

Transportation Report to  
Calgary Planning Commission  
2018 July 26

ISC: UNRESTRICTED  
CPC2018-0932  
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## **9 Avenue SE Bridge Replacement - Inglewood (Ward 9) & East Village (Ward 7), 9 Avenue SE over Elbow River**

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### **EXECUTIVE SUMMARY**

This report presents information on the 9 Avenue SE bridge replacement project in Inglewood and East Village. The existing bridge is past its useful service life and has numerous structural and functional deficiencies. A feasibility study was undertaken in 2016 and recommended replacement of the existing bridge.

The scope of the project includes the construction of a temporary bridge and roadway south of the existing alignment, removal of the existing bridge, construction of a new flood resilient bridge, and integration with the surrounding public realm.

The design of the replacement bridge is integrated to the context and prominence of the location and will accommodate all multi-modal needs. Public engagement has been a constant input throughout the design process.

Construction is anticipated to take place from Q4 2018 – Q4 of 2020.

#### **ADMINISTRATION RECOMMENDATION:**

That Calgary Planning Commission **RECEIVE AND ACCEPT** the 9 Avenue SE Bridge Replacement Project Report for information.

### **PREVIOUS COUNCIL DIRECTION**

Council previously approved the plan for Investing in Mobility (2015-2024) in May 2014. Replacement of the 9 Avenue SE Bridge is included in Investing in Mobility under Lifecycle and Asset Management as a High Priority project. The approved budget for this project is \$23M, which includes \$12M from CMLC.

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**LOCATION MAP – AREA PLAN**



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### **BACKGROUND**

The 9 Avenue SE Bridge over the Elbow River is located in Calgary's inner city and provides a gateway between the City's oldest neighbourhood, Inglewood, and the Downtown East Village. The Fort Calgary grounds and plaza connecting to the RiverWalk pathway system are located to the northwest. The historic Deane House property and a regional pathway are located to the northeast. A public City park, Statue Park, is located directly southeast of the bridge site. A vacant lot and the 7th Street SE connection to 9th Avenue SE are located southwest of the site. The CPR main line is located south of the bridge, while the Elbow River Traverse pedestrian bridge is located to the north.

The existing bridge is a single span steel truss bridge that was constructed in 1909, originally to accommodate a new streetcar system. The bridge was converted to vehicle use following removal of the streetcar system in the 1950's and has remained an important transportation connection within Calgary, with approximately 21,000 vehicles per day as of 2014. The bridge currently includes three (3) lanes of traffic (1 west bound, 2 east bound) with substandard width sidewalks on each side (1.8 metres south and 2.4 metres north).

Due to its deteriorated condition, the bridge is inspected annually by the City. There are also several functional deficiencies including vehicle weight restriction, narrow lane widths, vehicle height restriction, and insufficient flood clearance. A feasibility study was undertaken in 2016 and determined that a complete rehabilitation of the existing structure was not feasible due to the high costs and functional restrictions that would remain.

The new bridge is designed for a 100 year service life and would eliminate the functional restrictions that currently exist. The new bridge will be designed to accommodate up to four lanes of traffic and include 3.3 metre wide pathways on each side. The new bridge span will be raised in order to withstand a 1/100 year flood.

### **INVESTIGATION: ALTERNATIVES AND ANALYSIS**

#### **Design and Aesthetics**

Context sensitivity is an important aspect of the design. The existing site consists of a mix of park, river, historical buildings and railway elements. The design of the bridge aims to tie these diverse elements together while improving the main function of crossing the river. The design reflects the site's context and seeks compatible aesthetic outcomes representative of the bridge's historic function and the siting of the bridge as a gateway between the newly redeveloping Downtown East Village and the historic Inglewood community. The location and alignment of the new bridge provides for maximum opportunity for integration with the future plans in the area.

A steel arch bridge was developed as means to provide a design solution that represents a simple, yet distinct structure to the area. The use of exposed steel arches creates a prominent landmark at a scale appropriate for the site, uses a form that will be easily interpreted by the bridge users and features the use of structural steel reminiscent of the original bridge.

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The selected bridge type is a single span steel through arch bridge that includes up to four (4) vehicle lanes for traffic and 3.3 metre multi-use pathways on each side. The bridge design will conform to the City's Access Design Standards and Sustainability guidelines. To minimize the environmental impact at the site and reflect the form of the existing bridge, the new bridge is being designed with no intermediate piers or permanent structures within the Elbow River.

The bridge is a key component of the design and functionality of the area including roads and pathways. The location and alignment of the new bridge provides for maximum opportunity to integrate with the future development plans in the area. Key design criteria includes:

- Safety;
- Accommodation of all modes of transportation;
- Accessibility for all users;
- Connectivity with existing and future pathways;
- Design and construction to current engineering standards;
- Sustainability;
- Cost and schedule, and;
- Aesthetics and context sensitive design;
- Commemoration of heritage.

Architectural support to the engineering team during development of bridge aesthetics and contextual sensitivity landed on a design alternative that is respectful of the old steel truss including form (through-type bridge), scale (similar length and height), and choice of materials (coated steel).

While the new 9 Avenue SE Bridge will remain respectful of the natural environment of this site and be functional for pedestrians, cyclists, transit and vehicles, the bridge will serve to further define the character of the site and will be a landmark between Inglewood and Downtown East Village.

A critical design requirement on all bridges is pedestrian safety and accessibility; this will be achieved by incorporating the following site-specific features:

- Pathway grades under 5 percent;
- Maximum 3:1 pathway side slopes;
- Keeping pedestrians safely separated from the Elbow River, CP Rail Line and vehicles through the use of railings and barriers;
- Way finding;
- Sufficient roadway and pathway lighting; and
- Maintaining clear sightlines.

The new bridge will also incorporate Crime Prevention Through Environmental Design (CPTED) guidelines in relation to the overall design and performance requirements.

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Public realm integration is proposed at the Deane House, Statue Park, and Riverwalk Plaza to remediate impacts and tie the new bridge into the community and pathway network. The project will enhance and expand new landscaped areas at the bridge encouraging people to gather, pause to view the river and learn about the history of the old bridge through interpretive pieces and plaques developed using salvaged elements from the old bridge where possible.

### **Stakeholder Engagement, Research and Communication**

Two public engagement sessions were held in March 2017 during the initial preliminary design phase with approximately 150 residents in attendance. For this engagement opportunity, The City presented different design forms and asked residents to share their thoughts on each of the conceptual bridge types based on the visual graphics and general information provided for each type. The engagement opportunity was also available online on the City's engage portal and 260 comments were received. The feedback from this in-person and online engagement was used to help determine the design of the new 9 Avenue Bridge.

Another public open house session was held in May 2018 during the detailed design phase with approximately 80 local residents attending. The open house included information on the final bridge design and construction staging, and requested input from the residents in developing the content of an interpretive plan to commemorate the old bridge.

In addition to open house sessions, public engagement has also included meetings with local community associations, both the Ward 7 and 9 Councillors, and adjacent businesses and residents throughout the design phase.

Information on the project is currently available on the City of Calgary's website. Project updates are posted regularly and the site will continue to be updated during construction with information for the public.

### **Pathway Connectivity, Accessibility**

The proposed bridge includes 3.3 metre wide multi-use pathways along both sides of the bridge that will connect to the adjacent pathways, sidewalks, and RiverWalk. Pathway circulation is highlighted in Attachment 1 – Figure 1.

A minimum of 3 metre vertical clearance will be provided between the existing river pathway and the new bridge, and all pathway grading will meet current accessibility standards for mobility.

Visual sightline opportunities to other proposed key features such as the Elbow River are also considered. In addition, the design for the structure provides a unique experience for the user with entry features that tie to the adjacent landscaping and pathways in an exciting and pleasing way.

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### **Heritage Commemoration**

An interpretive plan that tells the bridge users the story of the original bridge has been developed. The story will be told through a combination of information plaques, photos, graphics and other interpretive elements. The existing truss will be salvaged and kept at a City yard for reuse of the old bridge elements where possible. A total of seven (7) locations on the project site near the bridge have been identified to feature interpretive elements. See Figure 2 – Attachment 1.

### **Strategic Alignment**

The project is in alignment with the Calgary Transportation Plan – Appendix B – Principles and design considerations for river crossings:

- Principle 1: Demonstrated need for the crossing; and
- Principle 2: Advanced planning for appropriate site based on all relevant factors.

The project is in alignment with a number of the City's Action Plan Priorities (2015-2018) including:

N1. Keep communities safe by meeting and maintaining standards for crime prevention, fire response and enforcement. Crime Prevention through Environment Design is incorporated into the project. Pathways will include improved lighting and sightlines to increase pedestrian safety.

N2. Build resiliency to flooding. The new bridge is designed to improve the flood resiliency of the area and will be located above the waterline in a 1/100 year flood.

N3. Enhance The City's capacity and resiliency to prepare for and respond to pandemic, natural disasters and emergency situations. The new bridge and roadway will be able to accommodate emergency vehicles and will be a critical route during flood events.

N9. Provide great public spaces and public realm improvements across the city to foster opportunity for well used public spaces and places for citizen connections and urban vitality. The project will maintain and include new landscaped areas at the bridge encouraging people to gather, pause to view the river and learn about the history of the old bridge through the interpretive plan.

### **Social, Environmental, Economic (External)**

The new bridge aligns with the City's sustainability policies and will result in long term social, environmental, and economic benefits. The new bridge promotes healthy lifestyles by significantly improving the pedestrian and cycling infrastructure and their connections to the adjacent pathways and sidewalks.

The new bridge is designed to last 100 years and incorporates the use of durable, sustainable materials which will reduce initial and ongoing costs and provide long term value to the City.

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**REASON(S) FOR RECOMMENDATION(S):**

In 2016, the City undertook a feasibility study of the existing 9 Avenue SE bridge over the Elbow River and determined that due to its overall deteriorating condition and functional deficiencies, the structure had reached the end of its service life and required replacement.

The analysis conducted at the project outset confirmed that replacement of the existing bridge would provide best value to The City.

**ATTACHMENTS**

1. Figures 1 to 5
2. Urban Design Review Panel Comments and Responses