing 32% of the total contract amount. MMM Group has invoiced a total of $8.205 million from the budget of $9.6 million for design, permitting, construction administration, and project management in the same period.

To the end of December, $1,015,475 has been allocated from the contingency with $1,799,525 remaining. However, a number of items yet to be finalized will virtually commit the balance of the contingency. These include additional consulting costs to resolve the steel issue in China; provision of habitat compensation as ordered by the federal government; finalization of the north end fendering dolphins; additional legal costs for change order negotiation and mediation; finalization of the pedestrian overpass foundations; removal of additional soil at the west end abutment; increase in landscape costs to complete the project; payment for seabed land; and potentially increased need for the Owners Quality Assurance and Quality Control program in China. A report will be provided to Council in February on allocation of funds and funding sources for the contingency as the present amount is fully allocated.

The change order requests from both the contractor and the consultant team is subject to a mediation process. All parties have now agreed to a mediator and the process has commenced in December and is presently on-going. All parties are bound to confidentiality of the mediation process; however, any settlement is subject to City Council approval.

Public engagement for the new green space on the west side of the Johnson Street Bridge is currently in the Operational Plan for 2015. Public consultation in the last quarter has been primarily with the Delta Hotel regarding the changed access and with adjacent businesses on Harbour Road.

Recommendation:
That Council direct staff on a priority basis to prepare a report bringing forward options for Council's consideration to increase the project contingency.

Respectfully submitted,

Dwayne Kalynchuk, P. Eng.,
Director
Engineering and Public Works

Jonathan Huggett, P. Eng.,
Interim Project Director

Report accepted and recommended by the City Manager:

Date: January 16, 2015

Purpose
As directed by Council, staff provide quarterly reports on the Johnson Street Bridge Replacement Project throughout the year. This is the first report for 2015, with the next update scheduled for April.

Financial Overview
As of December 27, 2014 PCL has invoiced $20.65 million, representing 32% of the total contract amount. This includes $1.74 million of pre-payment for structural steel that is located at the fabrication plant in China, and $1.385 million for hydraulic power units, programmable logic controllers, and motor control centres at the manufacturer in Florida. The units were tested in mid-October and are operational and ready for shipping.

As of December 27, 2014 MMM Group has invoiced a total of $8.205 from the budget of $9,614,377 budget for design, permitting, construction administration, project management, and Owners Quality Control for the steel fabrication.

To the end of December, $1,015,475 has been allocated from the contingency with $1,799,525 remaining. However, a number of items yet to be finalized will virtually commit the balance of the contingency. These include additional consulting costs to resolve the steel issue in China; provision of habitat compensation as ordered by the federal government; finalization of the north end fendering dolphins; additional legal costs for change order negotiation and our share of mediation; finalization of the pedestrian overpass foundations; removal of additional soil at the west end abutment; increase in landscape costs to complete the project; payment for seabed land; and potentially increased need for the Owners Quality Assurance and Quality Control program in China.

However, the City will be reviewing options to recover costs for a number of these items, such as the resolution of the steel fabrication and additional consulting fees.

While the contingency is not as of yet completely spent with the balance being mostly allocated, staff are recommending that a report be submitted to Council next month for reallocation of funds for the provision of a contingency for the balance of the project and potential funding sources.

The budget update and project completion contingency update are attached as Appendices A and B in this report.

Mediation Update
The matter of both the requested change orders by the Contractor and the Consultant are the subject of mediation. Mediation is a private, informal dispute resolution process in which a neutral third person (the mediator) helps disputing parties to reach an agreement. The mediator does not have the power to impose a decision on the parties. The process is private and confidential and conducted on a "without prejudice" basis, meaning that nothing discussed in mediation can be used against any of the parties in any subsequent litigation. The cost of the mediation is shared equally between parties. However, although the cost of the mediator will be shared equally, the legal costs are the responsibility of each party.

The process is non-binding and all parties have to agree to any solution that may be reached. All parties in the process are subject to confidentiality of the mediation process. Any solution that would involve a change to the contract price would be subject to Council approval.

All parties have agreed to a mediator and the process has commenced in December 2014. Several meetings have taken place and it is anticipated that it will take several months to conclude.

In addition to the mediation the City is attempting to resolve items that are not disputed with PCL, and agree to final costs as a result of these changes. However similar to any mediated settlement, these items will require City Council approval as the costs will be outside of the contract award price.

Bridge Construction

West Side Approach

The last few months have seen significant progress on the construction of the foundation and abutments, as well as changes to the roads network on the west side of the bridge, that included the following: realignment of the Esquimalt Road approach, construction of the new Harbour Road intersection, and landscaping that will eventually form the new public parks area to be landscaped in the spring of 2015. Generally items on the west side are either on or ahead of schedule.

In October, a new road to the Johnson Street Bridge opened from the intersection of Esquimalt and Harbour Roads. Opening the roadway has created more usable space for the contractor during construction and will minimize future impacts to motorists. This new road will eventually connect with the new bridge.

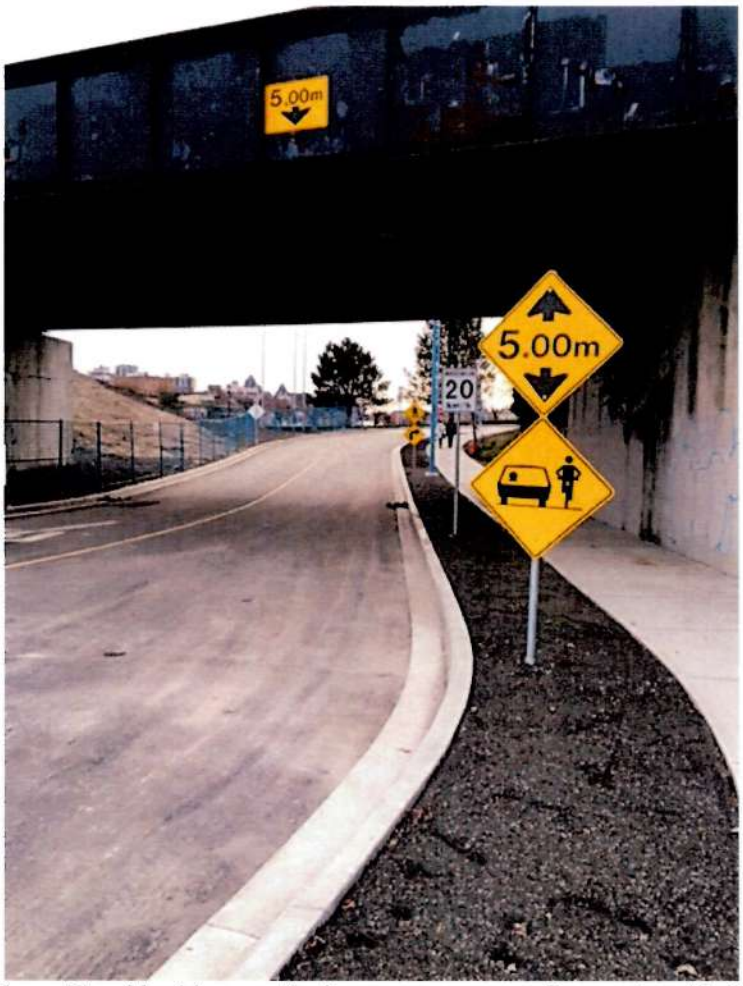
In mid-November, new traffic signals were put in place at the intersection of Esquimalt and Harbour Roads. Changes included new traffic lights at the four-way intersection and new pedestrian crossings. Cyclists on Harbour Road are now able to activate the lights by positioning their bikes over a new bike detector at the intersection. New crosswalks and accessible sidewalks have also been added, in addition to a new extension of Harbour Road, connecting to the Delta Ocean Pointe Resort and future waterfront green space.

New park space during hydro seeding for soil stabilization November 17, 2014

Esquimalt Road at Harbour Road looking west November 17, 2014

The middle of December saw the Harbour Road access to the Delta Hotel open. This resulted in the redirecting of pedestrians along a safer route south on Harbour Road and onto the old Esquimalt Road sidewalk. Cyclists now have full access to the bicycle lane on Esquimalt Road, which was temporarily being used by pedestrians.

Harbour Road access to the Delta Ocean Pointe Hotel November 5, 2014



Harbour Road looking south down new access December 16, 2014

Retaining walls will be constructed in the near future in preparation for the pedestrian overpass over the Harbour Road intersection. As a result of this ongoing work, Harbour Road will remain closed at Esquimalt Road for approximately two months.

Bridge Site

The bridge crossing site continues to see significant progress on the concrete foundations, including the abutments and rest piers. These concrete structures are now visible to passers-by as the formwork is removed. The completion of this work is scheduled for early 2015 and will represent a major milestone in the completion of the foundation work.

West side rest pier during concrete pour November 5, 2014

Completed west side rest pier December 22, 2014

Work on the bascule pier continues to progress steadily. Work is underway to prepare for the bascule's "big pour". This massive single concrete pour will involve approximately 1200 cubic meters of concrete that will arrive in 120 truckloads; this will be the biggest single concrete pour in recent Victoria history. This complex procedure requires many specialized techniques; for instance, specialized cooling hose coiled throughout the concrete will control the rate of cooling. This works much the same way a radiator controls the temperature of an engine.

Bascule pier December 22, 2014

One of the cranes that had become a part of the City scape was removed in mid-December. The "Big Blue 4100" was located within the east side construction zone and was removed from the site when its work was completed.

Excess soil from previous excavations was shipped off site in late November to provide more space for construction staging, as well as clean up the appearance of the site.

Concrete structural blocks containing hazardous waste material that have been on city owned land for nearly 30 years have now been removed and sent to a facility in Pincher Creek Alberta. The City's Sustainability staff worked closely with HL Demolition and Trevita Management to facilitate the smooth transfer. The cost for the disposal and removal was $134,000 and was funded from the Equipment and Infrastructure Reserve Fund.

Concrete construction blocks shown at centre clad in plastic sheeting January 2, 2015

East Side Approach
Work along the road network on the east side of the bridge has been relatively quiet for the past few months and has continued to serve motorists, cyclists and pedestrians with minimal impacts. Planning and preparations are now being made for upcoming road and above ground works beginning early in 2015.

Significant electrical infrastructure work to bring in an adequate power supply to the new bridge will take place in early 2015. This will result in some minor changes to traffic patterns. City engineering staff continues to work with all parties proactively to minimize disruptions to the public.

As the "Big Blue 4100" crane is removed and pier and abutment work comes to a close behind the fenced area on the south side of the Janion building, that section of the construction site will be significantly cleared. As that happens, PCL crews will begin work on the new east side bridge approach road network. Much of this work will occur behind the established fenced off work zone and should not have a significant impact on motorists.

Big Blue and the upcoming east side construction zone adjacent to the Janion October 14, 2014

Janion
City staff continues to work with Janion representatives to ensure a seamless integration between the Janion, David Foster Way, and Johnson Street Bridge construction sites. Planning work has continued on David Foster way, connecting the Northern Junk lands and connections to the Janion plaza area. The next Council update report should include preliminary plans for City Council's consideration.

Steel Fabrication
Regular quality inspections were routinely conducted on the steel fabrication in China to ensure that the bridge is built to the high standards of the design. The steel elements to be fabricated include the rings, north and south trusses, and the orthotropic deck. An inspection in July found that some aspects of the steel fabrication had not been undertaken in accordance with the design specifications.

As a result, one of the two rings is being replaced while the other is being repaired. The north truss steel will be replaced. All new steel has been ordered and is presently at the fabrication shop. Samples are being tested to assure the quality of steel meets the specifications. A mock-up of the orthotropic deck has been cut and will be inspected by the consultant in the near future.

After a full investigation of the fabrication deficiencies, which included an assessment of the quality management process, historical records, and unresolved issues, the decisions described above were made.

PCL has also performed an evaluation of the existing Quality Management Plan (QMP) to find out the following:

- Whether the QMP was effective in assuring the production of steel meets project requirements;
- Whether the conditions and events observed in July of 2014 were adequately managed under the plan; and
- What additional measures are needed to prevent a similar incident and ensure this will not happen again.

Following this evaluation and a detailed review provided by PCL and its quality assurance consultant, Atema, a number of areas have been identified and require improvements before steel fabrication can start again.

Meetings were held this week in Victoria between PCL, Atema (PCL's quality control consultants), MMM, and H&H regarding quality management, oversight and control plans, and the quality control plans. Update plans are being finalized to re-start fabrication.

Construction Schedule
At the last Quarterly Update in September, it was reported that the contractor was indicating that the project was approximately five months behind schedule. It is anticipated that steel fabrication will re-commence in China in March. A start-up meeting in China is being scheduled at the end of the month to have the steel fabrication re-commence and to inspect the orthotropic deck mock-up. With a re-start in March, the project will be approximately ten months late. In order to accommodate the delay, staff continue to maintain the existing bridge to assure its operation until the new facility is operational. Discussions have commenced with the external funding agencies about an extension on the project completion. All federal and provincial permits are being examined to determine which will require extensions.

Telus Duct Bank Relocation Project
The City was required to relocate the existing underwater Telus Duct Bank (TDB) to accommodate future construction between the inner and upper working harbours in Victoria. The new TDB is located north of the new bridge location. The construction had the potential to impact fish habitats, so the City of Victoria ensured it had all the necessary permits required by the Department of Fisheries and Oceans Canada (DFO) before relocating the TDB.

A condition of the City's ongoing Fisheries Act Authorization is that the City monitors the ballast mats installed as an offsetting habitat constructed at the same time as TDB relocation in early 2012. In 2013 the City hired Golder Associates Limited to conduct annual monitoring of the habitat. Three annual reports are to be submitted to DFO by October 31st of each year.

The habitat is composed of a series of articulating ballast mats which provide a hard surface for marine organisms to attach themselves to.

The habitat was observed to be physically stable and supporting encrusting and tidal marine species typical of similar habitats in Victoria's Inner Harbour. Overall, the habitat is functioning much like an artificial reef and is providing habitat for the diversity of marine organisms.

Safety and Environment
An incident occurred involving a cyclist colliding with temporary fencing at the intersection of Harbour and Esquimalt Roads. No injuries were reported and immediate steps were taken to relocate temporary fencing to an area where it was visible during day and night.

As part of the PCL Environmental Management Plan, Hemmera, PCL's environmental consultants, do weekly inspections of the worksite which are reported to Transport Canada. Additionally, Transport Canada also does monthly inspections of the project.

During the last quarterly period, PCL carried out a number of in-water construction activities. There were no water quality issues resulting from the work; however, on two occasions a sheen appeared which in both cases was discovered to have originated from the upper harbour. Both cases were reported to Transport Canada.

With respect to the on-land work, a minor spill of hydraulic fluid on pavement from a hydrovac truck occurred on the east side of the bridge during the paving project. The material was quickly cleaned up and no further issues occurred.

Update on Risk Management

Risk management is a critical part of any complex engineering project. The following key strategies are being implemented as a general framework:

- Development of a risk aware culture on the Project where we are identifying, managing, and monitoring risks
- Team Building - development of a team approach to managing the Project
- Collaboration between the Owner, Contractor, and Engineer
- Proactive project management verses reactive
- Large quantities of risks are systematically managed through a simple, efficient, and effective process
- Development of preventative action and response plans
- Potential risk events are tied to the Project schedule for management
- Reduces disputes and claims

The following table identifies specific major risks remaining to completion of the project and record the actions taken to mitigate these risks:

Risk Description	Consequences	Risk Management
Quality assurance of the steel components being manufactured in China	• Delays to the project • Defects resulting in reduced lifespan of structure • Early maintenance issues	• The ZTSS quality control program is under review and will be improved. • PCL has retained ATEMA to monitor the ZTSS quality control program. • The City has added $120,000 to the MMM budget to provide an owners quality assurance program and Caltrop has been retained to provide another level of inspection. • A quality assurance meeting has been organised in China for early January 2015
Lifting of the steel bascule when it arrives by barge in the harbour. The steel truss is near the lifting capacity of the largest crane on the west coast	• Any delay in lifting into place will result in blockage of a navigation channel. • Incorrect lifting of the truss could lead to hidden damage to the truss that may not be evident for several years.	• While the erection of the steel structure is PCL's responsibility, MMM and H&H will play an active role in reviewing the PCL erection procedures which will be subjected to intense scrutiny.
The project costs will	• The City has received a	• The City is evaluating the PCL

Risk Description	Consequences	Risk Management
exceed the City's budget. Examples of cost increase causes include: • Delays caused by the City and its advisors • Unforeseen conditions not identified in the contracts	request for a change order from PCL to cover claims for delay. • Requests for additional costs have been received from the Owner's Engineer, MMM and their sub-consultant H&H. • The project contingency continues to be drawn down to cover the cost of additional work.	request for a change order to determine its validity. • The City and its advisors have placed a very high priority on a timely response to PCL requests under the contract. • A mediation process to resolve some of the claims has been initiated.
The bascule opening and closing will not operate correctly during commissioning of the bridge.	• Opening and closing of the bridge may result in traffic delays if it does not consistently open and close correctly.	• The City has engaged MMM to design and supervise the bridge. • MMM have retained specialist machinery consultants. • The City has asked MMM to ensure that it plans to have adequate staff and resources on site during commissioning to deal with unforeseen problems.

Citizen Engagement and Communications
Public engagement for the new public green space on the west side of the Johnson Street Bridge is currently in the Operational Plan for 2015. Council will have an opportunity to review the schedule for this in March. Public consultation in this last quarter has been primarily with the Delta Hotel regarding the changed access and with adjacent businesses on Harbour Road. Staff have recommended that consultation on the new plaza spaces and the new park occur at the same time to help facilitate a more holistic discussion on both projects. Staff are proposing that this engagement occur once a new project completion date has been identified.

The City of Victoria continues to engage the public and keep drivers, cyclists, pedestrians, and marine traffic informed about the ongoing work and changes in traffic patterns and access routes as needed.

Recommendation:
That Council direct staff on a priority basis to prepare a report bringing forward options for Council's consideration to increase the project contingency.

Attachments
- Appendix A – Budget Update
- Appendix B – Project Completion Contingency

Appendix A - Budget Update	Budget	Contingency/ Tax allocation	Budget	Actuals (Oct 2014)
Project Component				
Professional Services				
Design Management, Design & Contract Administration[1]	10.675	0.209	10.884	9.155
Design consultant optimization	0.250	-	0.250	0.240
Development Costs to end 2010[1]	1.330	0.003	1.333	1.333
Approvals & Permitting[1]	1.100	0.029	1.129	1.125
Legal/Procurement[2]	0.730	0.029	0.759	0.778
Subtotal	14.085	0.269	14.354	12.631
Construction Costs				
Main Bridge Contract[7]	62.935	0.306	63.241	18.058
Project Completion Contingency - available[7]	2.815	(1.015)	1.800	-
Hydro relocation, design/install, archeological services, demolition	-	0.662	0.662	0.681
Subtotal	65.750	(0.048)	65.702	18.739
General Construction				
Early Marine Works, Rail Bascule Removal[3]	2.400	0.023	2.423	2.428
Insurance[3]	1.500	0.017	1.517	1.123
Other Works & TELUS Duct Removal[4]	2.265	0.271	2.536	1.644
MMM Detail Workshop	-	0.054	0.054	
Subtotal	6.165	0.365	6.530	5.195
City Costs (over 5 years)[5]	1.900	(0.302)	1.598	1.009
Property	1.000	(0.003)	0.997	0.997
Finance Fees	1.000	0.000	1.000	0.481
Value Added Tax (HST)[6]	2.900	(0.281)	2.619	-
Total	92.800	-	92.800	39.052

Notes:

1. Adjustment for tax allocation from Value Added Tax budget
2. Additional legal work from Denton
3. Rounding of original budget (0.00)
4. Increase of $100K for Public Art; $8K Undefined Scope; $40K tax allocation and $10K misc additional expenses
5. Reduction in Project Contingency to offset increases to Legal and General Construction
6. Offset tax allocated to Professional Services and Other Works & Telus Duct Removal
7. Two increases to the Main Bridge Contract paid for out of the Project Completion Contingency: Hazardous waste disposal $34K; West cofferdam soil disposal $243K.

		Orginial Contract	Known to January 2015		If Remaining Unknows Materialize
Appendix B - Project Completion Contingency (as per Schedule C - Schedule of Prices)		**$ 2,515,000**	**$ 2,515,000**		**$2,761,100**
Allocated Contingency	**Contract line**	**Budget**	**Committed**	**Eliminated costs**	**Remaining Unknown**
A. Archaeological $250,000	A	$250,000	$ -		$ 250,000
B. Unforeseen Geotechnical and Subsurface Conditions $600,000	B	$600,000	$ -		$ 600,000
C. Hazardous Materials $250,000	C	$250,000	$ -		$ 250,000
D. Girder Span Depth $30,000	D	$30,000	$ -		$ 30,000
E. Structural Steel Overrun (see Article 4.4 of Agreement) $600,000	E	$600,000	$ -	$ (600,000)	$ -
F. Imported Fill $80,000	F	$80,000	$ -		$ 80,000
G. Hydro Relocation and Power Supply $150,000	G	$150,000	$ -		$ 150,000
H. City Services $200,000	H	$200,000	$ -		$ 200,000
I. Environmental Permitting and Processing $25,000	I	$25,000	$ -		$ 25,000
J. Multi]Use Trail Overpass Bridge (if changed to steel) $250,000	J	$250,000	$ -		$ 250,000
K. Additional structural support for Fendering $462,500	K	$462,500	$ -	$ (462,500)	$ -
L. City Quality Assurance for Structural Steel $75,000	L	$75,000	$ -		$ 75,000
M. Requirement for additional seabed land $50,000	M	$50,000	$ -		$ 50,000
N. Fabrication Shop Drawing . Third Party Detailer $50,000	N	$50,000	$ -		$ 50,000
Add: Resolution of China Fabrication QA/QC NCR's; Change order 3 Rev 2	X	$50,000	$ -		$ 50,000
Add: MMM Workshop	Y	$0	$ 53,900		$ -
		$3,122,500	$ 53,900	$ (1,062,500)	$ 2,060,000
		Budget	**Realized**	**Savings not achievable**	**Remaining Unknown**
Value Engineering Savings					
A. Replace Indicative Design with attached configuration including shortening of East end span (see Attachment 1 to this Appendix C) $900,000		$900,000	$ 300,000	$ (450,000)	$ 150,000
					$ -
B. Replace West Pier with extended pile configuration $125,000		$125,000			$ 125,000
C. Replace Indicative Design of West Abutment (see Attachment 2 to this Appendix C) $350,000		$350,000			$ 350,000
D. Reduction of piles under Bascule Pier $185,000		$185,000			$ 185,000
E. Lighting – optimizing lighting design $500,000		$500,000			$ 500,000
		$1,160,000	$ 300,000	$ (450,000)	$ 1,310,000
Remaining Contingency		**$552,500**	**$2,761,100**		**$2,011,100**