



Johnson Street Bridge Project – Path Forward

Governance & Priorities Committee
February 18, 2009

Engineering Department





Purpose

- Update Council on legal, engineering, schedule, and financial implications; and a public engagement strategy for project
- Seek Council's direction on advancing project



Overview

- Context
- Legal
- Engineering
- Project Schedule
- Financial
- Public Engagement
- Options



Context – Plans

- Bridge is part of key transportation corridor identified in several plans:
 - Council’s Strategic Priorities
 - Victoria’s Plans
 - Official Community Plan
 - Bicycle Master Plan
 - Pedestrian Master Plan
 - CRD TravelChoices Long-Range Transportation Study



Context – Strategic Relevance

- Bridge supports the economic vitality of the city through the movement of goods, services and people
- Carries 30,000 trips per day, including 4,000 pedestrians; 3,000 cyclists; daily commuter train
- Supports commercial & recreational marine users, including industrial activities in Upper Harbour
- Key regional trail link:
 - Galloping Goose / Lochside Regional Trail
 - Future E&N Rail Trail



Context – Project Considerations

- Council considered many factors in advancing the bridge project:
 - Embodied Energy
 - Heritage Value
 - Life Cycle Assessment
 - Regional Growth Strategy Objectives
 - Accessibility – for disabled community
 - Safety
 - Improved pedestrian & cycling [commuter & recreational] amenities
 - Marine Traffic
 - Traffic and Business Disruption



Legal Implications

- Heyes Decision [Canada Line] – Applies only if selected construction method creates nuisance and another method does not
- Duty of Care – City to ensure that bridge is maintained to reasonable standard
- Loan Authorization Bylaw – Must specify either rehabilitation or replacement, but not both



Legal Implications

- Referendum Question – Must identify specific purpose and borrowing amount
- Seismic Upgrades – While no legal or statutory requirement, must consider engineering standards for such projects [e.g., Canadian Highway Bridge Design Code]



Engineering Implications

- **Do Nothing:**
 - 2009 Condition Assessment Report
 - Pack rust / corrosion; obsolete electrical / mechanical equipment; seismic vulnerability
 - Risk of mechanical / electrical failure
 - Must address by 2012 or possibly consider closure
- Not an option due to risk, liability and economic impact



Engineering Implications

Seismic Requirements:

- 30%-35%* probability of major earthquake in next 50 years [M=7.0 to 7.9]
- Must meet current [2006] Canadian Highway Bridge Design Code to at least M=6.5 [1:475 seismic event]
- Aligns with provincial Ministry of Transportation bridge seismic retrofit program

•Referenced from Delcan information, 13th World Conference on Earthquake Engineering paper by Onur et al, and Dr. Garry Rogers, Natural Resources Canada



Engineering Implications

Seismic Requirements *continued*

- Bridge modelled using Nisqually, Washington earthquake [M=6.8] that occurred in February 2001
 - Point Ellice bridge designed to M=6.5 [1:475] standard
 - If M=6.5 seismic event occurred today, no emergency access across harbour
- **Bridge should be designed to “Lifeline” structure**

Seismic Design Category	After M=6.5 or 1:475 seismic event	After M=7.5 or 1:1000 seismic event	After M=8.5 or 1:2475 seismic event
LIFELINE	No damage	Emergency Vehicle Access	No collapse / Repair Needed
EMERGENCY	Emergency Vehicle Access	No collapse / Repair Needed	
OTHER	No collapse / Repair Needed		



Economic Impact to Downtown

Road Closures

- Bridge Rehabilitation
 - Scenario 1: Full closure
 - Bridge to be removed for about 10 months during 2-year construction period
 - Temporary Via Rail Train station on west side
 - Expect highest economic impact to downtown
 - Expected completion by 2013
 - Not recommended from economic impact, and impact to community and region



Economic Impact to Downtown

- Bridge Rehabilitation
 - Scenario 2: Night closures
 - Night work [7 pm – 7 am] only over 2 years
 - Must continue to allow marine traffic movements through bridge span as required
 - Impacts on nearby hotels and residences due to construction noise and high-intensity lighting of site
 - Expected completion by 2013
 - Not recommended from economic impact perspective to downtown night-time activity



Economic Impact to Downtown

- Bridge Rehabilitation
 - Scenario 3: Daytime lane closures
 - Temporary full closures over 3 years
 - Lane closures as required
 - Expected completion by 2014
 - Would have least economic and traffic impact to downtown area compared with Scenarios 1 & 2, although longer construction period expected
 - Greatest risk for higher construction capital and interest cost increases



Economic Impact to Downtown

- Bridge Replacement
 - New bridge built to north of existing
 - Temporary Via Rail station on west side
 - Decommissioning of rail bridge
 - Minor lane closures or temporary full closures as required
 - Expected completion by 2014



Economic Impact to Downtown

Ongoing research:

“[bridge / lane closures] in large urban centers or on highways due to bridge projects can have a significant economic impact on commercial and industrial activities. In many cases, the direct and indirect costs of traffic detours, the loss of the use of the bridge during construction, and the disruption to the local economy caused by a bridge project can exceed the actual cost of the bridge structure.”

[Source: Federal Highway Administration; Corporate Research & Technology – Priority, Market-Ready Technologies and Innovations List, Aug. 2009].



Project Schedule

- Council applied to Infrastructure Stimulus Fund [ISF] program to save city taxpayers \$42 million
- Chronology of key milestones:
 - Apr 2, 2009: Council received bridge Condition Assessment Report
 - Apr 23, 2009: Council gave approval-in-principle to replace bridge
 - May 1, 2009: ISF application submitted. City originally applied for 2/3s [\$42 million] funding for the \$63 million replacement project to be completed by March 2011
 - Sept 24, 2009: City advised that ISF application not approved



Project Schedule

- Applied under Building Canada Fund – Major Infrastructure Component for 1/3 funding up to a maximum of \$21 million under this program for completion by March 2016
- City applied for CHMC borrowing as interest rate lower than Municipal Finance Authority rate
- Oct 24, 2009: Minister Baird announced funding for bridge replacement under Building Canada Fund – Major Infrastructure Component.
- Nov 21, 2009 to Jan 4, 2010: Alternate Approval Process for project



Project Schedule

- Option A – June 2010 Referendum
 - Earliest possible date for referendum [replacement option]
 - Would not allow sufficient time for technical work on rehabilitation option



Project Schedule

- Option B – October 2010 Referendum
 - Earliest possible date for referendum [rehabilitation or replacement]
 - Allows technical work on rehabilitation option
 - Conduct high-level peer review by independent, qualified professional engineer
 - Citizens' Advisory Panel to continue as Project Steering Committee



Project Schedule

- MMM Group should continue as Owner's Representative on project
- Team is familiar with project
- Has required skills, knowledge and expertise to develop rehabilitation option
- Risk of losing design work completed to date
- Engaging another firm / team will add 4 months to schedule and delay referendum until 2011

Project Schedule

- Examples of bridge rehabilitation projects by MMM Group
 - Lasalle Causeway Bridge, Kingston, Ont.
 - Carrying Place Swing Bridge, Cornwall, Ont.
 - 8 moveable bridge projects



Lasalle Causeway Bridge



Project Schedule

- MMM Group currently technical manager to Cowichan Valley Regional District for Kinsol Trestle rehabilitation project





Financial Impacts

- Federal contribution for 1/3 of eligible costs up to maximum \$21 million for replacement option
- Federal Minister amenable to revised proposal subject to conditions
- Lower interest rate through CMHC no longer available due to revised project timelines
- Staff seeking additional funding opportunities:
 - Gas Tax Funds – General Strategic Priorities Fund through CRD, which could be added to federal contribution up to maximum 50% of capital cost
 - Insurance Corporation of BC – Road Improvement Program funding



Financial Impacts

Impacts to Date

- Cost to date for Project & Design Work [Replacement Option] **919,000**
- Loss of CMHC Financing
 - Annual Impact **398,000**
 - 20 Year Impact **7,960,000**

Potential Impacts

- Interest Rates
 - Annual Impact for each 1% increase **420,000**
 - 20 Year Impact **8,400,000**
- Construction Cost Escalation [estimated at 4% per annum]
 - Replacement Option **2,520,000**

Note: Same % rate impacts would apply for rehabilitation option



Financial Impacts

- June Referendum
 - \$140,000 to conduct referendum
 - \$50,000 for public engagement
 - No technical work for rehabilitation option
 - TOTAL = \$190,000



Financial Impacts

- October Referendum
 - \$140,000 to conduct referendum
 - \$150,000 for public engagement, including representative polling
 - \$400,000 for rehabilitation option technical work, design drawings and cost estimate
 - \$50,000 for independent peer review
 - \$100,000 for Economic Impact Assessment
 - TOTAL = \$840,000



Public Engagement

- Due to high level of public interest, this project requires comprehensive engagement strategy
- Upon direction from Council, staff will develop a public engagement plan that outlines objectives and required efforts



Public Engagement

- June Referendum:
 - Public engagement activities would inform the public of Council's decision leading up to referendum
 - Focus on replacement option
 - Estimated cost of \$50,000



Public Engagement

- October Referendum:
 - Public engagement activities would consist of 3 phases:
 - Phase 1 – baseline survey to gauge public’s understanding of issue
 - Phase 2 – engage public on rehabilitation or replacement options after technical work completed
 - Phase 3 – inform public of Council’s decision leading up to referendum
 - Estimated cost of \$150,000



Option A

1. Prepare a Loan Authorization Bylaw.
2. Undertake a Public Engagement Process;
3. Update the replacement cost based on revised timelines;
4. Proceed with a referendum in June 2010 to borrow the funds to replace the Johnson Street Bridge.



Option B

1. Proceed with additional technical consulting work by the Owner's Representative for a rehabilitation option for the Johnson Street Bridge Project to a similar level of detail and costing as the current replacement option;
2. Develop a public engagement process;
3. Update the replacement cost based on revised timelines;
4. Conduct a peer review of the technical work by a qualified third party professional consulting engineer;
5. Undertake an Economic Impact Assessment regarding the closures for each option;
6. Report back to Council with information from the additional technical work.
7. Prepare a Loan Authorization Bylaw;
8. Proceed with a referendum in October 2010 to borrow the funds for the Johnson Street Bridge project;
9. Expand the Project's Citizens' Advisory Panel Terms of Reference and scope to include a rehabilitation option.



Questions