

TRAFFIC IMPACT ASSESSMENT

Jonson Subdivision (N.E. 2-40-27-4) Intersection at Highway 2A:18 and Township Road 40-1

Background

As part of the requirement for a development permit, AMEC Infrastructure Limited has been commissioned to conduct a Traffic Impact Assessment. The purpose of the assessment is to determine the type of intersection treatment necessary to accommodate traffic utilizing an existing intersection at Highway 2A:18 and Township Road 40-1, between Blackfalds and Lacombe.

The proposed development is a 22 lot sub-division in the portion of N.E. 2-40-27-4 located east of Highway 2A and south of Township Road 40-1.

The following information is based on documents received from Alberta Transportation and the developer.

Existing Geometry

A County Map, showing the general location of the development, and a Lot Plan, showing the subdivision layout, are located in the Appendix of this report.

The lots are located on the east side of Highway 2A and south of Township Road 40-1.

The intersection is located on a tangent section of Highway 2A, at approximately km 12.48. An 1840 metre radius horizontal curve is located immediately south of the intersection and an 890-metre radius horizontal curve is located immediately north of the intersection.

The grade of the highway is approximately one percent (rising to the north).

The available intersection sight distance at this location is in excess of 400 metres south and north.

The angle of intersection is approximately 90 degrees.

According to the Alberta Transportation *2003 PMS Highway Summary Report* (in the Appendix), the width of Highway 2A, at the intersection, is 13.0 metres. With a lane width of 3.7 metres, the shoulder width is 2.8 metres.

The service classification of Highway 2A is Class 2A. The posted speed limit is 100 km/h.

Township Road 40-1 has a gravel surface and extends between Highway 2A, on the west side of the subdivision, and C&E Trail, on the east side.

The intersection at Highway 2A and Township Road 40-1 currently has a Type I (b) treatment (no tapers and 15 m radius curves).

A railway track parallels Highway 2A and is located approximately 30 metres east of the highway.

Subdivision Operation

The subdivision will access Township Road 40-1 at two locations; one approximately 50 metres east of the railway and the other approximately 200 metres west of C&E Trail.

The vertical alignment of the township road will be improved and intersection sight distance is expected to be adequate.

Existing and Future Traffic

The Alberta Transportation “*2003 Traffic Volume, Vehicle Classification, Travel and ESAL Statistics Report*”, the “*Traffic Volume History (1994 – 2003)*”, the “*Turning Movement Summary Diagram for Highway 2A/C&E Trail*” and the “*Turning Movement Summary Diagram for Highway 2A/Highway 12*” are located in the Appendix.

In 2003, the average of the vehicle classifications on Highway 2A between C&E Trail, north of Blackfalds, and Highway 12, at Lacombe, was 92.5% PV, 2.2% RV, 0.2% BU, 3.0% SU, 2.1% TT (5.3% CM).

In 2003, the AADT for Highway 2A, north of C&E Trail, was 6430 (6710 ASDT). In 2003, the AADT for Highway 2A, south of Highway 12, was 6790 (7080 ASDT). The average AADT for Highway 2A, between C&E Trail and Highway 12, was 6610 (6895 ASDT).

From 1994 to 2003, the average annual growth rate north of C&E Trail was 3.4 percent (non-compounded). From 1997 to 2003, the average annual growth rate south of Highway 12 was 2.6 percent (non-compounded). Using a future growth rate of 3.0 percent, the 2014 AADT on Highway 2A is 8790 (9170 ASDT) and the 2024 AADT is 10775 (11240 ASDT).

Intersection Analysis

This intersection was analyzed based on traffic and roadway information from Alberta Transportation; the estimated existing traffic volume and type; the estimated future traffic volume and type.

An analysis was conducted for year 2004 (present day with no Jonson Subdivision), year 2024 (no Jonson Subdivision) and year 2024 (with Jonson subdivision). A printout of the

“Intersection Design Report, Present Day Analysis”, “Intersection Design Report, 20 Year Analysis – No Subdivision” and “Intersection Design Report, 20 Year Analysis – With Subdivision” are included in the Appendix.

The present day analysis is based on an estimated 2003 AADT of 60 on the township road. The treatment requirement at the Highway 2A / Township Road 40-1 intersection is Type II (b). The intersection currently has a Type I (b) treatment (no tapers and 15 m radius curves).

The year 2024 analysis, with no subdivision, uses the same 2003 AADT as the present day analysis. The growth rate is 3.0 percent on Highway 2A and 2.0 percent on Township Road 40-1. The treatment requirement at the Highway 2A / Township Road 40-1 intersection is Type III (d).

The year 2024 analysis, with subdivision, uses a volume of 210 (21 lots @ 10 trips per day) on the east leg of Township Road 40-1 (fully developed). The growth rate is 3.0 percent on Highway 2A and 2.0 percent on the west leg of Township Road 40-1. The treatment requirement at the Highway 2A / Township Road 40-1 intersection is Type IV (b). This treatment requirement accounts for the existing developments on the west side of Highway 2A, which are independent of the Jonson Subdivision.

The intersections at Township Road 40-1 and the accesses into the subdivision will require Type I (a) treatment.

Examples of the Type I (a), Type I (b), Type II (b), Type III (d) and Type IV (b) intersection treatments are located in the Appendix.

Recommendations

Improvement to the Highway 2A / Township Road 40-1 intersection is required as a result of this development. The existing intersection geometry is below present day requirements. In year 2024, the intersection treatment requirement for “no subdivision” and “subdivision” is Type III (d) and Type IV (b), respectively.

Being that the Type IV (b) intersection treatment requirement is not solely due to the presence of the development, a cost sharing between the developer and road authority for intersection improvement would be prudent.

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APPENDIX