



**Committee of the Whole Report
For the Meeting of October 19, 2017**

To: Committee of the Whole **Date:** October 12, 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 third quarterly report for 2017, with the next one scheduled for December 2017. Should any emergent issues arise, staff will provide an immediate update to Council.

During the past quarter, major steel shipments have arrived in Victoria from China and all of the bridge components are now in Victoria. The two rings, lower counterweight, and the falsework (temporary supports required for installation) arrived by barge on August 19th and were delivered to Point Hope shipyards. Since that delivery, the falsework required to install the rings and lower counterweight has been constructed in the bascule pier and is now ready to support the rings and lower counter weight.

The north ring had only been painted with a primer in China and the painting of the north ring has now been completed by a local specialist. Work commenced on installing the span support structure to the north ring on October 6th. The span support structure has been installed on the south ring, and grouting of the installation (filling high performance grout) commenced on October 10th. On completion of the grouting work a final paint top coat will be applied to the south ring and the ring will then be ready for installation.

On September 17th, the main bascule leaf and the associated walkways and cycle paths arrived in Victoria. They were off loaded onto a barge and moved to the north end of the harbour. The various parts will remain on the barge, where the walkway and cycle path supports will be attached to the main bascule leaf. The completed span will then be lifted in a single operation and bolted to the rings after they have been installed.

Handrail installation has continued throughout the past quarter and all of the handrail work is nearing completion. The handrails were fabricated in Delta, BC.

Work continues on designing the north side fendering required to protect the bridge from vessel collisions. Geotechnical investigations are complete. Significant efforts are in progress to reduce the capital costs, while still maintaining protection for the bridge. Council will be updated in the near future regarding the likely costs and schedule for the fendering work.

In April 2017, Council directed staff to prepare an interim design based on the Johnson Street Bridge Public Realm Final Design plans, to minimum standards, and report back to Council. Staff are in the process of determining options for implementation of the design concept for both the west and east sides of the Johnson Street Bridge. A separate report to Council will be forthcoming, outlining options for the level of treatment and associated cost considerations. Within that report, staff will also present the concept for the public art and confirm its location, in accordance with Council's direction to commission the City of Victoria's Artist in Residence and Indigenous Artist in Residence as the artists for this project. It is anticipated this report will come to Council in November so that budget considerations and detailed design work can progress to align with opening of the new bridge and decommissioning of the current bridge in 2018.

The new bridge is scheduled to open to traffic on March 31st, 2018. Key dates involved in meeting that schedule are as follows:

1. Installation of the rings and lower counterweight – end of November 2017: the exact date depends on availability of Dynamic Beast crane.
2. Installation of main bascule span: January, 2018.
3. Commissioning and testing of the new bridge: February through March, 2018.

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 September 30, 2017 actual costs of \$92.85 million have been incurred.

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.

The arrival of the steel pieces in Victoria marks a major project milestone that staff are ensuring is well documented and communicated to the public. With many different operations taking place in Victoria's upper harbour the project is receiving heightened local interest. Public inquiries have also increased over the past couple of months following the steel's arrival and staff continue to answer questions and share information.

Media have taken a keen interest in the bridge pieces arriving in Victoria and the City's Engagement department is working closely with the Project Director to ensure timely information and access to spokespeople. Numerous media opportunities have been held to explain the project and next steps in construction.

Staff are also working with partners at Point Hope Shipyard on proactive engagement to keep neighbours informed of weekend or evening work and increased activity at the shipyard worksite.

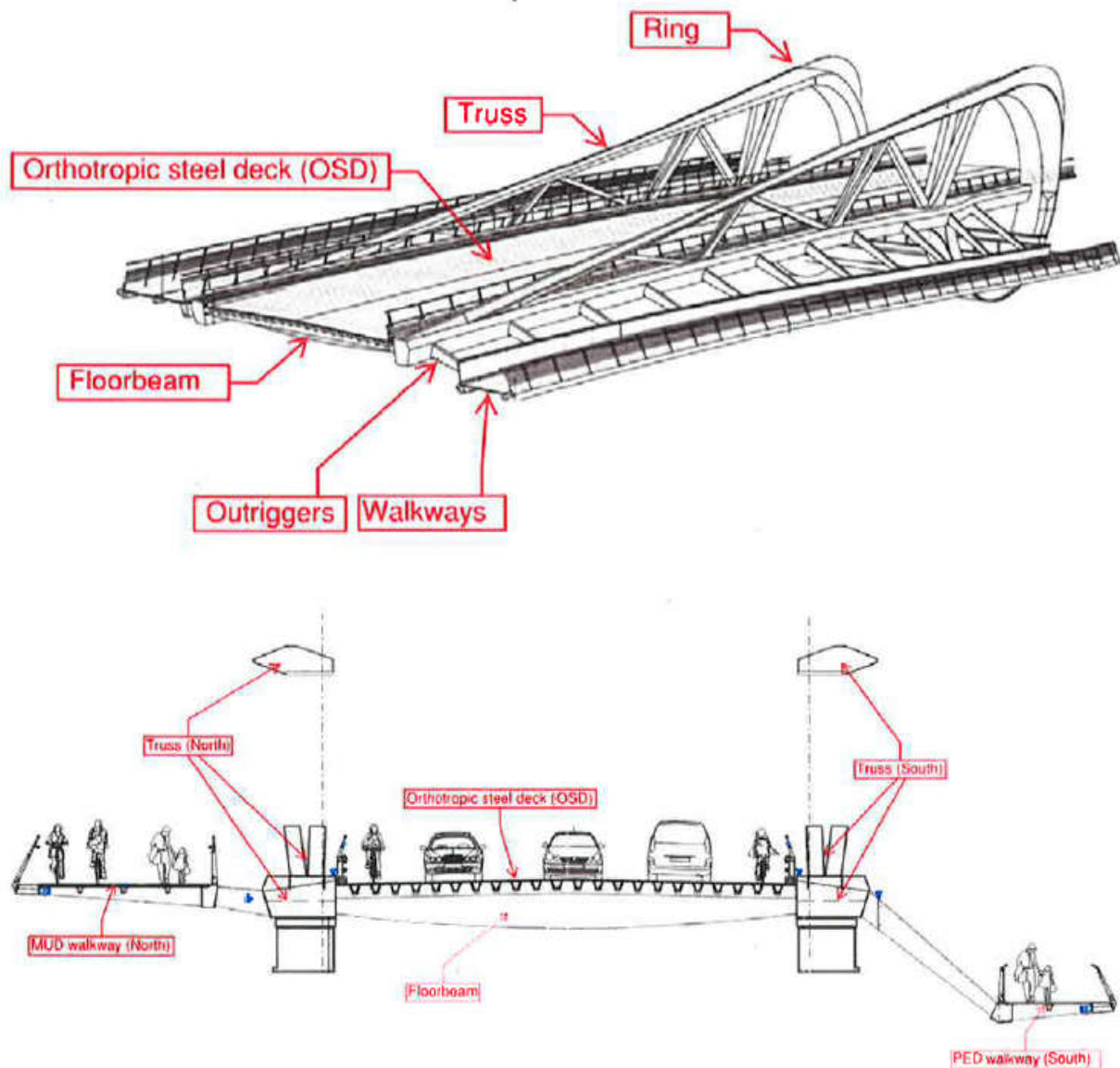
In the coming months as the bridge pieces are lifted into place, City staff have a communications and media plan in place to ensure that information about key milestones of interest to the public and the media are shared. Staff will also continue to communicate possible impacts such as road or marine channel closures, bridge lifts and construction related impacts to the public, the media and stakeholders.

PURPOSE

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

STEEL ASSEMBLY AND PAINTING

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



Final Ring Assembly

The north and south rings are currently located at the Point Hope Shipyards. Both rings are nearing completion ready for installation in the bascule pier during the latter part of November.

Figure 1 – Painting of the North Ring Completed



Painting of the north ring is now complete and installation of the span support segments has commenced.

The grouting of the installation (filling with cement) of the south ring commenced on October 10th. On completion of the grouting work a final paint top coat will be applied and the south ring will then be ready for installation

Figure 2 – Final Attachment of Span Support Structure on the South Ring

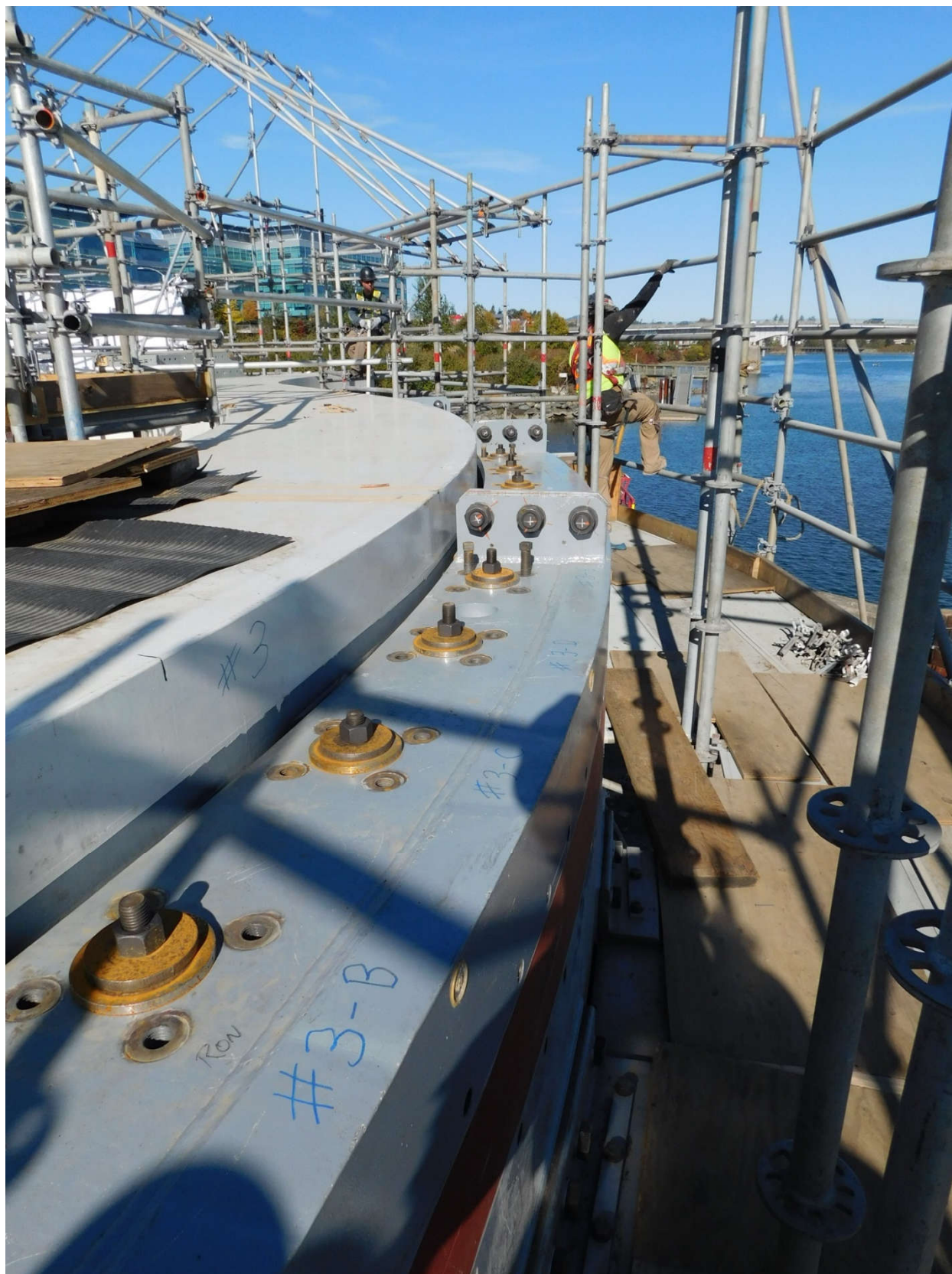


Figure 3 – Line Boring of the Span Support Structure



FINAL ASSEMBLY OF BASCULE SPAN

On September 17th, the main bascule leaf and the associated walkways and cycle paths arrived in Victoria. They were off loaded onto a barge and moved to the north end of the harbour. The various parts will remain on the barge, where the walkway and cycle path supports will be attached to the main bascule leaf. The completed span will then be lifted in a single operation and bolted to the rings after they have been installed.

Figure 3 – Arrival of the Bascule Leaf and associated outriggers



The following picture shows the various support structures that will be attached to the main span before that is lifted into place in January 2018.

Figure 4 – MUD and PED Components for Main span



The final assembly of the bascule span is currently scheduled to begin in late November when the rings and lower counterweight will be installed in the bascule pier. These components require support during assembly using a special structure known as falsework. The falsework is temporary and will be removed on completion and sent for recycling. The following picture shows the current completed falsework in the bascule pier. The lower structure supports the lower counterweight, while the rings are supported on the higher structure.

Figure 6 – Completed Falsework in Bascule Pier



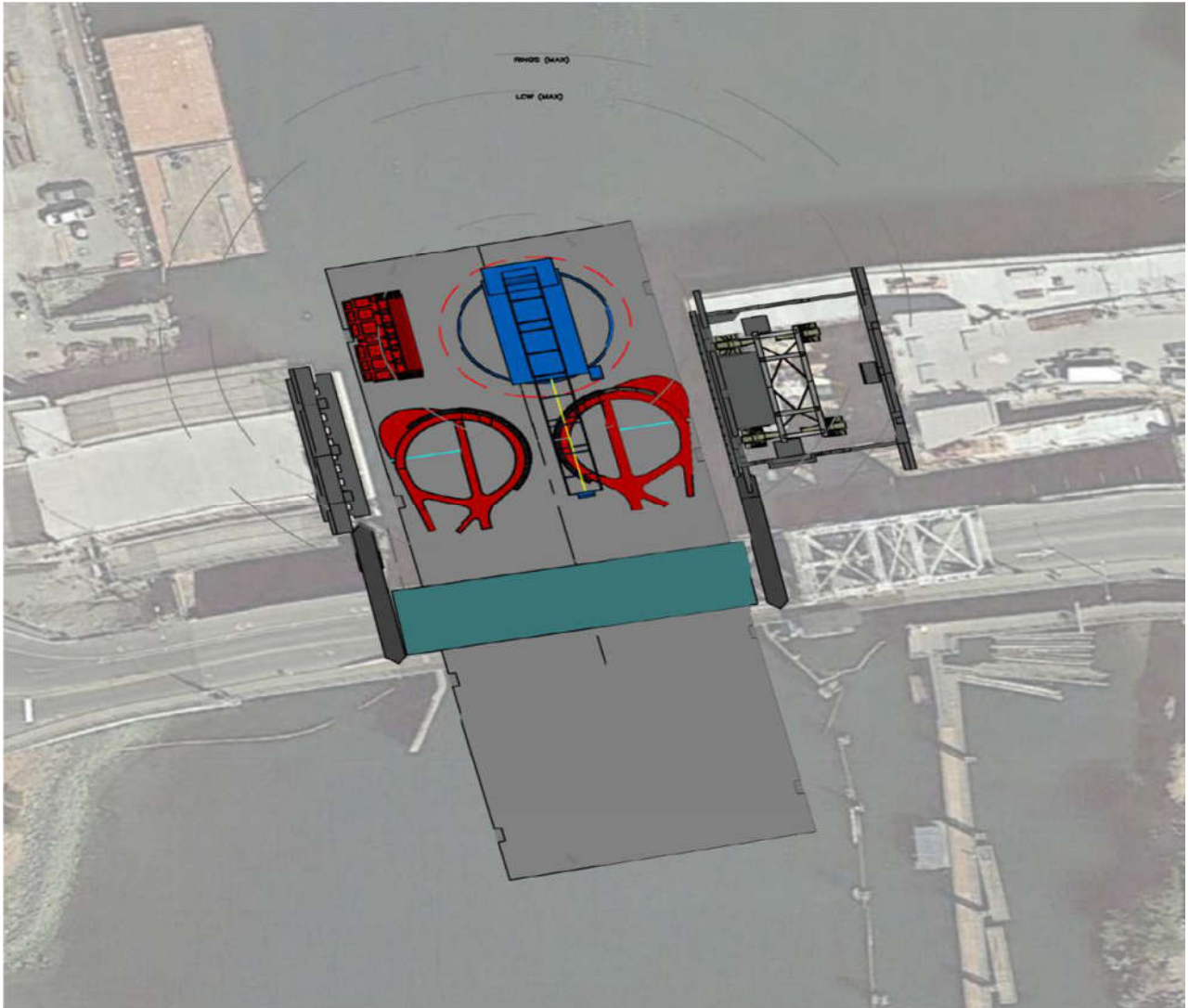
The following describes the lifting of the various parts of the bridge into position:

The rings and the lower counterweight will be placed on a new heavy lift crane barge called the Dynamic Beast (330ft long x 120 feet wide) which can lift 900 US tons:

Figure 7– Dynamic Beast Heavy Lift Crane

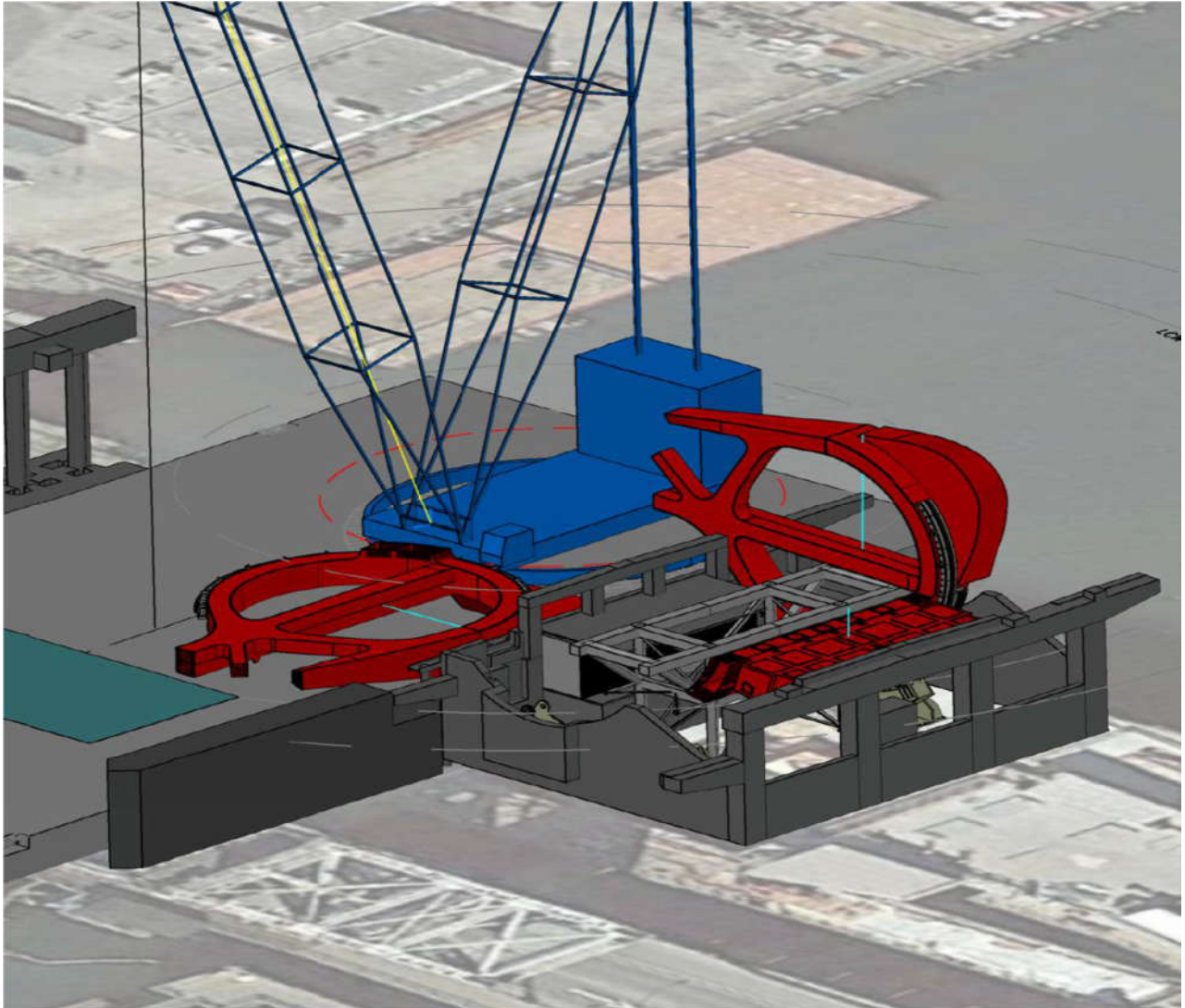


Figure 8 – Position of the Lifting Crane



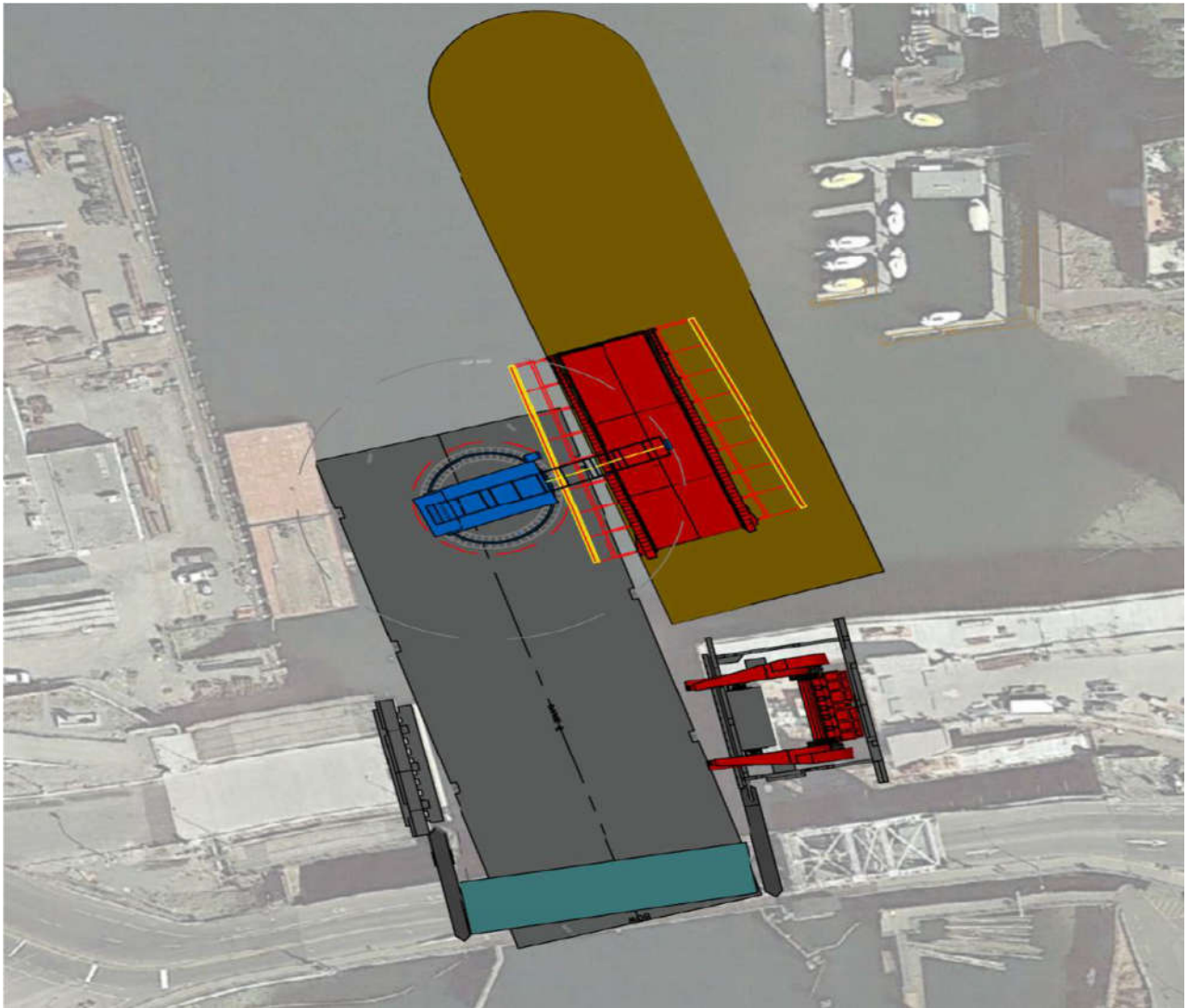
With the existing bridge closed, and part of the crane under the existing bridge (marine channel closed), the lower counterweight will be lifted into place followed by the rings. They will then all be bolted together and aligned.

Figure 5 – Rings and Counter Weight lifted in place



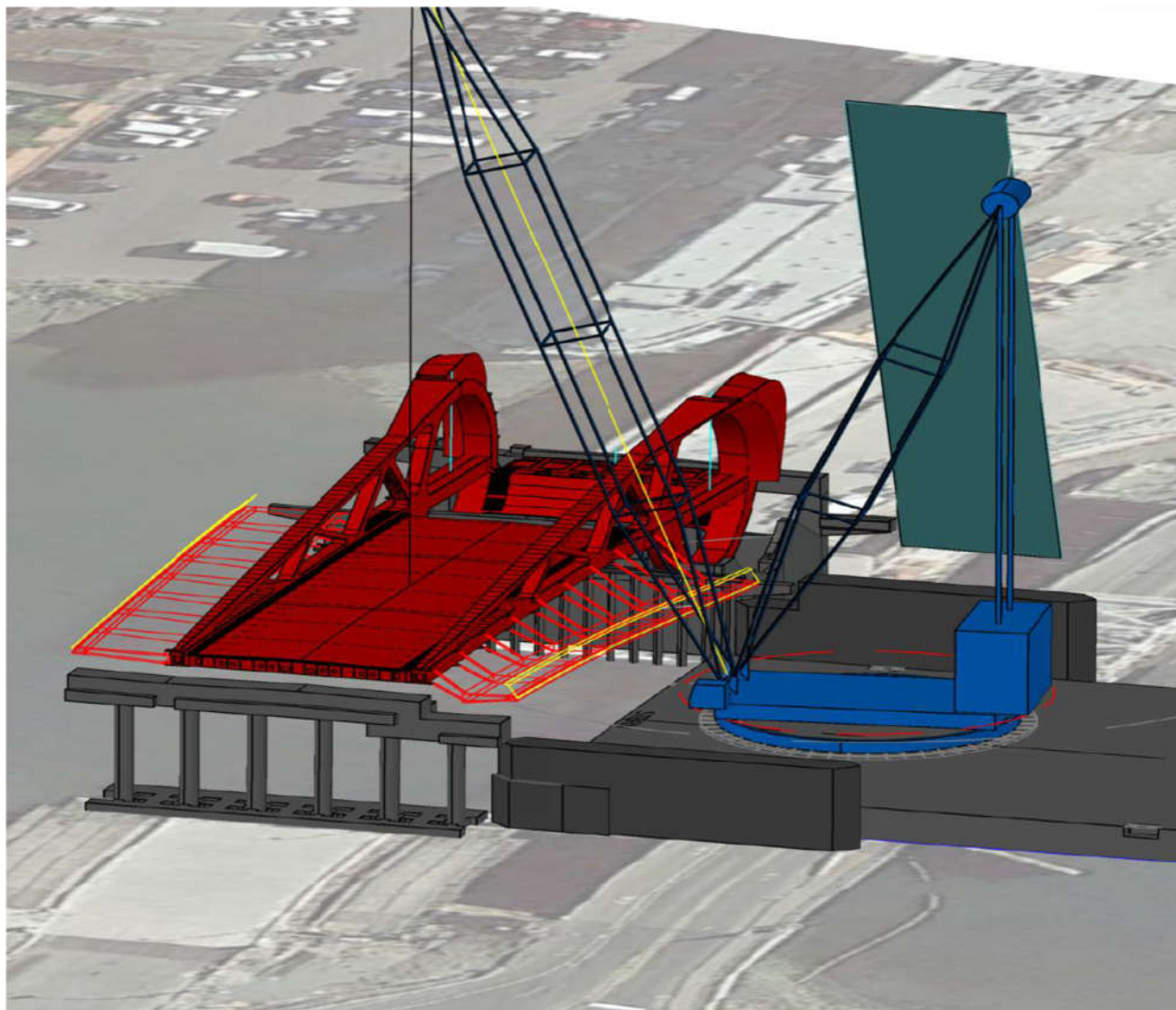
When the rings and counterweight are properly aligned, the main span will be lifted as one piece with all of the walkways and cycle tracks attached.

Figure 6 – Barge and Crane Position with Main Span



Once the span is in the air, the crane then moves under the existing bridge carrying the main span and rotating it ready to set it down in the correct position.

Figure 7 – Main Span lifted in place



The main span is then bolted onto the rings.

FENDERING UPDATE

During the past quarter various tasks have been undertaken related to the north side fendering. This included the drilling of geotechnical investigation holes to assess soil conditions, discussions with Telus regarding the stability of the adjacent Telus duct bank, and preliminary design work.

Staff are aware of the potential cost implications regarding any fendering solution, and are spending significant effort to reduce the overall costs while still maintaining adequate safety for the new bridge in regards to possible vessel collisions. In this regard staff continue to work with various specialist consultants, industry experts, legal and properties specialists. The goal is to return to Council shortly to present the likely cost impacts and other issues related to the north side fendering.

Other fendering work has also been undertaken during this quarter, including the removal of some of the old creosote coated piles both on the south side and in the in-channel areas. This has enabled a wider navigation channel to be established.

SCHEDULE UPDATE

The new bridge is scheduled to open to traffic on March 31st, 2018. Key dates involved in meeting that schedule are as follows:

1. Installation of the rings and lower counterweight: end of November 2017. The exact date depends on availability of Dynamic Beast crane.
2. Installation of main bascule span: January, 2018.
3. Commissioning and testing of the new bridge: February through March 2018.

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 September 30, 2017 actual costs of \$92.85 million have been incurred, including the following:

Vendor	Services	Budgeted	Invoiced	% Invoiced
WSP	Main Professional Services Contract: Project Management, design, procurement, administration, geotechnical engineering, permits	\$9.362 m	\$9.359 m	99.96%
WSP	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.	\$2.646 m	\$2.489 m	94.06%
PCL	Main Bridge Contract	\$62.935 m	\$57.659 m	91.62%
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.	\$3.213 m	\$3.090 m	96.17%

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 September 2017	\$ 8,919,000
Less Committed Contingency	(8,271,876)
Unallocated Contingency September 2017	\$ 647,124

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

Work on the bridge management program is continuing. Once completed, these will be referenced by relevant 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.

Development of the operations and maintenance program will be completed at the end of the project. Staff also are working to acquire the parts and equipment needed for maintenance work.

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, to minimum standards 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 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. A project budget of up to \$250,000 is currently allocated within the Johnson Street Bridge Project budget. The staff team, including the artists, are currently collaborating to assess priorities for the interim treatments, to align with bridge construction and decommissioning schedule.

DAVID FOSTER HARBOUR PATHWAY

The City has engaged a local structural engineering firm to complete the conceptual design for the new Johnson Street Bridge pedestrian underpass. The underpass will form part of the David Foster Harbour Pathway and Trans Canada Trail providing a safe and convenient pedestrian route between the South end of the new JSB bridge and the Janion Plaza on the North. The design will focus on barrier-free access and consider important safety, aesthetics and maintenance needs. The underpass design will be a subject of a staff report later this fall.

CITIZEN ENGAGEMENT UPDATE

The arrival of the steel pieces in Victoria marks a major project milestone that staff are ensuring is well documented and communicated to the public. With many different operations taking place in Victoria's upper harbour, the project is receiving heightened local interest. Previously much of the work was taking place in China and the Johnson Street Bridge website and quarterly updates were the only ways to share information with the public. But now with the steel here in Victoria, weekly website updates, photos, and social media can be proactively shared with the public. Public inquiries have also increased over the past couple of months following the steel's arrival and staff continue to answer questions and share information.

Media have taken a keen interest in the bridge pieces arriving in Victoria and the City's Engagement department is working closely with the Project Director to ensure timely information and access to spokespeople. Numerous media opportunities have been held to explain the project and next steps in construction.

Staff are also working with partners at Point Hope Shipyard on proactive engagement to keep neighbors informed of weekend or evening work and increased activity at the shipyard worksite. The City is working closely with PCL to keep noise and traffic disruptions to a minimum. Engagement staff are also working closely with PCL and Transport Canada to ensure that bridge and marine channel closures are communicated in advance to the public and other affected stakeholders.

Staff continue to be in regular contact with businesses and stakeholders on the Vic West and Downtown sides of the project, as well as harbour users. At any time in the project where significant construction activities will create impacts, an email to stakeholders is sent and face-to-face meetings with City staff and PCL are held, if necessary.

In the coming months as the bridge pieces are lifted into place, City staff have a communications and media plan in place to ensure that information about key milestones is shared with the public and the media.

SAFETY AND ENVIRONMENT

Environmental monitoring is being conducted by Hemmera field representatives on a regular basis. Hemmera have been actively involved during the past quarter in such tasks as advising on the removal of the old creosote coated piles and the drilling of additional geotechnical investigation holes for the north side fendering. An archaeological monitor from Stantec and a First Nations representative will be on-site during any excavation works.

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 assembly and painting at the Point Hope Shipyards
2. Installation of the steelwork
3. Testing and commissioning of the bridge operation

NEXT STEPS

Priority tasks over the next couple of months include the following:

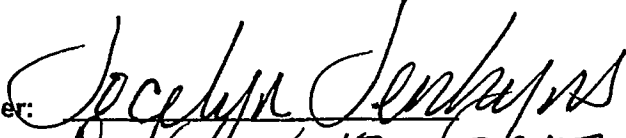
1. Continue to monitor steel work assembly and painting at the Point Hope Shipyard as this is critical to achieving the current schedule;
2. Prepare for the installation of the major steel components in their final bridge location;
3. Monitor the proposed testing and commissioning procedures for the bridge to assure satisfactory operation.
4. Resolve the north side fendering design issues and bring a report to Council regarding next steps;
5. Work with PCL to amend their demolition work related to the old bridge so that the removal of the abutments is consistent with the final plans for the public realm.

Respectfully submitted,


Jonathan Huggett, P. Eng.
Project Director

Report accepted and recommended by the City Manager:

Date:


October 13, 2017

List of Attachments

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