

Freeway Interchange Planning: A Public Involvement Success Story

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Abstract

For planning of major transportation projects, technical analysis is important, however public engagement is playing an increasingly critical role in the development and acceptance of technically complex transportation infrastructure.

Over the past two years, the City of Edmonton has completed a freeway interchange planning project for Yellowhead Trail using a collaborative approach with area stakeholders. This approach stemmed from a desire to develop a technically feasible conceptual plan while building understanding and support from area stakeholders.

The bulk of the planning study was completed by in-house City staff. To aid in some of the more technically complex aspects of the planning study, the City retained the services of a consultant to advise the team through the technical details of developing and refining interchange options. Additionally, a public involvement consultant was retained to support public engagement and communication aspects of this project.

The study area is currently fully developed and most interchange configurations have the potential to impact numerous operating businesses. The project team designed a program to allow area stakeholders to participate during the development, refinement, and selection stages of the interchange planning process. This approach was used as a means of reducing potential public and political backlash that may result from large, transformative projects.

Throughout the study, the project team worked with a group of area stakeholders assembled to provide the City with input to aid in decision making processes. Over a series of workshops, the stakeholder group was educated regarding interchange planning, discussed site-specific issues, developed and reviewed options, prepared evaluation criteria, and assisted the City in refining and narrowing down options.

The process successfully solicited input from stakeholders and ultimately resulted in understanding and general agreement with the recommended option. A unique solution was arrived at for the area which balances the needs of the City with the needs of area stakeholders. This solution may not have been selected through a traditional planning process.

The public engagement process utilized in this planning study has provided insight and valuable lessons learned that will be implemented in future studies to enhance public engagement.

1.0 Introduction

Public engagement is playing an increasingly critical role in the development and acceptance of technically complex transportation planning studies. In recent years, the City of Edmonton has updated its approach to road planning to include a greater focus on public engagement, providing the general public and impacted stakeholders with opportunities throughout the planning process to weigh-in on decisions that may change the road network around them.

Over the past two years, the City of Edmonton has been undertaking a freeway planning study for Yellowhead Trail at 149 Street using a collaborative approach with area stakeholders. The collaborative approach used on this project stemmed from a desire to educate stakeholders about the planning process and to build understanding and support from these stakeholders for the ultimate plan.

2.0 Background and Study Area Context

Yellowhead Trail is one of the busiest roadways in the City of Edmonton and one of the most important east-west goods movement corridors within the City. Traffic demand along this corridor is anticipated to grow as development in and around Edmonton continues. Projections indicate that traffic can be expected to double over the next few decades to volumes in excess of 100,000 vehicles per day. In response to the importance of this route as a goods and service corridor, in 2011 the City of Edmonton completed the *Yellowhead Trail Strategic Plan*¹ to identify, at a high level, the improvements needed to upgrade Yellowhead Trail to a freeway standard. The Strategic Plan identified a number of upgrades, including closures of at-grade intersections and accesses, modifications to existing interchanges, and the construction of new interchanges. One of the upgrades identified in the Strategic Plan was a new interchange at 149 Street (see Figure 1).

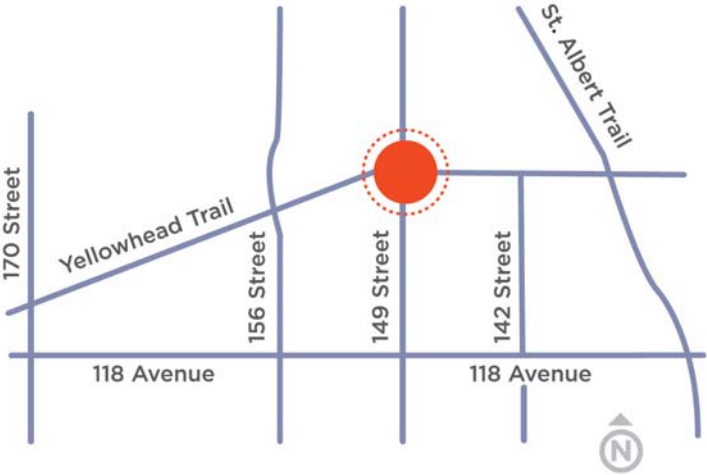


Figure 1 – Project Location

At present, 149 Street connects to Yellowhead Trail at a signalized intersection. South of Yellowhead Trail, 149 Street is a 4-lane arterial connection surrounded primarily by commercial and light industrial land uses. To the north of Yellowhead Trail, 149 Street ranges from a 2 to 4-lane undivided arterial cross-section. The CN Rail mainline parallels Yellowhead Trail and

crosses 149 Street at-grade, contributing to over 40 train crossings of 149 Street each day with several minutes of delay per crossing for vehicles using 149 Street north of Yellowhead Trail.

The area surrounding the 149 Street / Yellowhead Trail interchange is fully developed, consisting of a number of industrial and commercial businesses which currently take access directly from Yellowhead Trail or via services roads paralleling the corridor.

The proposed interchange at 149 Street is located between two existing interchanges along Yellowhead Trail. The existing 156 Street interchange is located 890 m to the west of 149 Street, while St. Albert Trail interchange is located 1370 m to the east of 149 Street. The spacing between these key north-south corridors (156 Street, 149 Street, and St. Albert Trail) makes proper interchange planning and design difficult due to the constrained space and lack of ideal interchange spacing. This task is further complicated by development surrounding the proposed interchange.

3.0 Planning Process Overview

Following the completion of the *Yellowhead Trail Strategic Plan*¹, the City of Edmonton initiated a planning study for an interchange at Yellowhead Trail / 149 Street. Although there are a number of major improvements to Yellowhead Trail proposed through the Strategic Plan, 149 Street was selected to be reviewed first for a number of reasons. 149 Street is the first signalized intersection driver's encounter when entering the City via Yellowhead Trail from the west, it experiences significant traffic and significant delay, and this intersection is currently one of the highest collision locations in the City. Based on total number of collisions, the City of Edmonton's Office of Traffic Safety has ranked Yellowhead Trail / 149 Street intersection among the City's highest collision locations for a number of consecutive years. Improvements at Yellowhead Trail / 149 Street were considered to have the potential to reduce delay for drivers traveling along Yellowhead Trail, reduce emissions due to idling at the existing intersection, and to reduce collisions.

In early 2012, the City of Edmonton initiated the planning study. The Project Team included primarily in-house City staff from the Transportation Planning Branch, a technical advisor consultant, and a public engagement consultant

The premise of the planning study was to develop an interchange concept plan, including the completion of all technical analysis and public engagement. In developing the project approach, the Project Team acknowledged issues with other technically complex projects previously completed. In many ways, issues with previous projects were related to public engagement, particularly the lack of understanding and support from stakeholders related to the ultimate concept plan. With this being acknowledged, the Project Team endeavoured to learn from past projects and developed a project approach that would help to build ownership and understanding of the ultimate plan by involving the stakeholders throughout the planning process in a more hands-on way than was done in the past.

The area surrounding Yellowhead Trail / 149 Street intersection is fully developed, and at the outset, the Project Team was aware that most interchange configurations had the potential to impact numerous operating businesses. The project approach centered around a well-defined public engagement program to ensure that stakeholders were provided with multiple opportunities to be involved in the planning study and to ensure that these stakeholders had the chance to weigh-in on decisions that would help to shape the plan development and guide

decision-making. The project team designed a program to allow area stakeholders to participate during the development, refinement, and selection stages of the interchange planning process to ensure that stakeholders would ultimately understand how and why the final plan was selected. The project approach was targeted at building *understanding and support* from stakeholders through this process.

The public involvement process was closely integrated into the planning process, with the public engagement and feedback influencing the option development, option evaluation, and concept refinement throughout the duration of the planning study.

4.0 Public Engagement Process Overview

The public engagement process for this planning study took place between June 2012 and September 2013. It included a number of opportunities for stakeholders to participate and to provide input, including:

- two public meetings
- eleven stakeholder interviews
- five Stakeholder Input Group workshops

Public meetings (i.e. open house, information sessions) as well as stakeholder interviews (also called profiling interviews) had been used in the past by the City's Transportation Planning Branch, but the Stakeholder Input Group workshops were a new approach for Transportation Planning and had not been used in the past by the City's Project Team on similar planning studies.

4.1 Open House

The planning study was rolled-out to the general public through an initial open house designed to introduce the project to the public and to gather initial thoughts on issues, constraints, and opportunities for the project. The open house also provided attendees with the opportunity to sign up for a Stakeholder Input Group to allow them to participate in more targeted discussions about the project. The Stakeholder Input Group process is the primary focus of this paper.

4.2 Stakeholder Interviews

The initial open house was followed by a series of interviews with area businesses and stakeholder groups. These interviews were held to gather local knowledge from stakeholders and to collect initial thoughts on the proposed public involvement plan. The interviews were conducted with a number of local businesses, a representative trucking association, the Yellowhead Highway Association, among others. The input gathered from these interviews was used to refine the proposed public involvement plan and to start designing the next phases of the planning process. With input from the open house and the stakeholder interviews, the Project Team was in a more informed position with regard to some of the local issues, concerns, and visions for the area.

4.3 SIG Workshops

Starting in fall 2012, volunteers from the open house and from the interviews that followed were assembled into a group referred to as a Stakeholder Input Group. Over a series of workshops, the Stakeholder Input Group was educated regarding interchange planning, discussed site-specific issues, developed and reviewed options, prepared evaluation criteria, and assisted the City in refining and narrowing down options.

The process successfully solicited input from stakeholders and ultimately resulted in understanding and general agreement with the recommended option. A unique solution was arrived at for the area to balance the needs of the City with the needs of area stakeholders. This solution may not have been selected through a traditional planning process. The public engagement process utilized in this planning study has provided insight and valuable lessons learned that will be implemented in future studies to enhance public engagement.

4.4 Open House

An open house was held in fall 2013 to present the two preferred strategies to the general public. The open house provided attendees with an overview of the planning study process, an overview of the work completed with the Stakeholder Input Group, and ultimately a presentation of the two strategies for review by the public. Participants of the Stakeholder Input Group ultimately attended this open house informally advocating for the process undertaken to arrive at the resultant strategies.

5.0 Stakeholder Input Group - Detailed Workshop Process

As mentioned, the City worked closely with the Stakeholder Input Group from the early stages of the planning study through to the selection of the preferred concept plan. The process was developed to ensure that the group was able to provide input at all stages.

5.1 Workshop #1: Visioning

The initial workshop with the Stakeholder Input Group was centered around reviewing the project scope and objectives and to ensure that participants were aware of their role in the planning process. Participants were first introduced to the City's vision for Yellowhead Trail as a freeway facility to give them the background on why this planning study was being undertaken.

The Stakeholder Input Group was then involved in a detailed discussion of the group's role. This discussion included the development of a Purpose Statement and Guiding Principles. To get the discussion started, the City came prepared with a draft Purpose Statement and Guiding Principles. Through a facilitated discussion, the participants modified and agreed to the Purpose Statement and the Guiding Principles which became a framework for the attendees to refer to as a means of clarifying their role in the planning process.

To set the stage for the following workshops, the participants were asked to provide their thoughts on criteria that should be used to evaluate options and to select a preferred interchange configuration. Participants provided feedback on what they considered to be

important. Their thoughts were assembled together with criteria developed by the City to ultimately form a complete list of evaluation criteria to be used in later stages of planning. Evaluation criteria ranged from access accommodation and land impacts, to construction cost, to accommodation of active modes of transportation. The evaluation criteria developed through this process was thorough and ultimately reflected not only the City's priorities, but the priorities of stakeholders in the area.

The initial workshop was a critical step in the public engagement process because it set the stage for future workshops by ensuring that in the Stakeholder Input Group and the City had the same expectations. Materials discussed and developed at this workshop were revisited throughout subsequent workshops.

5.2 Workshop #2: Interchange 101

After revisiting the results of the first workshop with participants and reminding the Stakeholder Input Group of their Purpose Statement and Principles, the second workshop provided participants with an overview of interchange planning and design principles. With the majority of participants being unfamiliar with City planning processes and unfamiliar with interchange designs and application, the Project Team felt it was important to ensure that the participants were aware of basic interchange concepts to enable them to understand why some concepts apply better than others under a particular set of circumstances. Through the "Interchange 101" segment prepared by the City's Project Team, participants were introduced to a wide variety of interchange configurations, their common applications, along with pros and cons of each.

This basic education in interchange planning and design helped to ensure that participants were empowered to provide input and suggestions in later workshops when reviewing interchange configurations for the study area.

As an addition to the second workshop, participants were asked to build upon the evaluation criteria discussion that was held during the first workshop. Participants were asked to prioritize the established criteria by applying weightings to indicate which criteria they felt were the most important to them. This exercise was also completed by City staff to ensure the end result was a balance of the needs and desires of the City as well as area stakeholders.

5.3 Workshop #3: Option Review

At the third workshop, the Project Team presented 15 interchange configurations to the Stakeholder Input Group. The interchanges were shown within the context of the study area to demonstrate the true scale of impact that each interchange configuration would have on the area. In addition, because many of the Stakeholder Input Group participants were representatives of local businesses or residents, the interchange configurations were matched up with a wide variety of access scenarios to illustrate to participants how they could expect to access the surrounding road network and how they could potentially access the local businesses.

The configurations presented included a wide variety of scenarios, including partial cloverleaf style interchanges, tight diamond and single point interchanges, as well as configurations that limit network connectivity such as flyovers and full closure of 149 Street.

Participants were broken into small groups to review the interchange and access configurations. The discussion and feedback that followed was focused on the benefits and consequences of each option, particularly with respect to the footprint (size) of each configuration and associated land impacts, business access, and access to the surrounding road network. Ultimately the discussion of each option was ended with a question to the stakeholders as to whether they felt the option should be carried forward for further consideration during the formal evaluation to be conducted during the next workshop.

This workshop provided participants with a greater understanding of the balance that must be struck between freeway operations, network connectivity, and local access. The participant's comments and suggestions were reviewed in conjunction with technical analysis to arrive at a shortlist of options for further review and refinement.

5.4 Workshop #4: Option Refinement

Prior to Workshop #4, a substantial amount of technical work had been completed to verify the technical applicability of some of the interchanges within the context of the 149 Street study area. This technical analysis, combined with the feedback from the participants of the first three workshops, allowed the Project Team to narrow down the options for formal evaluation. By this time, it was becoming clear to participants that the number of potential options for consideration was being narrowed down and the level of detail was starting to increase.

Stakeholder input and subsequent review by the Project Team resulted in a short-list of seven configurations for evaluation at the fourth workshop. In some cases, options were carried forward that the stakeholder group suggested be discarded. In general, these options were carried forward for their technical merits. However, in many cases, the Project Team agreed with the input and recommendations of the Stakeholder Input Group and the short-list of options carried forward to Workshop #4 were a strong reflection of the input provided.

The seven options carried for further review at this workshop were thought to be the options that fit best into the area, provided the best local and road network access, and were generally most favourable based on input from the Stakeholder Input Group.

The group was reminded of the evaluation criteria developed during the first and second workshops. This evaluation criteria was then used by the Stakeholder Input Group and the Project Team to conduct a formal evaluation of the seven remaining options.

To allow participants to complete the formal evaluation, stakeholders were provided with information for all options broken down based on each evaluation criteria. The information ranged from quantitative measures such as construction cost to qualitative data such as community impacts. Stakeholders were asked to review the material and then to score each of the options based on the each of the 11 identified evaluation criteria. The Project Team also participated in this exercise.

The intent of this formal evaluation was to narrow down options to a set of technically feasible design options that best meet the evaluation criteria identified collaboratively by the City's Project Team and the Stakeholder Input Group.

Often times, stakeholders are not part of this level of evaluation. By involving them in the detailed analysis and formal evaluation of the options, the City was able to ensure that options carried forward during subsequent stages were direct reflections of the stakeholder feedback. This was another important step toward developing the understanding and support that this process was focused on developing.

5.5 Workshop #5: Final Evaluation

Following the fourth workshop, a detailed review of the technical feasibility of the remaining options was conducted by the Project Team. Based on this review, two major technical flaws were identified. These flaws were related to insufficient weaving distance, as well as structural constraints at the 156 Street interchange which rendered a number of the options undesirable from a technical perspective. Five of the seven options evaluated at the fourth workshop were eliminated from further consideration as they were not desirable from a safety, operational, or feasibility perspective.

The elimination of a number of options based on the technical analysis left two options remaining, one which was considered favourable by the Stakeholder Input Group (a half-diamond interchange configuration) and another that was not looked upon favourably (full closure of 149 Street).

To alleviate the concerns about the full closure of 149 Street, the Project Team took the opportunity to further explore the use of alternative designs, particularly the use of frontage roads. Up to this point, a number of options were explored using collector-distributor roads, but none had made use of potential frontage roads which would provide better access to the surrounding developments. A set of refined options were developed using this approach.

Ultimately, the Project Team arrived at three options that were determined to meet the evaluation criteria and technical analysis. A follow-up workshop was arranged to update the Stakeholder Input Group of the project progress and to collect feedback on the top three options.

The three strategies for consideration by the Stakeholder Input Group included:

1. Diamond interchange with ramps on the northwest, northeast and southeast quadrants
2. One-way frontage roads with at-grade crossing of CN Mainline and closure of 149 Street across Yellowhead Trail
3. Full closure of 149 Street at Yellowhead Trail with an underpass of the CN rail mainline

The three strategies presented at the final workshop were refined versions of the options that remained following the fourth workshop. The Stakeholder Input Group provided candid feedback on the remaining options, primarily expressing favour for the option which provided access to area businesses via one-way frontage roads. They expressed that this option provided adequate access to the surrounding area with little disruption to existing

businesses and lowest cost. Stakeholders expressed that this option provided the best balance of business access, road network connectivity, and freeway operations.

The full closure of 149 Street was found to be least favourable by the Stakeholder Input Group, primarily as a result of circuitous access. The full closure of 149 Street was eliminated from further evaluation and subsequently two strategies were carried forward for review and input from the general public.

6.0 Plan Selection

The Stakeholder Input Group process formed a critical component of the planning study and ultimately helped the Project Team to arrive at two concepts for the corridor that best balance the objectives of the planning study with the needs of area stakeholders. More importantly, by the end of the public engagement process, those who participated in the Stakeholder Input Group workshops had a better appreciation of the complexity of the planning study and understood how the final concepts were derived. It is this understanding and appreciation of the final outcome that can be credited for the reduced resistance to the final two concepts.

In mid-2014, the City of Edmonton will provide a project update and recommendation to Transportation Committee of City Council.

7.0 Summary

This planning study was a test of a different type of public engagement process for the City of Edmonton's Transportation Planning Branch. The public engagement was closely integrated into the concept plan development and refinement process in a hands-on way. A number of lessons were learned from this study. These lessons have been used to refine subsequent planning study public engagement processes.

Part way through the public engagement process, the City learned that a number of stakeholders were concerned that they were not invited to participate in the Stakeholder Input Group process. There was a desire to allow more opportunities to participate in this group. For future studies, a more inclusive and thorough process to solicit participation in the Stakeholder Input Group would be advisable to help alleviate concerns from stakeholders that they were not given an opportunity to weigh-in on important decisions impacting their surrounding road network. For this project, the City invited participation in the Stakeholder Input Group through a volunteer sign-up sheet at the initial open house as well as through targeted requests to those who participated in the initial stakeholder interviews. In the future, it is recommended that additional opportunities be provide to area businesses and residents to participate in the Stakeholder Input Group.

The Stakeholder Input Process used for this planning study took significant planning, preparation and time. The Project Team devoted countless hours planning and preparation for each and every workshop, ensuring that the most thorough information was provided in the limited time available. Not only did the Project Team devote significant time and effort to these workshops, but participants did as well. Each workshop was scheduled for approximately three hours, totalling 15 hours of workshop time for each and every participant. As a result of the time and effort devoted to this process, the Stakeholder Input Group was a success in the sense that participants were educated on the interchange planning process and ultimately understood how

the final two strategies were developed. This process may not apply in all situations, but is well worth the time and effort for technically complex and potentially controversial projects.

The Stakeholder Input Group process gathered a wide variety of stakeholders with varying perspectives in the same room working toward a common goal. These stakeholders included area businesses, residents, trucking associations, and City staff. Ultimately, the individuals who participated in the process from start to finish have a strong understanding of the technical design aspects and the wide variety of perspectives that came together to form the ultimate recommendation and are advocates for the process, and in many cases are proponents of the end result.

At the end of the last workshop, members of the Stakeholder Input Group were asked to provide feedback on their involvement in the Stakeholder Input Group. To the credit of the process, some members noted that the level of effort and level of detail was appreciated. Furthermore, these same stakeholders acknowledged that the process provided them with an opportunity to contribute to the project in a meaningful way and noted that the City should consider this method on other major projects.

8.0 References

1. ISL Engineering and Land Services. 2012. Yellowhead Trail Strategic Plan (156 Street to 50 Street).