



**Committee of the Whole Report
For the Meeting of July 27, 2017**

To: Committee of the Whole **Date:** July 20, 2017
From: Jonathan Huggett, P. Eng., Project Director
Subject: Johnson Street Bridge Replacement Project Quarterly Update

RECOMMENDATION:

That City Council receive this report for information.

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 project. This is the second quarterly report for 2017, with the next one scheduled for October 2017. Should any emergent issues arise, staff will provide an immediate update to Council.

As has been recently reported the first shipment of steel (comprising the north and south rings, the lower counter weight and the temporary erection support structure) has left the ZTSS plant in JingJiang by barge on 19 July and is to be loaded on a heavy lift ship at the port of Shanghai around July 22. This first shipment is due to arrive in BC at the end of August and will be taken to the Point Hope shipyards. At that time the steel will be washed to remove the salt spray incurred during transport across the ocean, examined for damage during transit and then the span support structures being fabricated in Tianjin will be attached to the rings by United Engineering.

Fabrication of the various span support segments at the QuayQuip plant in Tianjin is nearing completion. Blasting of the segments commenced on 19 July, a process required to remove mill scale to expose the bare steel. Painting commences immediately after. The span support segments have previously been trial assembled and inspected by the Engineer of Record and verified as meeting the contract specifications.

A meeting was held on 20 and 21 July in Victoria where all the details of the steelwork installation were discussed, so that plans could be finalized.

Onsite activities, including roadworks and civil activities continue. A road realignment was completed on the east side, bringing the roads to their final elevation to be ready to be connected to the new bridge. The additional cycle ramp from the pedestrian bridge on the west side to the eastbound bridge lanes which will enhance cycle traffic flow is designed.

Fabrication of the handrail posts has been completed and the majority of the handrails on the fix spans have been delivered. Installation of the on-bridge hand railing (on the approach spans) is underway and began in early July.

Work continues on investigations into fendering. With the steel installation work ongoing from now until March 2018, there is no opportunity to install fendering on the north side until later in 2018.

However, investigation work is continuing with the goal of reducing costs while still providing protection to the north side of the bridge. One particular solution is being investigated in detail, but until the feasibility has been determined it would be premature to discuss the proposal details.

On June 15, 2017, WSP (formerly MMM Group) presented an update to Council which indicated and explained the slippage in the schedule from PCL. On June 1, 2017 PCL issued a new CPM schedule that showed bridge completion (traffic on bridge) on March 30, 2018 – three months later than previously planned.

Council approved \$8.206 million in additional project funding from the Building and Infrastructure Reserve as part of the 2016 Financial Plan Bylaw on May 5, 2016, resulting in a current budget of \$105.06 million (see Appendix A). As of June 30, 2017 actual costs of \$83.843 million have been incurred. See Appendix B for a breakdown of the remaining contingency (\$852,012).

There will be two more planned project budget increase requests for fendering and public realm. Should additional unforeseen events occur before the completion of the project, Council will be advised.

At the Council meeting of April 13, 2017, Council directed staff to prepare an interim design based on the Johnson Street Bridge Public Realm Final Design plans, but of a minimum standard for the former 'S-Curve' lands, Esquimalt and Harbour Road intersection, Triangle Green and work needed to complete the Janion Plaza. Council also directed the Northern Junk Plaza to be put on hold pending the outcome of the Northern Junk rezoning application, following which further design refinements and public engagement will be undertaken to address stakeholder concerns.

Construction of the plaza was completed in mid-July and the plaza was opened to the public on Monday, July 17. Images of the plaza are featured further into this report.

Staff continue to stay in contact with businesses and stakeholders on the Vic West and Downtown sides of the project as well as harbour stakeholders. When incidents, concerns or questions come in from the public or stakeholders the project team works with City staff and PCL to solve issues or provide answers. As steel fabrication continues to take place overseas, images are being posted on the bridge project website to help demonstrate the progress. When safe, media opportunities have been accommodated on site in Victoria to raise awareness and understanding about ongoing construction.

Throughout the project, staff have continued to maintain correspondence with stakeholders and media in an effort to keep the public informed about ongoing construction and answer questions about the bridge project.

PURPOSE

As directed by Council, staff provides quarterly reports on the Johnson Street Bridge Replacement Project throughout the year. This is the second report for 2017, with the next update scheduled for October 2017.

SCHEDULE UPDATE

On June 15, 2017, WSP (formerly MMM Group) presented an update to Council which indicated and explained the slippage in the schedule from PCL:

- PCL's April 17, 2017 CPM schedule showed bridge completion (traffic on bridge) on December 28, 2017.

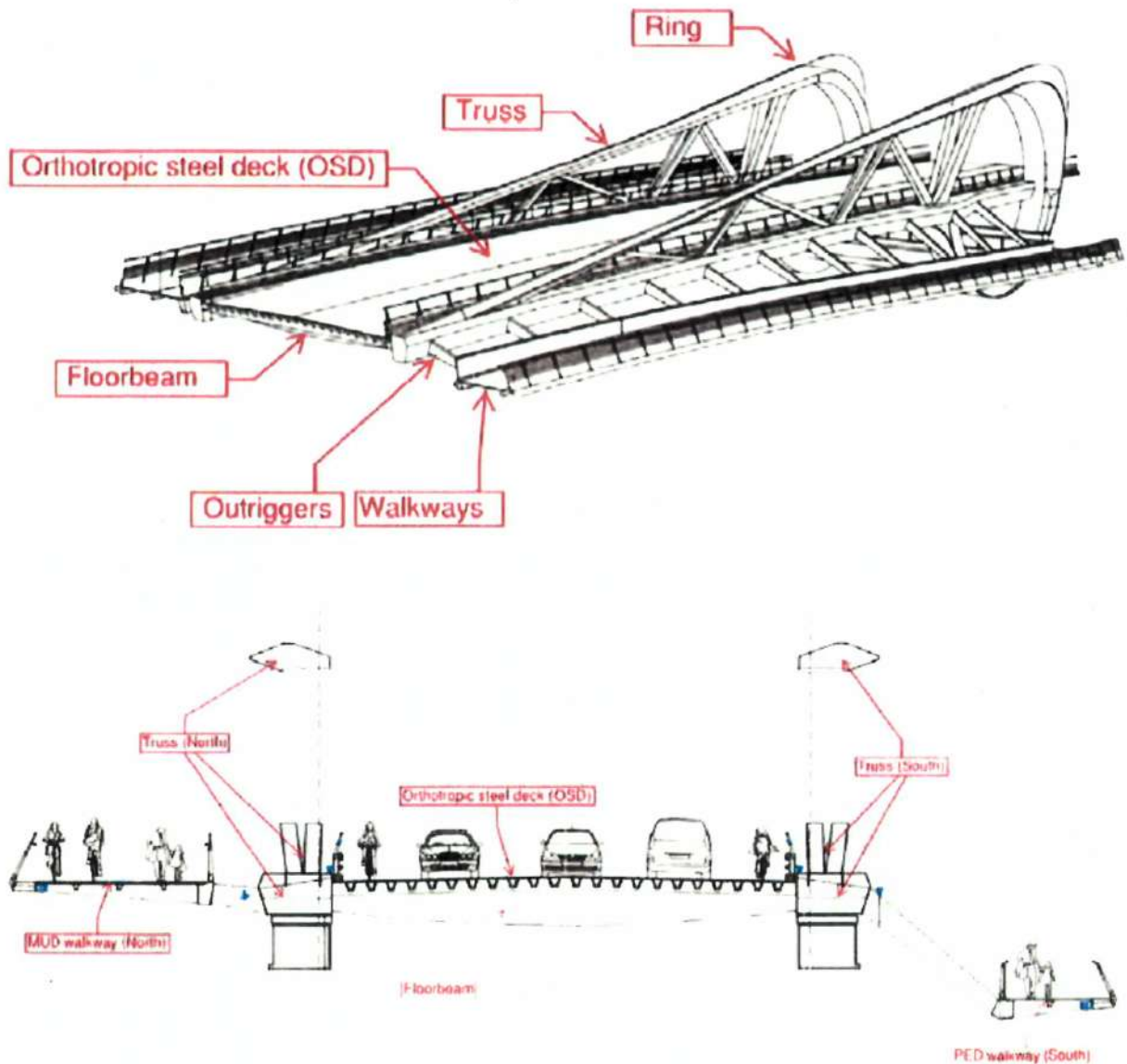
- On May 11, 2017 PCL indicated to the Project Team (City and WSP) that they were forecasting a two month delay and bridge completion (traffic on bridge) was projected to be end of February 2018.
- WSP and H&H went to visit ZTSS in Jinjiang on May 14 to review progress of the pre-fabricated bridge. H&H stayed until May 20 and WSP's Project Manager stayed on an additional week until May 27 to accompany the City's Project Director and City Manager on tours of the ZTSS fabrication facility in Jinjiang and QuayQuip's fabrication facility in Tianjin (where the rack support segments are being fabricated) to allow them to ascertain for themselves the progress of the steel fabrication.
- On June 1, 2017 PCL issued a new CPM schedule that showed bridge completion (traffic on bridge) on March 30, 2018 – three months later than previously planned.
- North side crash protection fendering is not currently planned to be installed prior to traffic on the new bridge. A decision on the way forward on fendering still needs to be approved by Council. Completion of this work may affect PCL's total completion date of September 13, 2018 that is reflected in their June 1, 2017 CPM schedule should Council decide to have PCL procure the north side fendering.

STEEL FABRICATION BY ZTSS AND QUAYQUIP (QQ)

As has been recently reported the first shipment of steel (comprising the north and south rings, the lower counter weight and the temporary erection support structure) has left the ZTSS plant in Jinjiang by barge on 19 July and is to be loaded on a heavy lift ship at the port of Shanghai around July 22. This shipment one is due to arrive in BC at the end of August and will be taken to the Point Hope shipyards. At that time the steel will be washed to remove the salt spray incurred during transport across the ocean, examined for damage during transit and then the span support structures being fabricated in Tianjin will be attached to the rings by United Engineering.

Fabrication of the various span support segments at the QuayQuip plant in Tianjin is nearing completion. Blasting of the segments commenced on 19 July, a process required to remove mill scale to expose the bare steel. Painting commences immediately after. The span support segments have previously been trial assembled and inspected by the Engineer of Record and verified as meeting the contract specifications.

The following diagrams provide visual clarity of the main steel components being fabricated for the new bridge by ZTSS:



PCL's Shipping Plans:

According to WSP's Schedule Update to Council on June 15, 2017, the following shipping dates were proposed:

Milestones	PCL Estimated Completion Date
Shipment 1 Package and Loading	July 18, 2017
Shipment 2 Package and Loading	August 20, 2017
Shipment 1 Arrive in Victoria	1st week of September
Shipment 2 Arrive in Victoria	1st week of October

- **Shipment 1** includes north and south rings, lower counterweight and erection falsework.
- **Shipment 2** includes north and south trusses, OSD, Panel D, and walkways.

On July 17, 2017 the first shipment of steel pieces for the new Johnson Street Bridge were loaded onto a barge in China to travel down the Yangtze River to Shanghai. These arrived in Shanghai on 20 July and the steel will be loaded onto a heavy lift ship and transported to British Columbia.

The steel will take approximately 25 days to cross the Pacific Ocean and will arrive in mid-late August. The components being shipped include the north and south rings, the lower counterweight and the temporary structure (false work) used to support the various components of the bridge during erection. The steel will be offloaded at either Ogden Point in Victoria or at the Fraser Surrey Docks depending on the Victoria cruise ship schedule. It will then be transported to Point Hope Shipyard.

Once the steel arrives in Victoria it will be cleaned and then inspected for any possible damage during shipping. The painting of the south ring is complete, however to meet the required shipping date, the north ring has only received a primer coating, and the painting of the north ring will be completed in Victoria.

Once at the Point Hope Shipyard, United Engineering will attach the span support structure which is nearing completion in Tianjin, China. The segments of the span support structure are being shipped separately and are composed of much smaller segments which can be shipped by container.

The second shipment of steel is expected to leave China in September and arrive in October.



Figure 1 – Bascule Leaf ready to enter paint shop



Figure 2 – Lower Counter Weight prior to loading



Figure 3a. – Rings loaded (I)



Figure 3b. – Rings loaded (II)

SPAN SUPPORT STRUCTURE

The span support structure connects the main steel structure to the machinery and the following diagrams illustrate the complexity of this work:

Figure 4 – Entire Span Support Structure

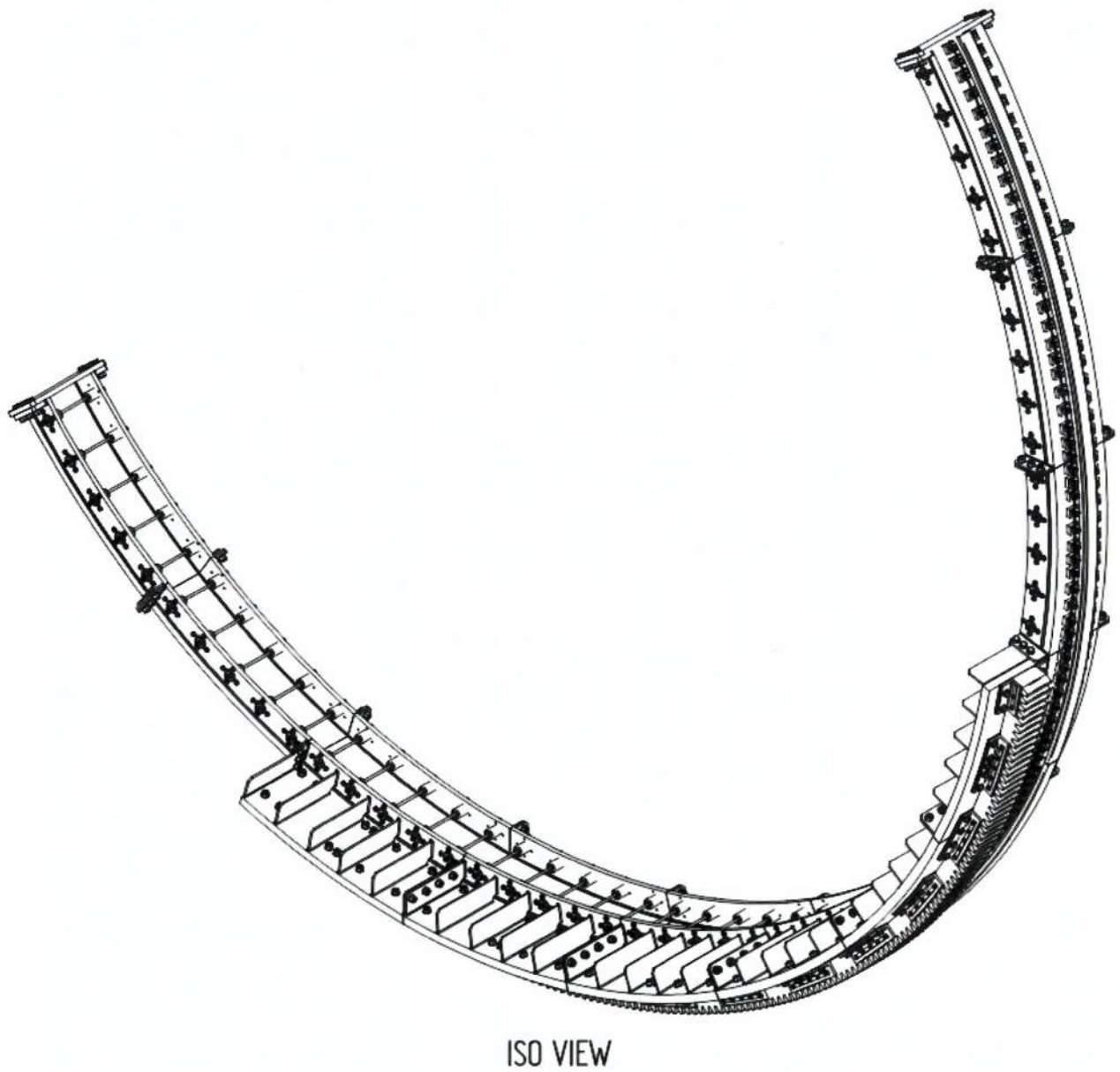
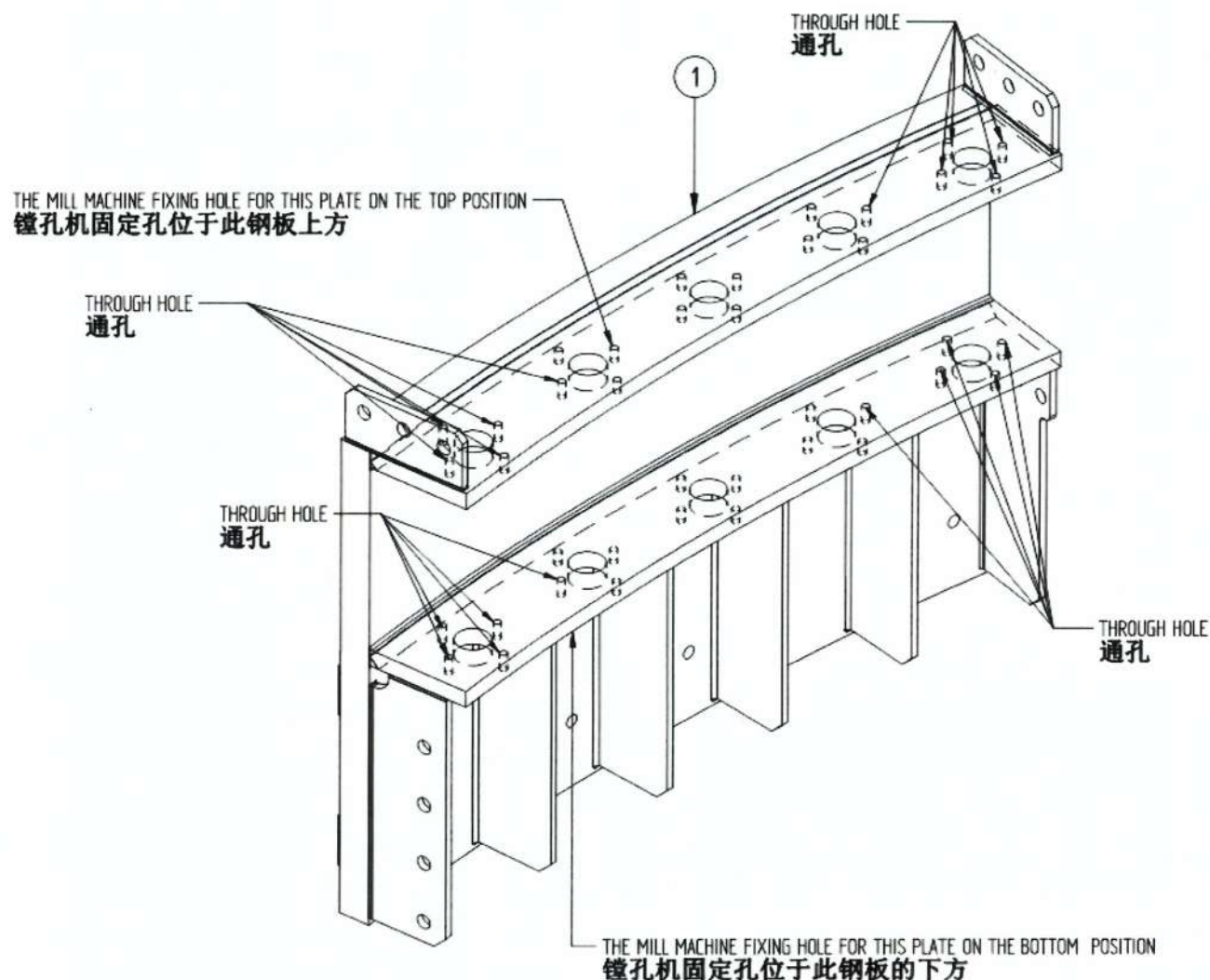


Figure 5 - One Segment of the Span Support Structure



All of the span support segments (the bridge machinery component that attaches to the structural steel and on which the bridge opens) have been fabricated. The next stage is for the segments to be blasted and painted prior to shipping in a container leaving Tianjin on 30 July 2017.

The images below display the production status of the span support segments as of mid-July 2017.



Figure 6a. – Angle hole drilling – north truss



Figure 6b. – Angle hole drilling – north truss



Figure 7a. – Span support segments



Figure 7b. – Span support segments



Figure 7c. – Trial fit up of span support structure



Figure 7d. – Fit up of Span Support Structure

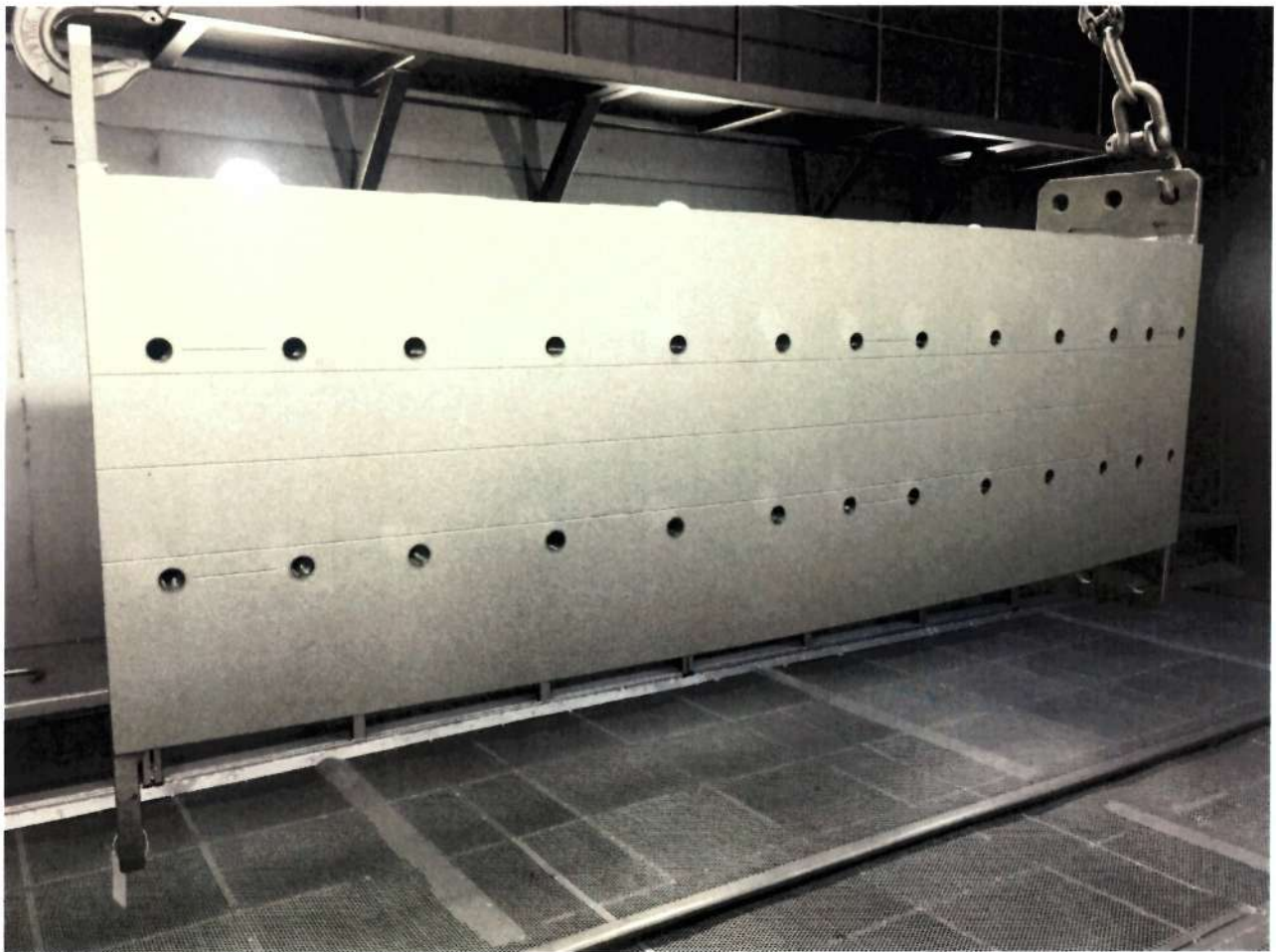


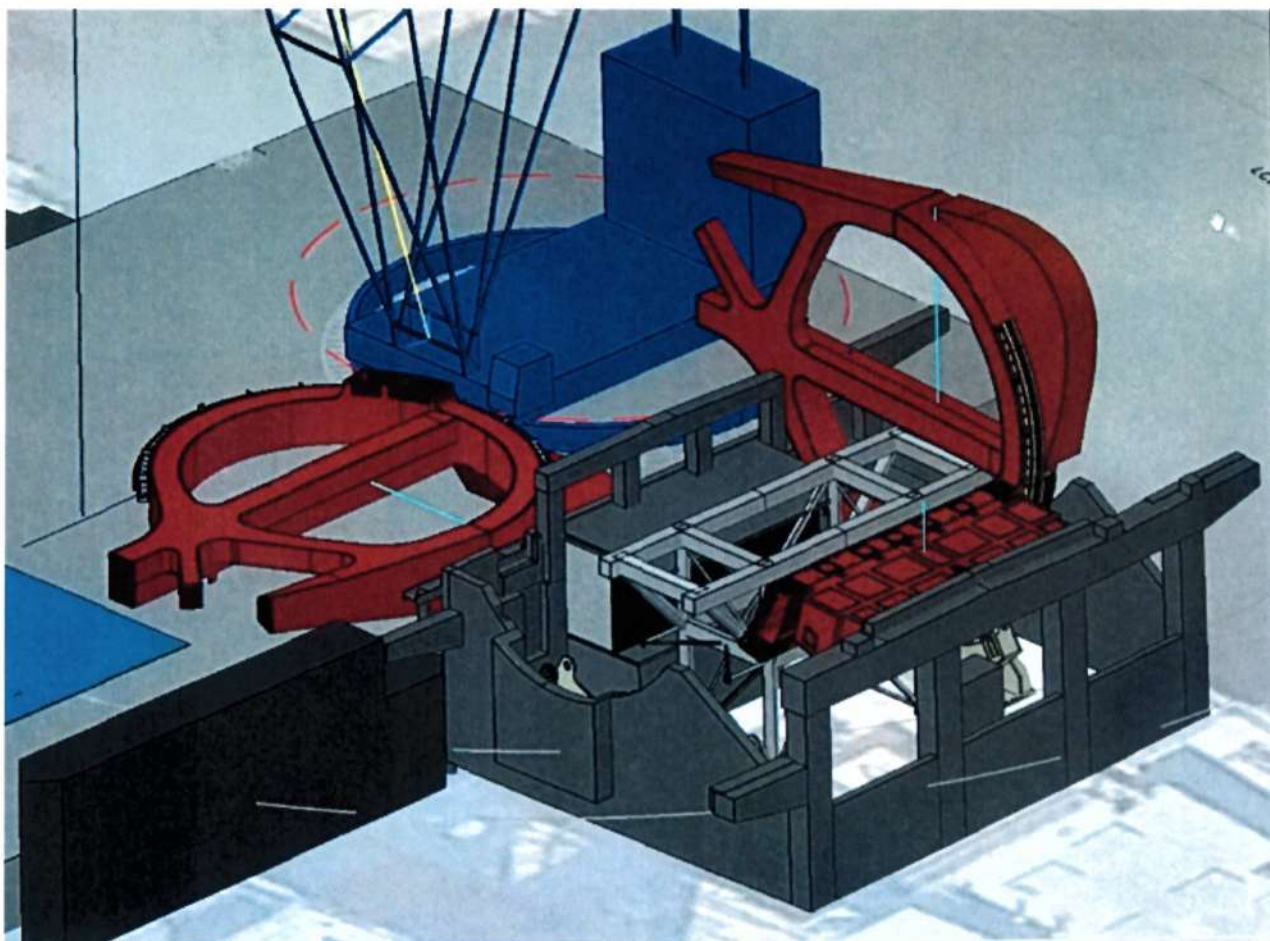
Figure 8a. – Span support segment after blasting



Figure 8b. – Span support segment after blasting



Figure 8c. – Span support segment after blasting



CONSTRUCTION PROGRESS – SITE AND ROAD WORKS IN VICTORIA

Traffic and Civil Updates

Onsite activities, including roadworks and civil activities continue. A road realignment was completed on the east side, bringing the roads to their final elevation to be ready to be connected to the new bridge. The additional cycle ramp from the pedestrian bridge on the west side to the eastbound bridge lanes which will enhance cycle traffic flow is designed.

Handrails

Fabrication of the handrail posts has been completed and the majority of the handrails on the fix spans have been delivered. Installation of the on-bridge hand railing (on the approach spans) is underway and began in early July.



Figure 9a. – Handrails (view looking west) (I)



Figure 9b. – Handrails (view looking west) (II)

FENDERING UPDATE

Work continues on investigations into fendering. With the steel installation work ongoing from now until March 2018, there is no opportunity to install fendering on the north side until later in 2018. However investigation work is continuing with the goal of reducing costs while still providing protection to the north side of the bridge. One particular solution is being investigated in detail, but until the feasibility has been determined it would be premature to discuss the proposal details.

SCHEDULE UPDATE

The March 23, 2017 update to Council advised that the bridge was scheduled to be open to traffic by the end of December 2017 and project completion was scheduled for March 31, 2018. On June 15, 2017 WSP (formerly MMM) reported to Council and the public that updates to the schedule had been made. The WSP report indicated and explained the slippage in the schedule from PCL. On June 1, 2017 PCL issued a new CPM schedule that showed bridge completion (traffic on bridge) on March 30, 2018 – three months later than previously planned.

In order to maintain schedule, PCL have now elected to install the span support structure to the rings in Victoria, rather than at ZTSS.

Financial Implications

Council approved \$8.206 million in additional project funding from the Building and Infrastructure Reserve as part of the 2016 Financial Plan Bylaw on May 5, 2016, resulting in a current budget of \$105.06 million (see Appendix A).

As of June 30, 2017 actual costs of \$83.843 million have been incurred, including the following:

Vendor	Services	Budgeted	Invoiced	% Invoiced
MMM	Main Professional Services Contract: Project Management, design, procurement, administration, geotechnical engineering, permits	\$ 9,362,377	\$ 9,358,887	99.96%
MMM	Additional Professional Services: Subsequent changes to the contract such as: owner's quality control for steel fabrication; review of non-conformance reports; Hardesty & Hanover settlement payments; supplementary services; safety review; fendering,; Janion design; etc.	\$ 2,644,237	\$ 2,425,603	91.73%
PCL	Main Bridge Contract:	\$ 63,235,000	\$ 49,744,609	78.67%
PCL	Additional Construction Services: Subsequent changes to the contract such as: hazardous waste and soil removal; installation of rip rap; pedestrian overpass modifications; increase to the environmental cash allowance; precast girder gaskets; safety revisions; Janion Plaza, handrail changes etc.	\$ 2,843,799	\$ 2,629,313	92.46%

The table below summarizes the allocation of the approved project completion contingency (see Appendix B for a detailed account of the contingency):

Original Project Completion Contingency	\$ 2,515,000
Add: Value Engineering Savings	300,000
Approved Funding March 2015	1,500,000
Approved Funding July 2015	2,554,000
Approved Funding May 2016	2,050,000
Project Completion Contingency June 2017	\$ 8,919,000
Less Committed Contingency	(8,066,988)
Unallocated Contingency June 2017	\$ 852,012

There will be two more planned project budget increase requests for fendering and public realm. Should additional unforeseen events occur before the completion of the project, Council will be advised.

BRIDGE MANAGEMENT UPDATE

JSB Project support staff are working on a bridge management program to capture administrative, operational, and maintenance procedures regarding the new bridge; once completed, these will be

referenced by relevant (current and future) staff. The structure of the program has been developed; it covers the following:

- Asset description;
- Bridge administration;
- Operational programs and procedures;
- Maintenance programs and procedures;
- Security and safety;
- Upgrade, reconfiguration/modification;
- Replacement and disposal plans.

Administration of the bridge management program will be developed in house. Development of the operations and maintenance program will take place closer to the end of the project.

PUBLIC REALM UPDATE

At the Council meeting of April 13, 2017, Council directed staff to prepare an interim design based on the Johnson Street Bridge Public Realm Final Design plans, but of a minimum standard for the former 'S-Curve' lands, Esquimalt and Harbour Road intersection, Triangle Green and work needed to complete the Janion Plaza. Council also directed the Northern Junk Plaza to be put on hold pending the outcome of the Northern Junk rezoning application, following which further design refinements and public engagement will be undertaken to address stakeholder concerns. The City of Victoria's Artist in Residence and Indigenous Artist in Residence were commissioned as the artists for this project, with a project budget of up to \$250,000 currently allocated within the Johnson Street Bridge Project budget. The staff team, including the artists, are currently collaborating and assessing priorities for the interim treatments to align with bridge construction and decommissioning.

JANION DEVELOPMENT

Construction of the plaza was completed in mid-July and the plaza was opened to the public on Monday, July 17.



Figure 10a. – Completed Janion Plaza – July 2017 (I)



Figure 10b. – Completed Janion Plaza – July 2017 (II)



Figure 10c. – Completed Janion Plaza – July 2017 (III)

CITIZEN ENGAGEMENT UPDATE

Staff continue to stay in contact with businesses and stakeholders on the Vic West and Downtown sides of the project as well as harbour stakeholders. When incidents, concerns or questions come in from the public or stakeholders the project team works with City staff and PCL to solve issues or provide answers. As steel fabrication continues to take place overseas, images are being posted on the bridge project website to help demonstrate the progress. When safe, media opportunities

have been accommodated on site in Victoria to raise awareness and understanding about ongoing construction.

Throughout the project, staff have continued to maintain correspondence with stakeholders and media in an effort to keep the public informed about ongoing construction and answer questions about the bridge project.

SAFETY AND ENVIRONMENT

Environmental monitoring is being conducted by Hemmera field representatives on a regular basis. An archaeological monitor from Stantec and a First Nations representative are on-site during the excavation works at the west and east side of the Project.

UPDATE ON RISK MANAGEMENT

Effective risk management requires continuous monitoring and updating.

The primary risk issues, all of which have the potential to impact the project schedule, are as follows:

1. Completion of the steelwork fabrication at the ZTSS plant
2. Finalizing all painting work in Victoria
3. Finalizing the steel installation work in Victoria

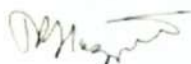
Weekly progress meetings regarding the steel fabrication occur with representatives from China, PCL, MMM, H&H and the City on the calls.

2. Schedule Risks

PCL's June 1, 2017 CPM schedule reflects bridge completion (traffic on bridge) on March 31, 2018 and PCL have indicated that they are comfortable with this date as well as the target dates for shipping. That being said there are still risks to PCL being able to meet their revised schedule.

- Shipping milestones must be met – the heavy lift carrier requires eight weeks' notice for rescheduling a shipment so a missed shipping date could translate into an eight week delay. In order to mitigate this risk the following has been implemented:
 - PCL have provided increased supervision at ZTSS and have relocated three project managers and engineers to China to supervise fabrication.
 - The project team (City, PCL, WSP, and H&H) that includes participants from New York, China, and Victoria has and continues to have weekly calls to discuss fabrication progress. These calls are used to answer questions, solve problems, and eliminate roadblocks to progress.
 - PCL management are monitoring schedule and quality at ZTSS daily and PCL executives are actively engaged, supporting the project team and in dialogue with senior City, fabricator, and designer representatives.
 - PCL have instructed ZTSS to double shift operations, where feasible.
 - Some works that were planned to be undertaken at ZTSS (span support segment installation) will now be performed by PCL in Victoria to make sure the scheduled shipping milestones are achieved.

Respectfully submitted,



Jonathan Huggett, P. Eng.
Project Director



Report accepted and recommended by the City Manager:

Date:

July 21, 2017

List of Attachments

- Appendix A – Project Budget
- Appendix B – Project Completion Contingency
- Appendix C – Project Schedule