

Transportation Report to
Calgary Planning Commission
2019 October 03

ISC: UNRESTRICTED
CPC2019-1144

Jaipur Bridge Replacement Eau Claire Promenade and Plaza Connecting to Prince's Island Park (Ward 7)

EXECUTIVE SUMMARY

This report presents for information, the pedestrian bridge project in the community of Eau Claire. The project entails the lifecycle replacement of the existing Jaipur pedestrian bridge connecting the Eau Claire Plaza to Prince's Island Park. The existing bridge's poor condition and design make full replacement the best option to address the current bridge's deficiencies. Replacement of the Jaipur Bridge will also allow the City to improve its flood resiliency by eliminating the pier supports in the lagoon and raising it above the forecasted 1:100 flood elevation. The new Jaipur bridge will also be designed to carry emergency vehicles to and from the island during flood events above the 1:10 return period when the causeway to the west, the primary vehicle access point to the island, is overtopped.

The Promenade, along the south river bank downtown, is a joint project between Urban Strategy, Parks and Water Resources to enhance the public realm and build flood protection for downtown above the 1:200 flood elevation. When complete the project will extend from Peace Bridge to Reconciliation Bridge. In 2018 construction of the first leg of this project was completed in West Eau Claire. The timing of the Jaipur Bridge replacement fits well with the next leg of the Promenade currently under design. Increasing the elevation of the new bridge allows the Promenade to create a higher permanent berm for protection at the Eau Claire Plaza entrance. The City is coordinating the projects to: enhance flood resiliency; implement a common aesthetic language in the area; and minimize impacts to the environment and public during construction.

The project scope includes removal of the existing bridge, as well as the design and construction of the replacement bridge including lighting, and landscaping to integrate landings with the adjacent environments. The new structure will comply with current City of Calgary standards and guidelines with respect to geometry, accessibility, public safety, Crime Prevention Through Environmental Design (CPTED) recommendations, and lighting.

Detailed design is scheduled for completion in Q4 of 2019 and construction is anticipated to commence in Q2 of 2020. Construction completion is expected in Q2 of 2021.

ADMINISTRATION RECOMMENDATION:

That Calgary Planning Commission receive this report for the Corporate Record.

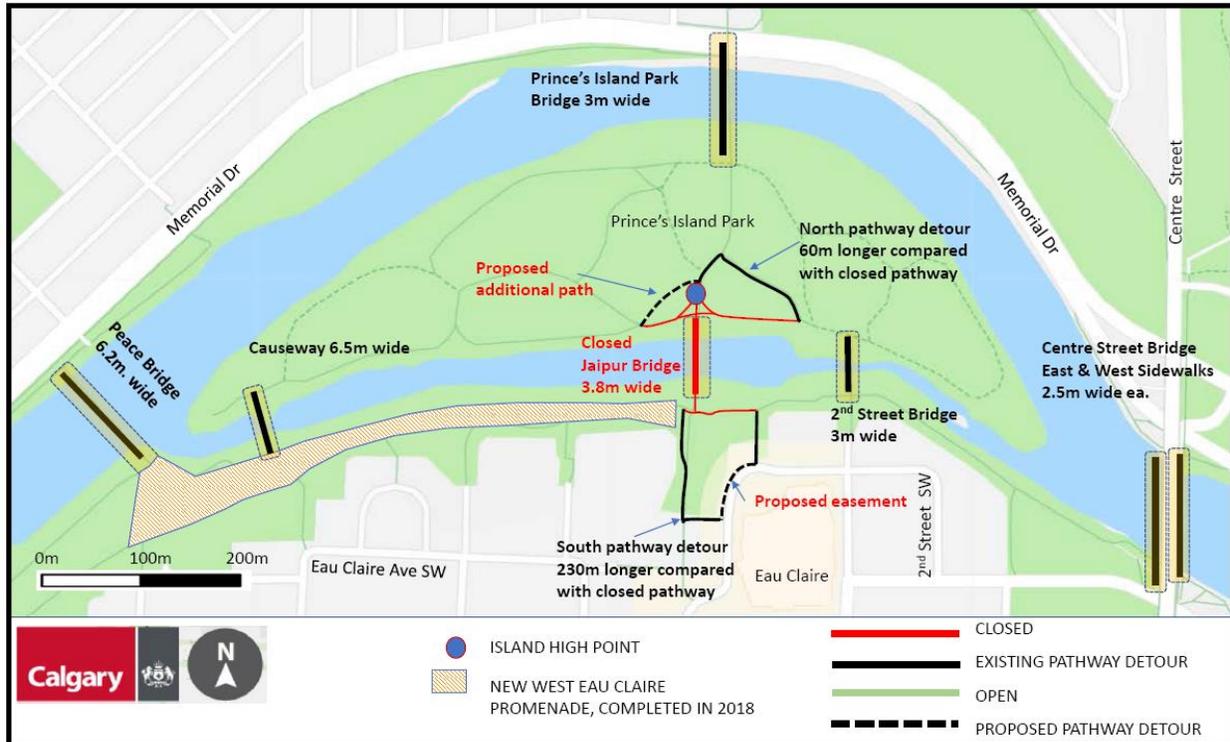
PREVIOUS COUNCIL DIRECTION / POLICY

Council previously approved the transportation infrastructure investment plan, Investing in Mobility 2015-2024, in December 2012 and accepted the updated report in May 2014. This project is funded through the Lifecycle and Asset Management category within Investing in Mobility 2015-2024, from funding allocated for the upgrading and replacement of pedestrian bridges. The project's budget will draw from Capital Program 223, which is reserved for these purposes.

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BACKGROUND

Location Map



Planning Analysis

The Jaipur Bridge is one of four connections to Prince's Island Park as shown in the Location Map. On the south side of the island there is the causeway to the west, Jaipur Bridge just north of the Eau Claire Plaza and the pedestrian bridge that is aligned with 2 Street SW. On the north side of the island there is Prince's Island Bridge that provides connection to the regional pathway along the north shore of the Bow River and over Memorial Drive to the Calgary Curling Club.

Prince's Island Park is one of the City's premier parks and a popular site for events such as Canada Day, Calgary Folk Music Festival, Expo Latino and Pride in the Park. These events are popular, well attended and draw over a million people to the area every year. Between 2013 and 2017 the average attendance for festivals and special events on the island was 1.25 million annually. It's estimated that on average over 2.25 million people visit the Park annually.

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Strategic Alignment

The City of Calgary's Investing in Mobility 2015-2024 program is a 10-year strategic plan for prioritizing capital transportation infrastructure investment. The plan's evaluation criteria includes life-cycle asset management and transportation network optimization considerations. The current project aligns with the program's objectives to address structural reliability and safety deficiencies.

The new bridge integrated with the rebuilding of the Promenade will be a major enhancement to pedestrian and cycling facilities in Calgary's City Centre. It's also a great example of the collaboration within the corporation to deliver better value projects to Calgarians.

This project is in alignment with Council Priorities to increase capacity and capability to response to and effectively recover from emergencies. The new Jaipur Bridge will be built to accommodate emergency services on to the island during an emergency such as a fire, flood or violent event.

Pathway Connectivity

The alignment of the new Jaipur Bridge will be similar to the existing bridge. The bridge's location connects Eau Claire Plaza directly to a pathway node, the highest point of Prince's Island and the only portion of the island that would not be inundated in a 1:100 year flood. Jaipur Bridge will be the connection to the island for emergency services, including fire engines, in the event of such a natural disaster. Replacing the bridge on the existing alignment will require closure of the connection during construction and a robust pathway detour plan. The City is working to minimize impacts to the public and events' clients that will be affected by construction. These strategies include by constraining the construction schedule, providing notice of work over a year in advance to all clients, and supporting alternative arrangements at other downtown venues.

When the bridge and promenade construction are complete the south connection will be a mixing area for all modes where cyclists should ride slowly and cautiously as there will be a break in the dedicated bike path in the east-west direction. The speed limit in the area is signed at 10 km/hr and the intention is to maintain that limit over the bridge.

The new 6 m width of the bridge is at the upper end of the Transportation Association of Canada's recommended width for multi-modal traffic. The width will also be compatible with the new Promenade which is also approximately 6 metres in width.

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Design Features:

Accessibility

The new Jaipur Bridge will be designed to meet the current City of Calgary accessibility design standards. Design features such as consistent accessible grades at 5 percent or less, continuous curbs at deck edges for cane detection, grab rails, covered expansion joints and contrasting colours at any vertical obstructions, will be incorporated into the design.

Bridge Structural Design & Aesthetics

Initial structure types were selected based on functional and technical requirements including accommodating emergency vehicles, improving flood resiliency, and maintaining accessible grades over the bridge. To select the most appropriate structure type, the project team developed 17 evaluation criteria which was further narrowed down to 8 during preliminary design. These evaluation criteria included aesthetics, pedestrian safety, capital cost, context sensitivity, schedule, structural resiliency to flooding, life cycle cost, and sustainability.

A tied arch bridge is the recommended bridge type for this site based on the evaluation criteria. The arch will be approximately 12 metres high and 60 metres long. Reference: Appendix I – Figure 1. The arches will have solid vertical members and be tied together at the top with crossed braces. Reference: Appendix I – Figure 2.

The tied arch bridge will allow for views of the surrounding landscaping while lending itself to customizations using banners and lights that could be tailored to events in the Park or temporary Public Art installations. During detailed design to further opportunities to enhance the user level experience on the bridge will be explored.

The bridge architect is collaborating with the architects working on the Promenade and Plaza designs to maintain a consistent design language throughout the area. The aesthetics of the bridge will be consistent with the location and its function.

Sustainability

The new Jaipur Bridge is being designed with sustainability as a key criterion. The tied arch design is the most efficient structure of those evaluated using the least amount of steel. The new structure is being designed to be low maintenance with potential features such as bioswales, LED lighting, and durable finishes. The bridge will encourage people to use active modes and enjoy the City's Regional Pathway system.

The Eau Claire Program team is looking at ways to minimize environmental and social impacts during construction: through strategic scheduling; minimizing space requirements; using well planned and signed detour routes; finding alternate venues and routes for events; and building stakeholder relationships.

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Lighting

The lighting design for the bridge will be targeting lighting levels similar in colour and brightness to those on the 2 Street Bridge and Riverwalk to the east. The lighting designer consulted internal stakeholders including Roads Street Lighting, Parks, Arts & Culture and Corporate Security on operational needs and desires, as well as the adjacent design teams.

The project is following the 2017 Calgary Parks Lighting Plan which states that lighting shall be provided on river pathways within downtown. The Plan also recognizes the inherent beauty that dark spaces can provide, and that minimal lighting allows for environmental protection and fiscal responsibility. Thus, the permanent lighting features will be focused on the pathway users' level while crossing the bridge.

Landscaping

The landscaping work to the north of the bridge in Prince's Island Park will follow the existing aesthetic design. To the northeast of the bridge the existing steps to the lagoon will be reintegrated with the new bridge. At the south end of the bridge the grading and landscaping design will be seamless with the new Promenade. The Bridge, Promenade and Plaza teams are all working together to coordinate a cohesive user experience for the public when all projects are complete.

Stakeholder Engagement, Research and Communication

Stakeholders including impacted City departments, were invited to participate in the project chartering session held in October 2018. Input into the project charter document was subsequently solicited from participants. One on one meetings were also held with key internal stakeholders on site to gather site specific input on topics such as trees, natural areas, Crime Prevention through Environmental Design, utilities and site amenities.

Public communication on the project has been delivered as part of the overall Eau Claire Program. On April 13, 2019 the City hosted an information and engagement session at the Eau Claire Market that featured multiple projects in the area and a team from City Arts and Culture department talked to event organizers about temporary accommodations during construction. The Eau Claire Program Manager and City Stakeholder Engagement specialists have been meeting regularly with stakeholder groups including Community Associations, developers, condominium boards, businesses, event organizers, and Business Improvement Associations as part of the overall stakeholder engagement strategy.

At the information session held on April 13 there were multiple remarks from the public about the name of the bridge and the Sister City Relationship it represents. Subsequently, the project team met with the President of the Calgary Jaipur Development Foundation, Mr. Omkar Channan, to learn more about the Sister City Relationship with Jaipur and enrich public communications. Details of some the activities that have occurred because of the Sister City Relationship have been included on the project website.

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Jaipur Bridge was officially named in 1994 to celebrate and acknowledge the Calgary Sister City Relationship with Jaipur, India. The new bridge will retain the same name as per City naming policy. The dedication plaques from 1994 will be remounted on the new bridge.

There is another information session for projects in the Eau Claire area on 2019 October 05 at the Chinese Cultural Centre.

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 stakeholders.

REASON(S) FOR RECOMMENDATION(S):

The Jaipur Bridge was constructed in 1968 and is at the end of its service life. It is regularly inspected due to its deteriorating condition caused by infiltration of salt laden moisture. Safety concerns were raised after an inspection in March of 2017 and loose concrete was removed from the soffit of the bridge. A subsequent structural evaluation in November 2017 recommended that the superstructure be replaced.

In addition to the deteriorating condition, the existing design of the Jaipur Bridge is a safety concern. The bridge has a cantilevered corbel ledge with drop in span design which has a history of sudden failure and is not compliant with the current bridge design standard. The City's plan to mitigate this safety risk is to take the existing bridge out of service before the end of 2020.

Construction of a new bridge offers the opportunity to improve the crossing's function, including:

- increased deck width from 3.785 metres to 6 metres to meet the access needs of emergency services while allowing people to exit the area, and meeting future traffic demand;
- railings that meet current design guidelines and safety codes;
- new low maintenance lighting to improve user safety;
- elimination of the piers in the lagoon to improve hydraulic capacity of the channel; and
- increased clearance of the structure over the lagoon to improve flood resiliency of the bridge.

The existing structure is currently well used by people visiting Prince's Island Park, attending events hosted on Prince's Island Park, enjoying the regional pathway system and commuting to downtown. The new bridge will better serve users by providing a safer crossing and will encourage increased use, by all active modes

ATTACHMENT(S)

1. Appendix I
2. CPC Report Briefing Jaipur Bridge Replacement