

**Calgary**



# **Glenmore Trail East Interchanges Functional Planning Study**

**Appendix N – Glenmore Business Park Access Memo**

Prepared By:

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To: **The City of Calgary, Alberta Transportation  
& Rocky View County** Date: **April 13, 2018**

Attention: **Jeffrey Xu, P.Eng., Jerry Lau, P.Eng.  
& Gurbir S. Nijjar, P.Eng.** Project No.: **26534**

Cc: **Jay German (Ronmor Developers)**

Reference: **Glenmore Trail East FPS Glenmore Business Park Access**

From: **David Breu, P.Eng., Nicole Lau, P.Eng.**

### Introduction

The future Glenmore Business Park located south of Glenmore Trail from the Western Irrigation Canal to 116 Street SE (Conrich Road) will have challenges finding access solutions due to the physical constraints of these lands, when the ultimate interchanges are constructed. During the development of the Glenmore Trail East Functional Planning Study (FPS), these challenges were discussed by the project team; and it was agreed that the access locations would not be approved as part of the FPS, but that some technical guidance for the access locations would be documented for future development applications. The intent of this memo is to document the viability of the possible access locations for Glenmore Business Park that balance Alberta Transportation (AT) and City of Calgary access management requirements, while also recognizing basic servicing constraints such as optimum lot depth for industrial development and the influence of existing intersections and physical and legal boundaries. This technical memorandum document will be included as an appendix to the FPS report.

### Background / Challenges

Glenmore Business Park is located to the south of Glenmore Trail. The development is bounded by the Western Irrigation District Canal to the west, 116 Street SE (Conrich Road) to the east, Glenmore Trail to the north and Shepard Industrial and Walton Industrial to the south. The development is approximately half a mile wide from north to south and approximately 1.5 to 1.9 miles long from west to east. The development will have internal public street networks that connect to the broader network via 100 Street SE (Garden Road) and 116 Street SE (Conrich Road). Network access is not possible via other routes given either their higher road classifications (for Glenmore Trail to the north) or due to pre-existing land-locking of the development (by the Canal to the west or by prior development to the south.) Based on the size of the development, at least two accesses are required off 100 Street SE due to emergency servicing, traffic operations and land-locking. 116 Street SE does not require two accesses like 100 Street E, but it is still good planning practice in order to ensure network redundancy, circulation, and so on.

Access management for the Glenmore Business Park will be physically constrained along 100 Street SE due to the future interchange at Glenmore Trail and the existing T-intersections just south of the Glenmore Business Park. The first T-intersection is a gated access to the Enmax facility directly south of Glenmore Business Park south property line with the access located on the east side of 100 Street E. Since this is a gated access specifically for the Enmax facility with 34 parking stalls, the amount of traffic utilizing this access is relatively low; and we do not expect that it would influence the location of adjacent public street intersections and would possibly be converted to a right-in / right-out access in future. The second T-intersection is 100 Street / Venture Ave SE intersection, located approximately 230 m south of the Glenmore Business Park south property line. Venture Ave connects to the west side of 100 Street E, and it is currently the only access for Walton Industrial. This access is expected to have relatively more influence in determining the best location for the Glenmore Business Park access along 100 Street E.



There are two existing intersections on 116 Street SE adjacent to the proposed Glenmore Business Park. The access at the north end near Glenmore Trail provides access to the parcel to the east and will require relocation when the interchange is constructed. The access just south of the Glenmore Business Park property providing access to the west is not a public road and should have little influence on the future access management of 116 Street E.

**Arterial Intersection Spacing Guidelines**

The Alberta Transportation Highway Geometric Design Guide (HGDG) and The City of Calgary Design Guidelines for Subdivision Servicing 2014 (DGSS) both specify similar spacing requirements for the first arterial intersection adjacent to interchange junctions, as described below. The DGSS would inform the access spacing for other intersections outside the influence of the interchanges.

Alberta Transportation Highway Geometric Design Guide (HGDG)

The HGDG defines the required setback of the access road intersection, measured along the minor road shall be a minimum of 400 m away from the nearest interchange ramp intersection or 150 m from end of taper treatment, whichever is greater. Figure 1.1 illustrates the minimum setback from the HGDG.

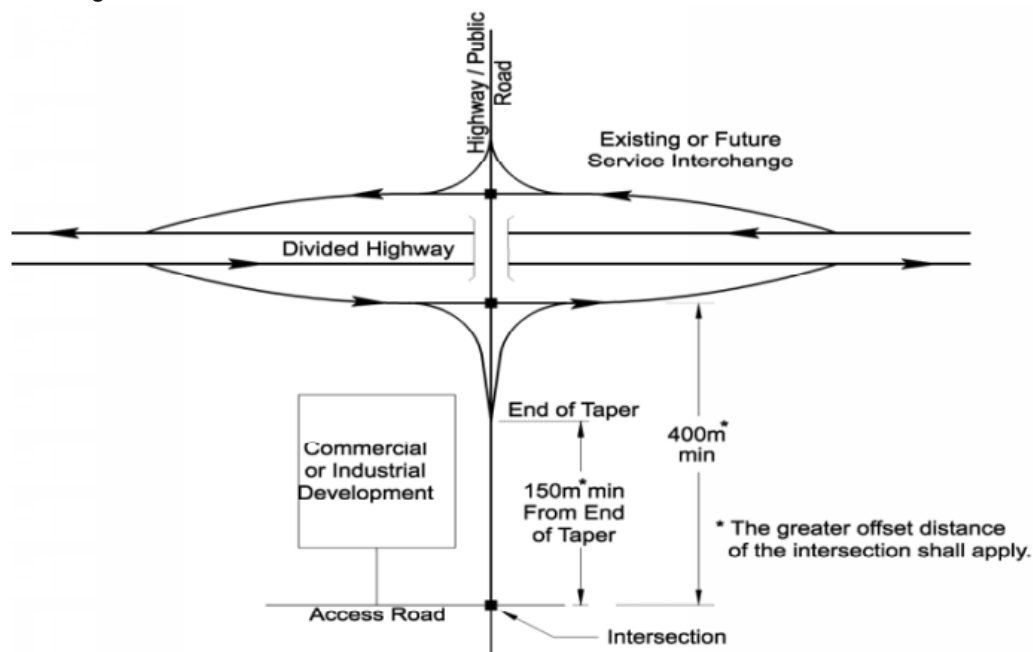


Figure 1.1 – Highway / Public Road Intersection at Diamond Interchange (Figure I-5 from HGDG)

The City of Calgary Design Guidelines for Subdivision Servicing 2014 (DGSS)

The City of Calgary Design Guidelines for Subdivision Servicing (DGSS) defined the minimum acceptable spacing between the terminal of an interchange ramp and the centerline of the first intersection on an Arterial Street is 400 m.

Outside the influence of the interchange, the minimum intersection spacing is 300 m. The intersection spacing less than minimum 300 m is considered an exception and has to be designed to the satisfaction of the General Manager, Transportation.



**Intersection Spacing Review 100 Street SE**

ISL completed a brief intersection spacing review for 100 Street SE and developed two options to provide two accesses to the Glenmore Business Park. The two intersection access options developed for both 100 Street SE accesses are:

- Option 1: 400 m Interchange influence spacing + 170 m arterial intersection spacing
- Option 2: 300 m Interchange influence spacing + 274 m arterial intersection spacing

100 Street SE – Option 1

As illustrated in Exhibit 1.1, Option 1 would have the north development access located 400 m south of the 100 Street SE interchange terminal intersection. In order to maintain minimum 300 m intersection spacing between the south access and Venture Ave SE, the south access is designed to be approximately 170 m south of the north access. In this option, the north access meets the HGDG 400 m requirement but the south access is much less than the City’s DGSS 300 m requirement relative to the north access. This option provides relatively inconsistent intersection spacing, as well as a significant exception to the DGSS standard, so is not recommended.

100 Street SE – Option 2

As illustrated in Exhibit 1.2, Option 2 would have the north development access located 300 m south of the 100 Street SE interchange terminal intersection. In order to maintain minimum 300 m intersection spacing between the south access and Venture Ave SE, the south access is designed to locate approximately 274 m south of the north access. In this option, the north access does not meet the AT HGDG 400 m requirement and the south access does not meet the City’s DGSS 300m requirement. However, from an overall corridor perspective, the option provides relatively balanced spacing of all major intersections, and we recommend should form the basis for analysis and confirmation at the Outline Plan stage.

Profile Review

The design of the 100 Street SE profile and the proposed development accesses should be such that it accommodates the 300 m interchange influence spacing location for Glenmore Trail in both the interim and ultimate scenarios. Figure 1.2 to 1.3 below illustrate the proposed profiles of 100 Street SE NB and SB carriage ways. It shows that desired 300 m interchange influence spacing on 100 Street SE would require the profile to be raised when 100 Street is upgraded in order to accommodate 300 m Option 2 in the future.

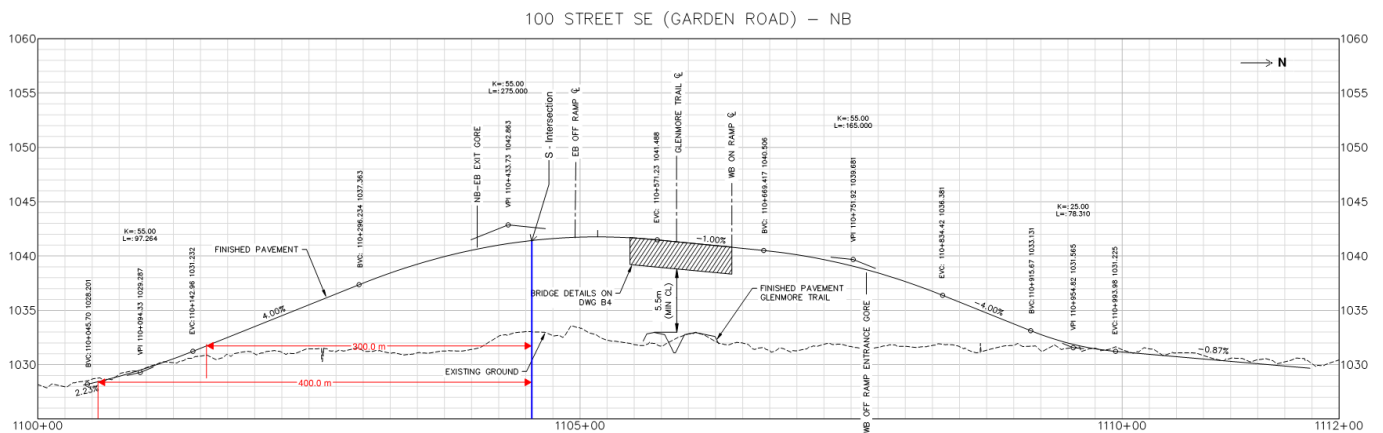


Figure 1.2 – 100 Street SE (Garden Road) Proposed Northbound Road Profile

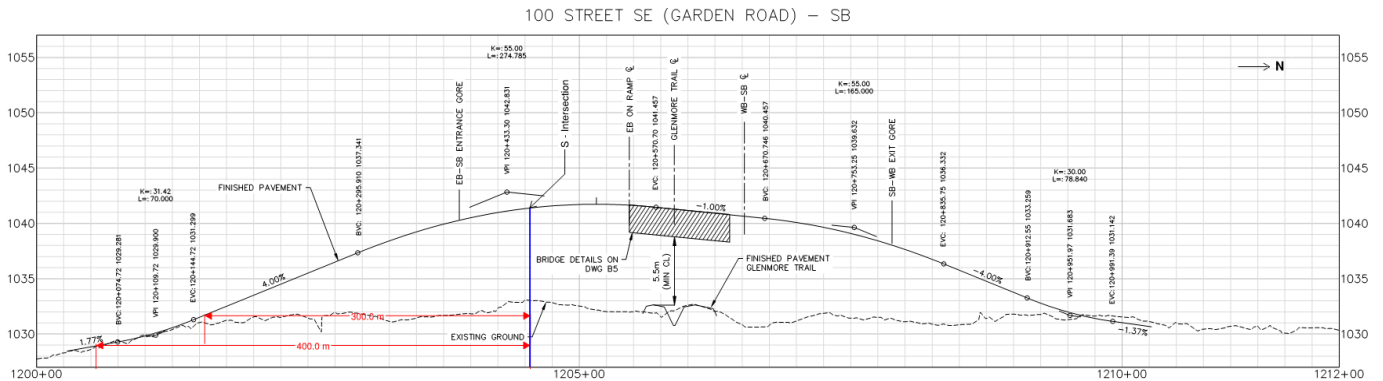


Figure 1.3 – 100 Street SE (Garden Road) Proposed Southbound Road Profile

**Intersection Spacing Review 116 Street E**

ISL completed a brief intersection spacing review for 116 Street SE and developed two options to provide two accesses to the Glenmore Business Park. The two intersection access options developed for both 116 Street SE accesses are:

- Option 1: 400 m Interchange influence spacing + less than 300 m arterial intersection spacing
- Option 2: 300 m Interchange influence spacing + less than 300 m arterial intersection spacing

116 Street SE – Option 1

As illustrated in Exhibit 1.1, Option 1 would have the north development access located 400 m south of the 116 Street SE interchange terminal intersection, meeting the HGDG 400 m requirement. The next intersection could be centred on the south property line providing 268 m for the arterial intersection spacing. This option meets the interchange influence requirement and almost meets the arterial intersection spacing requirement, but does not provide the desired two access to the Glenmore Business Park and requires multiple land owners to agree on the access location, construction etc. A benefit of this approach is that the loss of developable land to road right-of-way is split between land owners, but site planning is required to determine how it impacts lot depths and their development potential.

116 Street SE – Option 2

As illustrated in Exhibit 1.2, Option 2 would have the north development access located 300 m south of the 116 Street SE interchange terminal intersection while the remaining lot width allows the south access with approximate 265 m spacing off the north access. The north access does not meet the interchange spacing requirement and the south access does not meet the City’s DGSS 300m requirement, however overall it does provide relatively balanced spacing for the corridor as a whole.

Although this design exception is not strictly required from an emergency access perspective, we recommend that it be considered at the Outline Plan stage in order to reflect good planning practice for as a whole, by allowing multiple access points to increase circulation, improve intersection operations, and so on.

Profile Review

Figures 1.4 to 1.5 below illustrate the proposed profiles of NB and SB carriageways of 116 Street E. It shows that no special adjustments to the road profiles are required for the upgrades to 116 Street E, in order to accommodate the potential access points at both the interim and ultimate conditions.

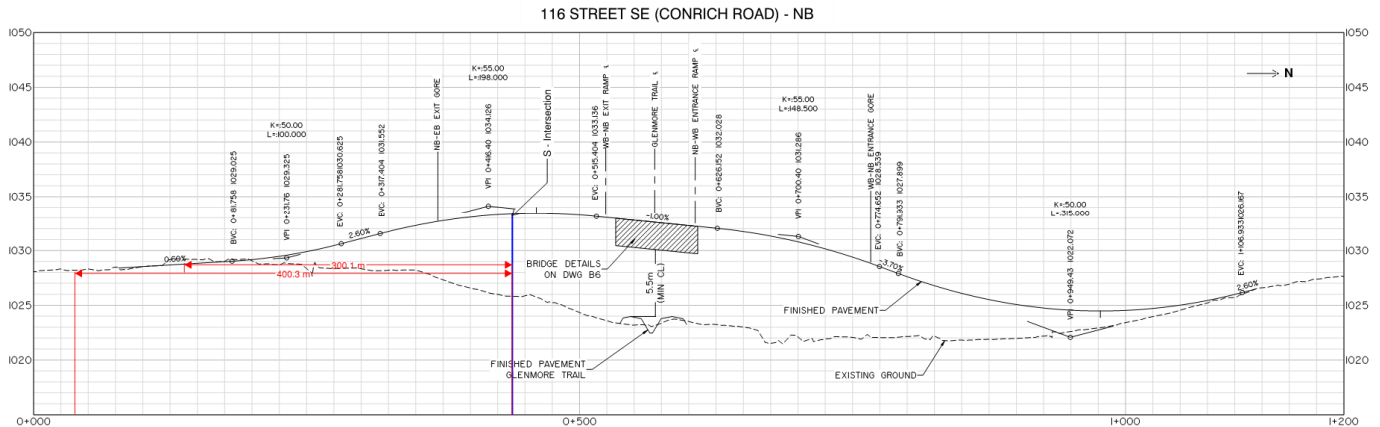


Figure 1.4 – 116 Street SE (Conrich Road) Proposed Northbound Road Profile

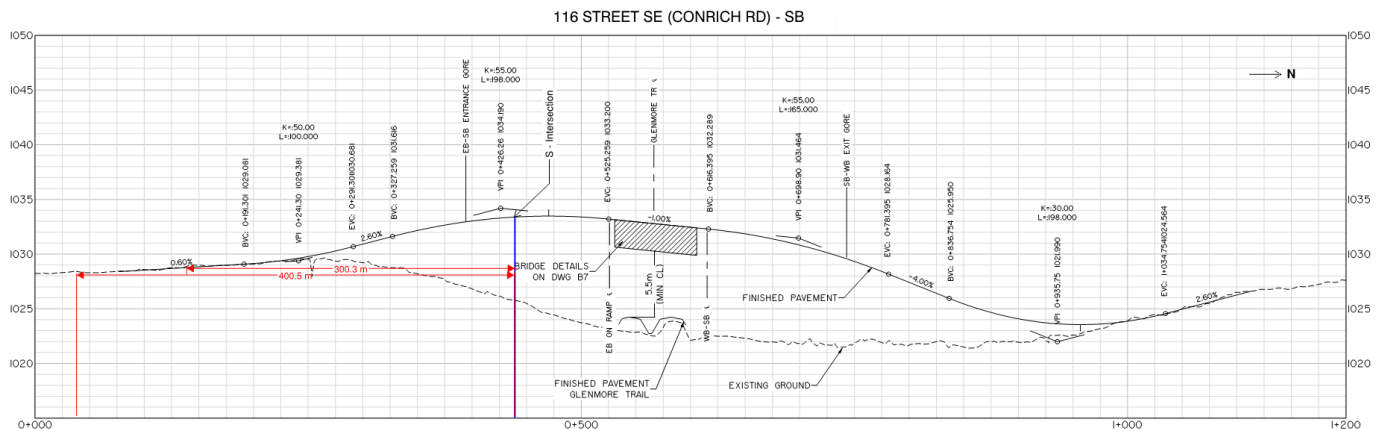


Figure 1.5 – 116 Street SE (Conrich Road) Proposed Southbound Road Profile

**Weaving Operation Review**

As land uses have not been finalized, no additional traffic analysis was conducted as part of the future development access review. It is recommended that traffic volumes and traffic patterns be reviewed at the Outline Plan application stage in order to confirm that weaving operations between the interchange terminals and the adjacent arterial intersections support the general approach recommended here.

Alternative ramp terminal designs such as dual signalized right turns can eliminate weaving issues (if any exist); however, additional land might be required from the adjacent property owner in order to accommodate the dual signalized right turn treatment.

**Recommendations**

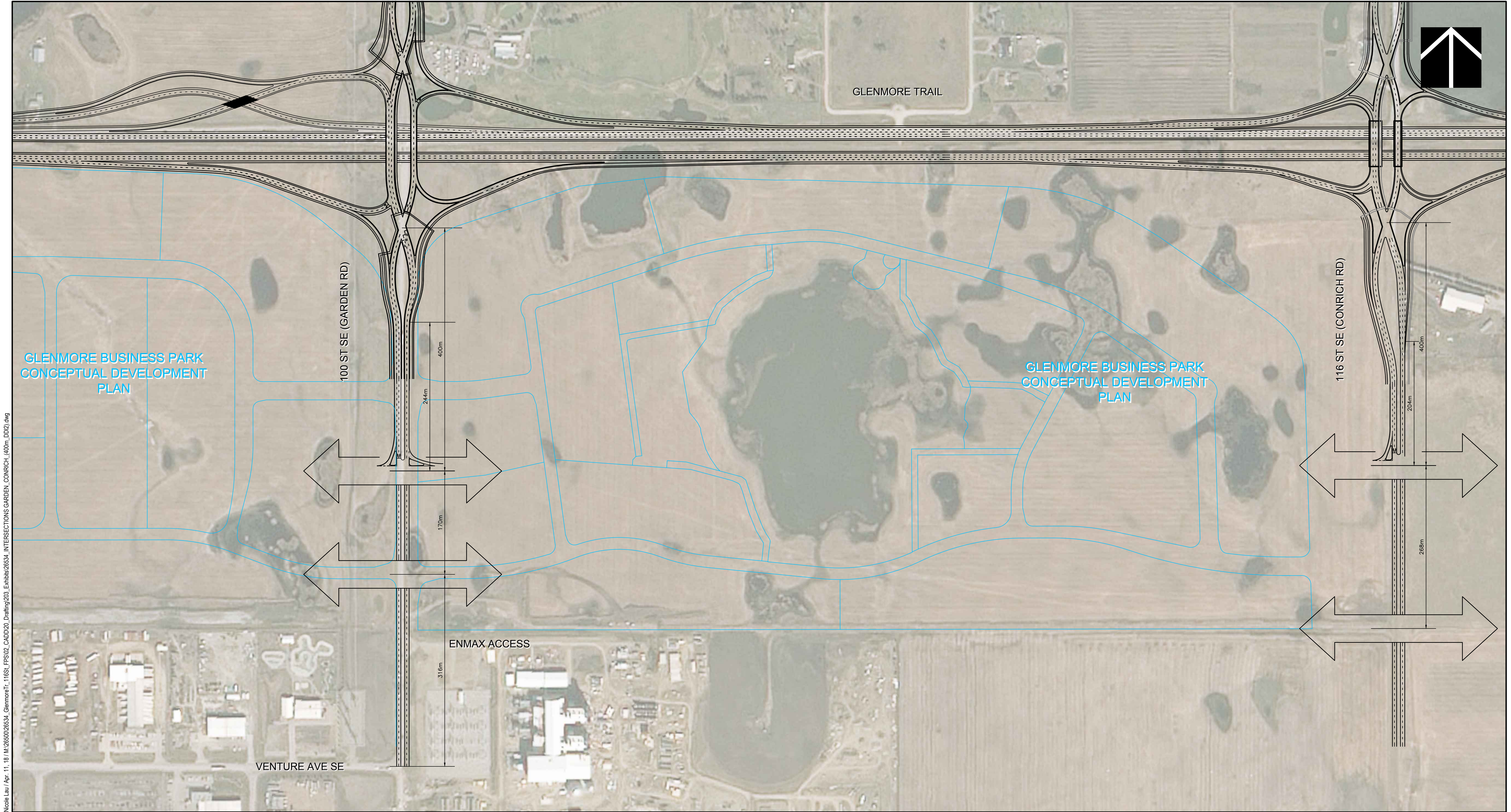
At 100 Street E, we recommend that Option 2 would provide balanced intersection spacing between the interchange and the next public street access locations while maintaining the 300 m intersection spacing requirement from Venture Ave SE intersection and optimizing the developable lot size. Due to the unique constraints of this development parcel we believe these design exceptions are required at 100 Street SE to service the future Glenmore Business Park. In this case, Alberta Transportation and The City of Calgary would need to review and confirm a design exception for 100 Street SE at the time of Outline Plan approval, which in turns requires supporting weaving analysis.

At 116 Street E, we recommend that Option 2 would provide better lot functionality, overall site road network and intersection spacing for the arterial corridor. While this design exception is not absolutely required as is the case on 100 Street E, there are nevertheless potential benefits including improved circulation and intersection operation, as well as generally reflecting good planning practice.

Review of these design exceptions at the Outline Plan stage will require supporting weaving analysis.

**Conclusion**

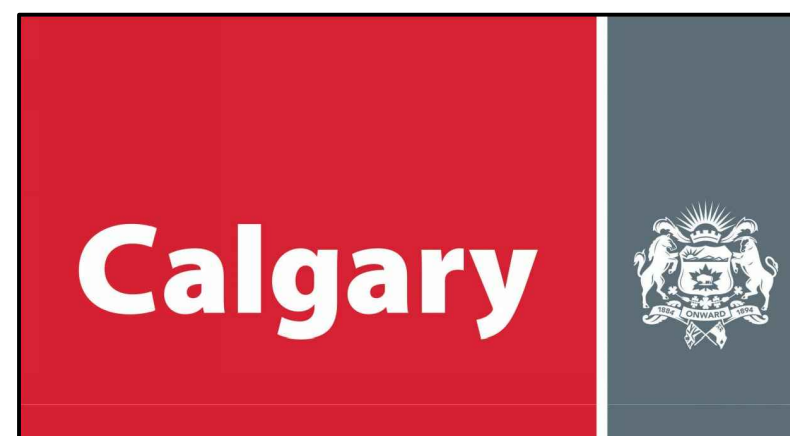
From the above review, it is confirmed that providing two side by side development accesses to the future Glenmore Business Park on either 100 Street SE or 116 Street SE is not feasible while meeting both AT and The City's access management standards, primarily due to the physical constraints of the development parcels and the surrounding physical and legal barriers. We recommend that design exception request on 100 Street SE will be required at the time of Outline Plan development in order to provide the required number of access for the development for safety and accessibility purposes. Further, design exception request on 116 Street SE should also be considered at the time of Outline Plan development in order to balance site functionality and intersection operations. The purpose of this document is to capture the access management review completed to date for the Glenmore Business Park as part of the Glenmore Trail FPS for others to consider during future review.



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and Land Services



NOTE: ALL DRAWINGS ARE  
PRINTED AT HALF SCALE WHEN  
IN 11" x 17" FORMAT

**PRELIMINARY**  
FOR DISCUSSION ONLY  
SUBJECT TO REVISION

1:3000

**GLENMORE TRAIL EAST STUDY**  
**GLENMORE BUSINESS PARK**  
DEVELOPMENT ACCESS  
OPTION 1 INTERCHANGE TO INTERSECTION SPACING  
400m  
**EXHIBIT 1.1**

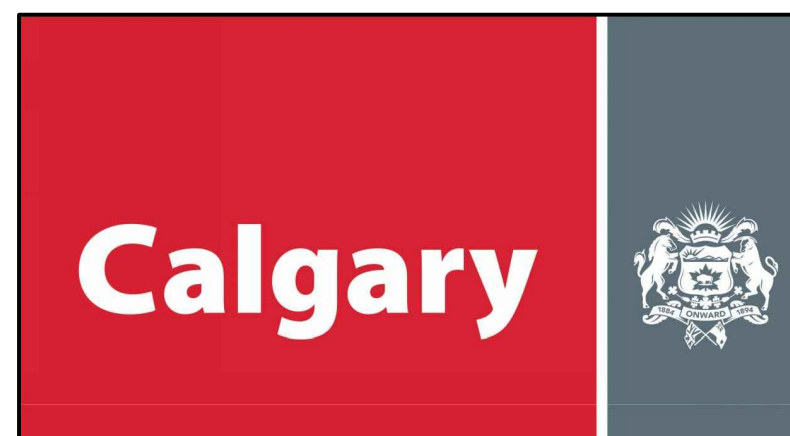




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**GLENMORE TRAIL EAST STUDY**  
**GLENMORE BUSINESS PARK**  
DEVELOPMENT ACCESS  
OPTION 2 INTERCHANGE TO INTERSECTION SPACING  
300m  
EXHIBIT 1.2