

**Transportation Report to
SPC on Transportation and Transit
2018 July 19**

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TT2018-0827
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Glenmore Trail East Functional Planning Study

EXECUTIVE SUMMARY

The purpose of this study is to modify and replace the previous approved 2007 Alberta Transportation Highway 560 Functional Planning Study from Stoney Trail to Rainbow Road (Range Road 283). Modifying the long-term transportation plan will allow Administration to protect the required long-term right-of-way to provide full-access connectivity to accommodate the future land use plans in this area. The future land uses were identified from the previously approved area structure plans (ASP) prepared by The City - Shepard Industrial ASP (2009, amended 2013), and Rocky View County - Janet ASP (2014).

Glenmore Trail is part of the provincial Highway 560 operated by Alberta Transportation (AT), and is the border between The City of Calgary and Rocky View County (RVC). The Planning study was a collaborative project between AT, RVC, and The City of Calgary to ensure that all three governments objectives were accomplished. A major landowner to the south of Glenmore Trail, Ronmor Holdings Inc. also played a key role in the study. Throughout the study, all parties collaborated on the creation and design of concepts ensuring alignment with provincial and municipal guidelines and policies. The study area of the entire corridor from Stoney Trail East to Rainbow Road is shown in Attachment 1. 100 Street S.E. and 116 Street S.E. are located within The City of Calgary boundary, whereas Rainbow Road is outside city jurisdiction and located solely in the RVC.

Based on the technical evaluation and input from public engagement, the project team recommended three full-access diverging diamond interchanges (DDI) at 100 Street S.E., 116 Street S.E. and Rainbow Road as shown in Figures E.7 to E.9 in Attachment 2, Glenmore Trail East Functional Planning Study Executive Summary. In the previously approved 2007 AT Highway 560 Functional Planning Study, there was no access provided to 100 Street S.E. off Glenmore Trail. It is anticipated that the interchanges will not need to be constructed for over 20 years, based on the current land use and development assumptions in The City's Regional Transportation Model (RTM).

Once approved by Council, the required right-of-way for the long-term plan shall be protected and can be acquired on an opportunity basis in the future, as shown in Attachment 3, Long-term Property Requirements. There is no immediate need to purchase the additional required properties. A total of four distinct construction stages for delivering the recommended plan are identified, as shown in Figures E.11 to E.14 in Attachment 2.

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ADMINISTRATION RECOMMENDATION:

That the SPC on Transportation and Transit recommends that Council:

1. Approve the Glenmore Trail East Functional Planning Study Report including the recommended interchange plans located within Calgary city limits identified in Figures E.7 and E.8 in Attachment 2.
2. Direct Administration to protect the required right of way for the long-term plan identified in Attachment 3.

RECOMMENDATION OF THE SPC ON TRANSPORTATION AND TRANSIT, DATED 2018 JULY 19:

That the Administration Recommendations contained in Report TT2018-0827 be approved.

PREVIOUS COUNCIL DIRECTION / POLICY

N/A

BACKGROUND

In 2007, AT completed the Highway 560:02 Functional Planning Study. The Study recommended the upgrade of Highway 560, known as Glenmore Trail in Calgary city limits, to a high-speed, six-lane divided highway with diamond interchanges at 116 Street S.E. and Rainbow Road, with no access to 100 Street S.E. The two originally-planned interchanges were located 400 metres west of 116 Street S.E. and along the existing alignment of Rainbow Road.

In 2009, AT agreed to The City's request to plan a half diamond interchange at 100 Street S.E. This request was made due to the closure of the intersection at 84 Street S.E. after the opening of Southeast Stoney Trail and the potential future developments in The City's Shepard Industrial Area Structure Plan on the south side of Glenmore Trail.

In 2013, AT agreed to the request to consider realigning the interchange at 116 Street S.E. Both approvals were subject to completion of an updated functional planning study for Glenmore Trail.

In 2014, RVC approved the Janet Area Structure Plan which outlines increased industrial / commercial land uses and long term plans for a regional business center north and east of the study area.

Since 2014, The City has taken the lead to conduct this functional planning study to plan interchanges at 100 Street S.E., 116 Street S.E. and Rainbow Road. Even though Rainbow Road is outside of Calgary's city limits, the previous interchange plan requires modifications due to the spacing distances required to accommodate full interchanges at 100 Street S.E. and 116 Street S.E.

INVESTIGATION: ALTERNATIVES AND ANALYSIS

Road Network Classifications:

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Glenmore Trail is a two-lane paved provincial highway, which is owned, operated and maintained by AT. It has a posted speed limit of 80 km/h west of 116 Street S.E. and 100 km/h east of 116 Street S.E. . It currently carries 19,000 vehicles per day east of Stoney Trail.

South of Glenmore Trail, 100 Street S.E. is under the jurisdiction of The City. It is a two-lane paved Industrial Arterial Road with a posted speed limit of 80 km/h. The traffic volumes are approximately 5,000 vehicles per day, of which 44% are trucks during morning peak hour. North of Glenmore Trail, 100 Street S.E. is under the jurisdiction of RVC.

South of Glenmore Trail, 116 Street S.E. is a two-lane gravel Rural Local Road with a posted speed of 80 km/h and is classified as an Industrial Arterial Road in The City's Glenmore Industrial Area Structure Plan. Today, the traffic volumes on the south leg of 116 Street S.E. are very minimal as only local traffic uses this road. North of Glenmore Trail, 116 Street S.E. is a two-lane paved Rural Road, under the jurisdiction of RVC.

Rainbow Road is under the jurisdiction of RVC and is a two-lane paved Rural Local Road with a posted speed of 80 km/h. It is classified as a Major Roadway in RVC's Janet ASP.

Existing Traffic Analysis and Future Prediction:

Based on the existing traffic volumes and signal timings, eastbound traffic and northbound traffic have travel delays during AM and PM peak hours at the 100 Street S.E. intersection. Vehicles making an eastbound left turn can be delayed approximately 290 seconds before completing their turn movement. Vehicles making a northbound left turn are delayed by approximately 113 seconds before completing their turn movement.

For the future traffic prediction, the 2039 horizon year was used from from The City's RTM. The assumed land uses were taken from the information documented in the previous ASPs and Traffic Impact Assessments (TIA), including the Shepard Industrial Park TIA, Glenmore Business Park TIA and Janet ASP. Future trips were then generated based on the land use assumptions and distributed to the road network in this study area.

Corridor and Interchange Planning:

At the beginning of the project, seven corridor improvement options were developed and evaluated to compare the different traffic operation scenarios. The second phase was to confirm the corridor configuration by analyzing different interchange configurations in detail, including a simple diamond interchange, a half diamond interchange, a diverging diamond interchange and a modified parclo interchange. Then a set of evaluation criteria was developed to compare the traffic operations, property impacts, accessibility, environmental impact and utility impact between these options. According to the evaluation results, the recommended shortlisted options included either a simple diamond interchange or a diverging diamond interchange at both 100 Street S.E. and 116 Street S.E.

The shortlisted options were further evaluated using a Multiple Account Evaluation (MAE) process. This method followed The City's Triple Bottom Line framework which considers social, environmental and economic aspects in the evaluation process. Based on the results, The City,

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AT and RVC made the decision to select the diverging diamond interchange for a full functional design.

Implementation Staging

Four distinct stages were identified in which the recommended long-term plan could be delivered over a number of years as shown in Figures E.11 to E.14 in Attachment 2.

Stage 1: Short-Term Improvements: An at-grade signalized intersection at 100 Street S.E. is recommended in the short-term as shown in Attachment 3. The short-term improvements help facilitate the adjacent development, and construction costs are the responsibility of the surrounding future developers. The class 4 cost estimate for the short-term improvement is approximately \$4.7 million in 2017 Canadian dollars.

Stage 2: Glenmore Trail Twinning:

Glenmore Trail will be twinned to the south to accommodate a minimum of two lanes in each direction and include a new bridge across the Western Irrigation Canal. Additionally, each intersection will be required to be upgraded to signalized intersections with slotted left-turn lanes. The timing of twinning and future upgrades of Glenmore Trail from four lanes to six lanes will be determined in the future by Alberta Transportation and is within the jurisdiction of the province. The class 4 cost estimate for this scope of work is approximately \$132.4 million. The sequence of intersection upgrades and twinning of Glenmore Trail will best be determined as land is developed.

Stage 3: Grade Separation:

As adjacent lands are developed, traffic demand will increase resulting in the at-grade intersections reaching capacity. Similar to Stage 2, a future traffic review and analysis along Glenmore Trail will be required to determine the timing of which intersection(s) requires grade separation. Stage 3 could extend over a number of years with each intersection grade-separated individually or grouped together as determined by traffic demand. The class 4 construction cost estimates for the interchanges at 100 Street S.E. and 116 Street S.E. is approximately \$118 million. The class 4 construction cost estimate for the interchange at Rainbow Road outside of Calgary city limits is approximately \$57.4 million.

Stage 4: Westbound Basketweave:

The long term recommended plan also included a basketweave option. This option will provide grade separation for the on-ramp from 100 Street S.E. on Glenmore Trail and the off-ramp to Stoney Trail from Glenmore Trail. The basketweave provides for more efficient access accommodation and egress between Stoney Trail and 100 Street S. E, given the proximity between these two interchanges. The need for the basketweave will be re-evaluated in the future and be constructed if future traffic volumes and adjacent land use necessitate it. The class 4 cost estimate for the basektweave is approximately \$19.2 million.

A Class 4 cost estimate was conducted with quantifiable items including removals, grading, pavement, concrete, structures and utilities. The Corporate Project Management Framework (CPMF) class 4 estimate includes a variance of -40% to +75%.

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For more information, please refer to the full Study report at the following link:

<http://www.calgary.ca/Transportation/TP/Pages/Projects/Current-Planning-Projects/Glenmore-Trail-East-Study.aspx>

Stakeholder Engagement, Research and Communication

The engagement approach reflected and upheld the guiding principles established in The City's 2014 engage! Policy. A communication strategy was developed to share information and notify adjacent residents and stakeholders about the project and engagement opportunities.

A three-phase engagement process was developed to provide stakeholders and the general public with multiple opportunities to provide feedback throughout each phase of the project. The goals of the engagement process and highlights of each phase included:

Phase 1 - Understand stakeholder and public issues:

- Information Session (June 15, 2015) – introduced the project team, provided information about the study and discussed any issues or concerns about the proposed interchange at 100 Street S.E. 64 people attended, and 64 comment forms were submitted, either in-person or online.
- Issues Scoping Workshop (June 25, 2015) – technical representatives from The City, RVC, AT and utility companies were invited to identify issues, concerns and constraints prior to concept development.

Phase 2 - Develop options recognizing stakeholder and public identified issues:

- Landowner Meetings (August and September of 2016) – all adjacent landowners, seven groups in total, were invited to review the preliminary interchange options. Landowners were most interested in minimizing right-of-way requirements, providing a full interchange at 100 Street S.E. and keeping 116 Street S.E. on the current alignment.
- Information Session (November 16, 2016) – held to gather feedback on the short-term improvements at 100 Street S.E. and the proposed interchange options for 100 Street S.E. and 116 Street S.E. 52 people attended and 63 comment forms were collected. 83 percent of respondents' feedback indicated that the proposed short-term improvements at 100 Street S.E. would improve traffic flow.

Phase 3 - Recommend a plan that considered stakeholder and public input:

- Information Session (April 24, 2018) – held at the HeatherGlen Golf Course (and online from April 24 – May 4, 2018). 61 people attended the Information Session and 39 feedback comments were received. The majority of the participants felt their input was used to develop the study recommendations, and that they were provided with enough information and opportunity to effectively share their feedback throughout the project.

As a partner and major adjacent developer in this project, Ronmor Holding Inc. is fully in support with the project recommendations as shown in Attachment 5.

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Strategic Alignment

The study objectives were in alignment with the Calgary Transportation Plan (CTP) and the 2020 Sustainability Direction including:

1. Transportation Goal #1 by providing better connectivity for the future developments to accommodate the future land use plan;
2. Transportation Goals #2, #3 and #4 by providing the public pathway connectivity in the Shepard Industrial Area Structure Plan and Janet Area Structure Plan areas;
3. Transportation Goal #5 to promote economic development by providing a full-access interchange at 100 St SE and efficient movement of people and goods;
4. CTP Objective 3.2 through the planned regional pathway in the study area;
5. CTP Objective 3.4 by improving road network connectivity to reduce travel time for all road users;
6. CTP Objective 3.10 by planning future grade-separated interchanges to improve safety; and,
7. 'Improving Goods Movement' 2020 objective by providing free-flow operations on Glenmore Trail.

Social, Environmental, Economic (External)

The recommendations will improve auto and goods movement, improve the connectivity and accessibility for a variety transportation modes including pedestrians and cyclists, and align infrastructure planning with future land use. The anticipated benefits include travel time reduction, congestion reduction, safety improvements and reduced vehicle emissions.

Financial Capacity

Current and Future Operating Budget:

There are no current or future operating budget impacts associated with this report. Once the interchanges are constructed, Alberta Transportation will assume ownership of the corridor, along with the operations, maintenance and future replacement of the structures.

Current and Future Capital Budget:

There are no current capital budget impacts associated with this report. Future discussion regarding cost-sharing with Rocky View County and Alberta Transportation is recommended prior to construction of the two interchanges within The City's Limits. The required right-of-way for the long-term plan shall be protected and can be acquired on an opportunity basis. There will be opportunities to negotiate with surrounding landowners for the additional required lands when they apply for future developments, working with RVC for development on the north side of Glenmore Trail.

Risk Assessment

There will be negotiations in the future to acquire the long-term required lands within The City's limits. There is a potential concern of not having sufficient capital funds to acquire the lands in the future needed to build the interchanges. Engaging and collaborating directly with the adjacent landowners, south of Glenmore Trail, will assist in mitigating this risk.

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REASON(S) FOR RECOMMENDATION(S):

The recommended plans will accommodate future land uses and allow required future right of way to be protected for and acquired based on an opportunity basis. The recommendations are supported in partnership between The City, Rocky View County and Alberta Transportation, with the assistance from the current landowner of the future Glenmore Business Park. The objectives of this study are in alignment with The City's Calgary Transportation Plan and Municipal Development Plan.

ATTACHMENT(S)

1. Attachment 1 – Site Plan – Glenmore Trail East Functional Planning Study
2. Attachment 2 – Glenmore Trail East Functional Planning Study Executive Summary
3. Attachment 3 – Long-term Required Right of Way Plans
4. Attachment 4 – Short-term Improvement Plan
5. Attachment 5 – Letter of Support from Ronmor Holdings Inc