

Transportation Report to  
Calgary Planning Commission  
2020 April 02

ISC: UNRESTRICTED  
CPC2020-0383

## Elbow River LRT Bridge - 17 Avenue SE Stampede Crossing (17SX) Beltline (Ward 11)

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### EXECUTIVE SUMMARY

This report presents for information, the new Light Rail Transit (LRT) Bridge over the Elbow River between Erlton Station and the Big Four building located on Stampede Park as shown in Figure 1 (Attachment 1). The bridge is required to replace the current siding track at Victoria Park / Stampede Station to sustain critical Calgary Transit operations. The location of the current siding track conflicts with the 17 Avenue SE Stampede Crossing at grade station requirements. The bridge design and location minimizes the change to the horizontal and vertical track geometry associated with the existing LRT network and minimizes impacts to the hydraulic conditions of the Elbow River. The 3-span bridge reflects the site and seeks comparable aesthetic outcomes to the existing LRT bridges.

In 2018 December, Calgary Municipal Land Corporation (CMLC) released the [Rivers District Master Plan](#) (RDMP) - a plan to integrate and align with the many existing and evolving plans, programs and development aspirations of the various stakeholders in the area. To enable the RDMP, the 17SX project was initiated to extend 17 Avenue SE at Macleod Trail via an at grade crossing of the Red Line C-Train tracks into Stampede Park, accommodating all modes of transportation.

As part of CMLC's mandate to lead the delivery of the overall RDMP for east Victoria Park, CMLC will manage the delivery of the bridge as part of the 17SX project and it will be funded through the Community Revitalization Levy (CRL).

The new bridge is expected to be in service Q2 2021. The at grade station is currently in detailed design and anticipated to be ready to present to the Calgary Planning Commission in Q3 2020.

#### ADMINISTRATION RECOMMENDATION:

That Calgary Planning Commission Receive This Report for the Corporate Record.

### PREVIOUS COUNCIL DIRECTION / POLICY

At the 2019 June 17 Combined Meeting of Council, that with respect to the 17 Avenue SE Stampede Crossing project, that Council agreed to receive the report (TT2019-0506) for information on the Consent Agenda.

At the 2019 April 29 Combined Meeting of Council, that with respect to the Beltline Area Redevelopment Plan – Part 2: East Beltline Area and Land Use Bylaw 1P2007 Amendments Beltline (Ward 11), PUD2019-0007, that Council adopted the proposed amendments to the *Beltline Area Redevelopment Plan*.

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### BACKGROUND

Since its opening in 1981, the Red Line C-Train has provided critical public transportation connectivity to Stampede Park and the surrounding area with an average weekday boarding of 187,000 served by 351 train trips per day. While this connectivity has significant customer, community and economic benefits, the C-Train line also acts as a physical barrier between the Beltline and east Victoria Park.

In 2018, CMLC partnered with The Calgary Stampede on the development of the Rivers District Master Plan (RDMP). The RDMP vision is to create an authentic, connected, resilient, and vibrant culture and entertainment district in which 8,000 people from diverse backgrounds and across demographics will one day live. Integrating into the city and established downtown neighborhoods, the district will not only become the premier culture and entertainment destination of the region, but also become home to those seeking the excitement and convenience of urban living.

The RDMP identified the extension of 17 Avenue SE at Macleod Trail via an at grade crossing of the Red Line C-Train tracks into Stampede Park as an important access point for future development in the area. The plan identifies improved connectivity within the Rivers District, through a new connection to Stampede Park and supports the creation of an attractive right-of-way for new retail and commercial development. CMLC will manage the delivery of the 17SX project shown in Figure 1 (Attachment 1) and it will be funded through the Community Revitalization Levy (CRL).

To allow for the implementation of the RDMP and the 17SX project, the current siding track at Victoria Park / Stampede Station needs to be relocated to retain the following critical Calgary Transit operational requirements:

- park trains with mechanical problems that would otherwise block mainline tracks and cause delays;
- move non-revenue trains (e.g. training, road tests) out of the path of revenue trains to ensure customers aren't delayed; and
- stage empty trains when special events occur in Stampede Park, so they can be dispatched timely for maximum service effectiveness.

The siding needs to be relocated as close to downtown as possible because 7 Avenue S is a focal point of the LRT system and is the area most prone to system disruptions. The farther away the siding is moved from downtown the longer the disruption to service. The siding needs to accommodate four-car trains in the immediate term and five-car trains in the future.

Calgary Transit previously reviewed twelve siding track relocation options. The Elbow River LRT bridge location shown in Figure 2 (Attachment 1) is the only option that meets the requirements of all stakeholders. The project steering committee which includes CMLC, Calgary Transit and Calgary Stampede, reviewed and approved the Elbow River LRT Bridge location in 2019.

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### INVESTIGATION: ALTERNATIVES AND ANALYSIS

#### Design and Aesthetics

The existing mainline LRT tracks cross the Elbow River between Erlton Station and the Big Four building approximately 10 metres east of northbound Macleod Trail Bridge. The existing LRT bridges are both 3-span and composed of weathered steel girders on concrete substructure as shown in Figure 3 (Attachment 1).

The new Elbow River LRT Bridge is also a 3-span bridge with weathered steel girders. It reflects the site and seeks comparable aesthetic outcomes (see Attachment 1, Figure 4). The bridge design and location are significantly constrained by track horizontal and vertical geometry associated with the existing LRT network and the hydraulic conditions of the Elbow River. The bridge must not be higher than the existing top of rail and must not be lower than the existing bridge underside of girder; limiting the structural depth.

The bridge will be located directly adjacent to the existing LRT bridge, with approximately 1 metre horizontal physical separation between the west edge of the proposed bridge and the east edge of the existing LRT bridge.

Hydraulic river modelling shows the existing high-water level to be located above the existing bridges in the area crossing the Elbow River. The Elbow River LRT Bridge underside of girder has been designed to a higher elevation compared to the existing bridges to help minimize the 1:100 year flood level rise in water elevation.

The new Elbow River LRT Bridge includes a single LRT track, space for a utility duct bank, Overhead Catenary System support poles, and motorman platform for Light Rail Vehicle access. These features are all required for Calgary Transit operations. The bridge will only be accessible to trains and trained Calgary Transit staff.

The total length of the bridge is nearly 130 metres. The bridge is strategically designed with a mid-span of 67 metres allowing piers to be placed outside of the Elbow River bed and shore to minimize the environmental impact at the site. Weathered steel girders and piers with concrete deck will be used. This design solution fits the context of the existing site in both scale (similar length and height) and choice of materials (weathered steel and concrete).

Detailed design of the bridge was completed in Q1 of 2020 and construction commenced in Q1 of 2020. Completion is expected in Q3 of 2021. Construction of the bridge is planned to not impact LRT service or Roads.

#### Pathway Connectivity

A regional pathway passes below the existing and new bridges on the south bank of the Elbow River shown in Figure 5 (Attachment 1). The pathway connections extend along the river to the west looping around Repsol Sports Centre and to the east to the Bow River pathway network. The pathway sees year-round usage with peak activity in May to October. A portion of the

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existing pathway must be reconstructed to accommodate the new bridge. The design team has worked to improve the pathway user experience where possible see Figure 6 (Attachment 1). Sight lines east of the bridge have been extended east of the bridge. The vertical grade of the pathway east of the bridge is reduced from ~18 percent to ~9 percent. The maximum grade in the current pathway guidelines and accessibility design standards cannot be achieved for the pathway due to its proximity to the river. However, it will be substantially improved. The pathway will have less vertical clearance than required in the current pathway guidelines, however the adjacent LRT bridge has less vertical clearance, so there should be no change to the user experience.

A pathway on the north bank of the Elbow River is not part of the scope of this project, but the bridge design allows for a pathway to be built by others in the future.

### Lighting

The lighting design on the bridge is targeted to Calgary Transit operations and maintenance requirements.

There will be lighting below the bridge for pathway users at night to improve visibility and safety.

### Landscaping

The landscaping on both the north and south river banks will be restored to their natural state post bridge construction. At the bridge abutments rip rap is required to protect the structure in flood events. The rip rap will be integrated with the surrounding landscape.

### Stakeholder Engagement, Research and Communication

In 2017, CMLC formed a working committee to guide the master plan process over the following two years. The committee included Ward 8 and 11 Councillors, Remington Development Corporation, Victoria Park Business Improvement Area, the Ramsay, Inglewood and Beltline Community Associations, Calgary Stampede, and The City of Calgary. The working committee completed a series of reviews on the master plan prior to a draft plan being taken through a rigorous nine-month public engagement campaign. The public engagement process was designed to ensure the ambitions of the master plan aligned with the vision for the community.

Involving 36 engagement events and assembling data from nearly 4,000 surveys about the future of Calgary's Culture and Entertainment District, engagements efforts spanned the entire City. To make the most of the broad engagement and ensure the master plan aligned with policy for the area, CMLC partnered with The City for public engagement to advance the master plan as well as proposed amendments to the *Beltline Area Redevelopment Plan*.

The engagement program provided citizens with an overall review of the master plan goals and critical connections including the 17th Avenue extension. Through these engagement sessions, participants shared the importance of the area being well-connected for all modes of transportation and improving connections in and out of the district.

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In addition to CMLC's public engagement for the overall RDMP described above, project specific engagement during the past 6 months has also included meetings with impacted City departments, and with local community and business associations. In December 2019, a project communications team was established to coordinate communications and engagement with stakeholders as plans are finalized and the construction program unfolds.

### Strategic Alignment

Construction of the Elbow River LRT Bridge is a 17SX enabling works project and the first step required to extend 17 Avenue SE at Macleod Trail into Stampede Park. The 17SX Project is in alignment with:

- The [Rivers District Master Plan](#): Reshape east Victoria Park as an active, walkable, accessible community with enhanced connections to adjacent neighbourhoods;
- The [Municipal Development Plan](#): Create great communities, connecting the city, enhancing the public realm, and creating a vibrant city centre;
- The [Calgary Transportation Plan](#): Increase mobility choices, enable public transit, make walking and cycling attractive and convenient, and provide safe accessible customer focused public transit;
- [RouteAhead](#): Improve customer experience, make transit attractive, make stops and stations attractive public spaces;
- 2020 Sustainability Direction: Investment in public transit and increase transportation choice;
- The [Beltline Area Redevelopment Plan](#): An authentic, connected, resilient, and vibrant culture and entertainment district; and
- [imagineCalgary](#): Convenient, comfortable, affordable, accessible and efficient transportation modes - and improve the pedestrian environment, attract tourism and reduce energy consumption.

### Social, Environmental, Economic (External)

The new Elbow River LRT Bridge is designed for a 100 year lifespan. It incorporates the use of durable, low maintenance materials which minimize lifecycle costs and provide long term value to The City.

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The improvements associated with the 17SX project will allow:

- Re-visioning and reconstruction of Victoria Park / Stampede Station with larger platforms so customers can wait safely and comfortably for the C-Train, while having the potential to increase ridership.
- At grade design to improve accessibility to Victoria Park / Stampede Station, Stampede Park and the Rivers District for Calgarians with limited mobility;
- Opportunities for reduced infrastructure maintenance costs, operating costs and lifecycle replacement costs while attracting private investment to the district.

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

The new Elbow River LRT Bridge is required to retain critical Calgary Transit operational requirements; and  
Enables the next phase of the 17 Avenue SE Stampede Crossing project.

The extension of 17 Avenue SE into Stampede Park was identified as a crucial access point, requiring at grade access to accommodate all modes of traffic in the RDMP.

### **ATTACHMENT(S)**

1. Supplementary Project Information