
Rail Relocation versus Grade Separation Feasibility Study – Phase 1 Report

Recommendation

That the Standing Policy Committee on Transportation recommend to City Council:
That Phase 2 of the Rail Relocation versus Grade Separation Feasibility Study proceed with a modified scope as outlined in this report.

Topic and Purpose

The purpose of this report is to provide information and update on Phase 1 of the Rail Relocation versus Grade Separation Feasibility Study, and recommend a modified scope for Phase 2 of the study.

Report Highlights

1. The scope of work for Phase 1 of the study is provided and is complete.
2. The impacts of the grade separation options are discussed. Based on the limited financial benefit and the significant impacts to adjacent property, the grade separation option should not be pursued further.
3. The impacts of the rail relocation options are discussed. While financial benefit is limited based on current assumptions, the option of relocation may have some merit if an agreement can be reached for Canadian National (CN) and Canadian Pacific (CP) Railways to operate in a shared corridor through Saskatoon.
4. A financial assessment of the costs and benefits are provided.
5. A summary of the study outcomes is provided.
6. Details on a modified scope for Phase 2 are provided.

Strategic Goal

This report supports the Strategic Goal of Moving Around by providing safer roads for all road users, and improving the flow of people and goods in and around the City.

Background

At its meeting held on May 8, 2017, City Council awarded a contract to HDR Corporation (HDR) for the completion of the engineering study “Rail Relocation versus Grade Separation Feasibility Study” with the intent of economically examining options for reducing rail delays throughout the city. The study was separated into two phases, with Phase 1 including a detailed economic evaluation of either relocating the existing CP line outside of the city limits or constructing grade separations at some or all of the nine priority at-grade rail crossings (five CP crossings and four CN crossings). If the first phase of the study recommended relocation, a second phase would focus on the documents and designs required to work with CP and the federal government on a relocation strategy. If the first phase of the study recommended grade separation, the second phase would focus on developing detailed functional plans with enough

engineering and design for each proposed grade separation to provide confident construction estimates and the subsequent preparation of tenders for detailed design. Significant stakeholder and public engagement was not included in the scope of Phase 1 but was included in Phase 2 (should it proceed).

Report

Phase 1 Scope of Work

The initial phase of the study included the following work:

- Preliminary design concepts for five CP grade separations, and four CN grade separations at the following locations:

CP Locations	CN Locations
22 nd Street W	33 rd Street W
25 th Street W	Marquis Drive
3 rd Avenue N	11 th Street W
Preston Avenue	51 st Street W
Central Avenue	

- Preliminary design concepts of four possible corridors for rail relocation:
 - Option 1 – Negotiated Use of the Existing CN Rail Right-of-Way (operate in shared corridor along existing CN Rail Right-of-Way)
 - Option 2 – Near Grasswood Road in the Rural Municipality of Corman Park (RM), south of the City Limits
 - Option 3 – Proposed Saskatoon Freeway alignment (north of City)
 - Option 4 – Near Victor Road in the RM, further south of the City Limits
- An estimation of the relative benefits and costs for each grade separation and the preferred option of rail relocation.
- Each option was evaluated financially based on its Benefit Cost Ratio, and Net Present Value.

Grade Separation Option Assessment

Grade separations would provide the benefits of savings to travel time, improved safety, avoided emissions, and reduced vehicle operating costs. However, many locations examined for grade separation have significant private property impacts and create other issues, including:

- Permanent loss of access to and/or from the arterial street.
- Significant business disruption during a minimum of two years of construction.
- Underpasses present significant concerns for stormwater management and Crime Prevention Through Environmental Design (CPTED).
- Both underpasses and overpasses introduce vertical concrete walls up to seven metres in height; for overpasses these structures would physically separate neighbourhoods, be visually unpleasant, and may be taller than adjacent properties.
- Overpasses treat vehicular traffic with priority at the expense of pedestrians and cycling.

CP Rail Relocation Option Assessment

CP rail relocation provides benefits over and above that for the program of five CP grade separations. Many of the benefits of rail relocation are difficult to quantify, and are instead improvements to quality of life, improved emergency response, and greater community cohesion. Specifically:

- Relocation avoids the significant private property impacts on existing development within the city, but may impact property in the Rural Municipality of Corman Park (RM).
- Relocation provides an opportunity for neighbourhood and community cohesion through the elimination of both a physical and a psychological barrier.
- Relocation avoids the long disruptive construction period with permanent disconnections likely to occur along the construction zone at each grade separation.
- Relocation eliminates the safety concerns near at-grade crossings in the city, and improves the accessibility and safety for vulnerable road users such as pedestrians and cyclists.
- Relocation provides redevelopment opportunities along the corridor, for the existing CP Sutherland Rail Yard, and for adjacent properties.
- Relocation reduces persistent delays for transit and emergency response throughout the city, not just at five CP crossings that would be grade separated.
- Vibrant cities encourage street use and integrated, supportive land uses; the presence of rail, with or without grade separations creates pockets of sterile places potentially without safe on-street activity.
- Relocation reduces the presence of hazardous material rail traffic within city limits.
- Relocation reduces the issue of the expected increase to rail traffic over time.
- Relocation avoids future land development driven grade separations at 8th Street East and Zimmerman Road for a total of \$70 million.

Financial Assessment of Both Options

Detailed financial analysis was completed for a number of scenarios:

- Nine grade separation locations;
- Two innovative options, including elevating the CP line through the downtown or trenching the CP line through the downtown; and
- Option 2 of the rail relocation scenario.

The feasibility of relocating rail and selecting a corridor is largely tested by the legislative requirement to not impose additional costs on the railway and not extend the route relative to the CP's current route through the City. On that basis, the feasibility of options 3 and 4 were eliminated and only options 1 and 2 were selected for further consideration. Option 2 was selected for detailed financial assessment as it was deemed, at the time, to be the option with the most potential, as option 1 increases in complexity with the inclusion of CN. A summary of the financial analysis completed for the various options is provided below.

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	CP Grade Separation - 5 locations (millions)	CN Grade Separation - 4 locations (millions)	CP Rail Relocation (Option 2) (millions)	CP Elevate Existing Line (millions)	CP Trench Existing Line (millions)
With undiscounted costs and benefits:					
Construction Cost	\$233.6	\$140.8	\$589.7	\$208.4	\$591.4
30 yr Total Benefits	\$153.2	\$64.8	\$392.1	\$100.9	\$196.4
Benefit Cost Ratio	0.66	0.46	0.66	0.48	0.33
Net Benefits	\$-80.3	\$-76.1	\$-197.6	\$-107.6	\$-395.0
With discounted costs and benefits (10% over 30-years)					
Construction Cost	\$180.8	\$109.0	\$385.3	\$136.2	\$375.8
30 yr Total Benefits	\$22.8	\$9.50	\$86.5	\$12.5	\$19.6
Benefit Cost Ratio	0.13	0.09	0.22	0.09	0.05
Net Present Value	\$-157.9	\$-99.5	\$-298.8	\$-123.7	\$-356.2

A Benefit Cost Ratio of 1.0 or greater, or a positive Net Present Value would indicate a beneficial financial outcome.

Study Outcome

The results of the assessments yields the following:

- From a pure monetary point of view, neither option proves viable at this time given the current assumptions. The proposed options do provide intangible benefits that are difficult to quantify including improved emergency response times, access to community services and facilities, and neighbourhood aesthetics and cohesiveness.
- The impacts of grade separation option on the adjacent properties are significant and this option should not be pursued further.
- If an agreement to operate in a shared corridor can be reached, the relocation option may have some merit in the long-term despite not providing pure monetary benefits.

Modified Scope of Phase 2

Based on the study outcomes, the Administration has developed a modified scope of work for Phase 2 as outlined below:

- Investigate opportunities to use technology to reduce the impact of delays related to rail activity throughout the City. This would be done in conjunction with the Bus Rapid Transit work currently underway.
- Revise HDR's scope of work for Phase 2 to evaluate CN and CP operating in a shared corridor through the City of Saskatoon as follows:
 - Background & Conceptual Corridor Design - Prepare more detailed engineering drawings exploring the feasibility of using the existing CN right of way by CP. For example this work would further determine the property requirements (if any), and the adjustments to road structures (for example the Highway 11 and Clarence Avenue grade separations) to facilitate this option.
 - CP Discussions
 - CN Discussions
 - Joint CN-CP Session
 - Conceptual Corridor Review with City of Saskatoon and Next Steps

- Engage the RM Administration throughout this process.
- The cost to complete this work is estimated to be \$100,000. Currently there is approximately \$300,000 remaining in this Capital Project.
- Approval from the Province will be sought to reallocate the remaining \$200,000 in Public Transit Infrastructure Funding (PTIF).

Further details on HDR's revised scope of work for Phase 2 is included in Attachment 1.

The consultant's detailed report summarizing phase one of the study is included as Attachment 2.

Options to the Recommendation

1. City Council may choose to pursue the grade separations option. The Administration does not recommend this course of action as many of the nine separations analyzed during Phase 1 included significant private property impacts. During construction, each location would be closed for a minimum of two years; impacting adjacent commercial properties by eliminating or greatly reducing their access. After opening, each grade separation may have permanently altered the commercial development along the corridor through access restrictions and connecting street closures.
2. City Council may choose to not pursue the revised scope of work for Phase 2. The Administration does not recommend this option as there may be some merit to the rail relocation option if an agreement can be reached between CN and CP to operate in a shared corridor. With the growing City, the following risks will remain outstanding:
 - Increased costs associated with later selection of relocation.
 - Continued economic costs to the City through delays, poor travel time, fuel use, emissions, vehicle operating costs, poor emergency response performance, and interrupted transit service along the Bus Rapid Transit (BRT) corridors.
 - Continued rail crossing collisions and community safety concerns.
 - Continued hazardous goods travel through the city, which will increase with increased train frequency and length.
 - Increased economic costs associated with increased train frequency and length.

Public and/or Stakeholder Involvement

During the course of Phase 1, updates were provided to the Rail Working Group, the P4G Project Manager, the RM of Corman Park Administration, and CP.

Stakeholder engagement for the property owners and Executive Directors of three Business Improvement Districts who would potentially be impacted by grade separations occurred on February 28, 2018. One hundred and fifty-two invitations were mailed to owners whose property was immediately adjacent to a proposed grade

separation embankment. Twenty-seven people attended the information session on February 28, 2018. A summary of responses generated during the event is provided as Attachment 3.

Communication Plan

Communications materials were developed by the consultant for Phase 1 of the study, and those materials have been incorporated into the project report.

Financial Implications

There are no financial implications to the recommendation as sufficient funding exists in Capital Project #1456 – TU Railway Crossing Safety Improvements to complete the revised scope of work for Phase 2. Remaining PTIF funds will be redirected to other eligible projects.

Environmental Implications

Delays at rail crossings increase fuel use, greenhouse gas emissions, and air pollution associated with vehicle idling. The environmental impacts of delays, given the current and forecast traffic and train volumes have been quantified in Phase 1 of this project and included in the benefit analysis.

Other Considerations/Implications

There are no policy, privacy, or CPTED considerations or implications assuming that the grade separations options are not pursued.

Due Date for Follow-up and/or Project Completion

No additional follow-up will be required with the completion of Phase 1. The Administration will provide a report to the Standing Policy Committee of Transportation at the end of Phase 2.

Public Notice

Public Notice pursuant to Section 3 of Policy No. C01-021, Public Notice Policy, is not required.

Attachments

1. Details on phase two scope of work
2. Rail Relocation versus Grade Separation, HDR Corporation, November 2017
3. Stakeholder Engagement Summary

Report Approval

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