

# Memorandum

<b>To:</b>	Gerry Fleming, MOTI	<b>From:</b>	Jonathan Ho, Binnie Ava Li, Binnie
<b>Cc:</b>	Janelle Erwin, MOTI Helen Cheung, MOTI Joanne Letkeman MOTI	<b>Date:</b>	January 19, 2017
<b>Project Title:</b>	Highway 1 202 <sup>nd</sup> Street to 216 <sup>th</sup> Street and 216 <sup>th</sup> Street Interchange	<b>File:</b>	14-482-05
<b>Re:</b>	216 <sup>th</sup> Street Traffic Volumes Review Memorandum – FINAL Rev.0		

## 1 INTRODUCTION

R.F. Binnie (Binnie) was retained by the B.C. Ministry of Transportation and Infrastructure (the MOTI) to prepare the detailed design of the proposed Highway 1 widening between 202<sup>nd</sup> Street and 216<sup>th</sup> Street, and a new interchange at 216<sup>th</sup> Street in the Township of Langley (the Township). The proposed interchange is expected to improve the transportation connectivity for the nearby residents in the Walnut Grove Neighbourhood and in the future Williams Neighbourhood.

The purpose of this memorandum is to estimate and compare the Average Daily Traffic (ADT) volumes along the following segments on 216<sup>th</sup> Street in the existing scenario, opening day scenario and the 2045 horizon year scenario:

- Between Highway 1 and Telegraph Trail
- Between Telegraph Trail and 88<sup>th</sup> Avenue
- North of 88<sup>th</sup> Avenue

Previously, Binnie only received the projected 2045 horizon year traffic volumes from the EMME plots, and the estimated turning movement data at the proposed Highway 1 and 216<sup>th</sup> Street Interchange; as a result, up to 22,000 vehicles were projected on 216<sup>th</sup> Street based limited information available at that time. With the receipt of the existing traffic data from the Township and the opening day traffic forecast of the surrounding road network, there is now a better understanding of the forecast traffic volumes along 216<sup>th</sup> Street and our findings are summarized in this memorandum.

## 2 TRAFFIC DATA REVIEW

### 2.1 Existing Traffic Volumes

The Township provided two-way traffic volumes on 216<sup>th</sup> Street for the following segments, which were collected from May 25 to 31, 2016:

- 88<sup>th</sup> Avenue to Telegraph Trail
- Telegraph Trail to 82<sup>nd</sup> Avenue

In addition, the Township also provided the historical turning movement count data collected at the 88<sup>th</sup> Avenue and 216<sup>th</sup> Street intersection. These traffic count data were used to estimate the existing traffic volumes on 216<sup>th</sup> Street for the study segments. They were also used to estimate the peak hour factor in order to estimate the ADT volumes in the opening day and 2045 horizon year scenarios, as described in the following section.

## 2.2 Forecast Traffic Volumes

The AM peak hour and PM peak hour forecast traffic volumes were prepared by Parsons Corporation (Parsons) for the MOTI using EMME. The forecast traffic volumes were estimated for the opening day and 2045 horizon year, with both scenarios assuming that the proposed Highway 1 and 216<sup>th</sup> Street Interchange is operational. For the purpose of this memorandum, the PM peak hour forecast traffic volumes are assumed to be the design hourly volumes.

For the opening day traffic projection, the EMME models assumed that the Highway 1 and 192<sup>nd</sup> Street Interchange would maintain its current configuration with west-facing on-ramp and off-ramp only. The opening day EMME models assumed the 208<sup>th</sup> Street overpass would maintain its current two-lane cross-section.

For the 2045 horizon year traffic projection, the EMME models assumed that the Highway 1 and 192<sup>nd</sup> Street Interchange would be upgraded to a full-movement interchange. It is assumed that the 208<sup>th</sup> Street overpass would be widened to a four-lane structure in the EMME models.

Based on the projected AM peak hour and PM peak hour traffic volumes, Binnie estimated the ADT volumes for the study 216<sup>th</sup> Street segments by reviewing the peak hour factor on the existing roadway using the 24-hour two-way traffic volumes provided by the Township. Binnie reviewed three full days of traffic volume data on 216<sup>th</sup> Street and estimated the peak hour factor to be in the range between approximately 10% and 15%. The peak hour factor of 10% is estimated based on the traffic data collected on the 216<sup>th</sup> Street segment between Telegraph Trail and 88<sup>th</sup> Avenue, which is generally consistent with the traffic patterns on an urban corridor. Therefore, for the purpose of this memorandum, the 10% peak hour factor is assumed for the conversion of the design hourly volumes into ADT volumes.

**Table 2-1** below shows a summary of the two-way peak hour traffic volumes for the opening day and 2045 horizon year scenarios based on the Parsons' EMME models.

**Table 2-1: Design Hourly Volume for 216<sup>th</sup> Street**

216th Street Segment	Opening Day		2045 Horizon Year	
	AM	PM	AM	PM
Interchange - Telegraph Trail	1,010	1,165	1,530	1,735
Telegraph Trail - 88th Avenue	585	710	715	895
North of 88th Avenue	300	335	395	420

## 3 FINDINGS

Based on the forecast traffic volumes and the assumed peak hour factor on 216<sup>th</sup> Street, **Table 3-1** shows a summary of the estimated ADT volumes for the study 216<sup>th</sup> Street segments:

**Table 3-1: Average Daily Traffic Volumes for 216<sup>th</sup> Street**

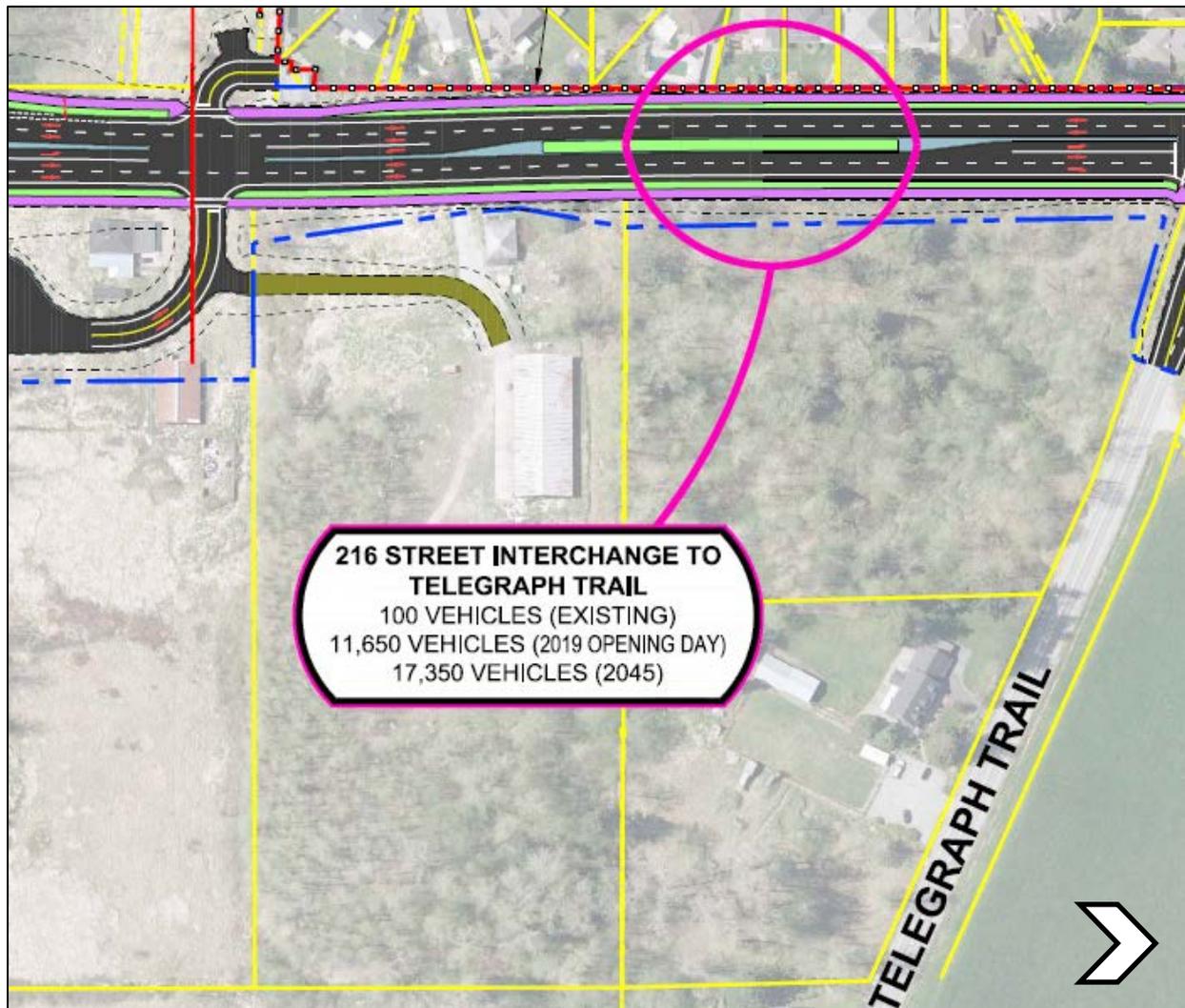
216th Street Segment	Existing	Opening Day	2045 Horizon Year
Interchange - Telegraph Trail	100	11,650	17,350
Telegraph Trail - 88th Avenue	4,200	7,100	8,950
North of 88th Avenue	4,000	4,000*	4,200

It is noted that the estimated ADT for the 216<sup>th</sup> Street segment north of 88<sup>th</sup> Avenue is 3,350 vehicles for the opening day based on the EMME forecast volumes. Since the areas north of 88<sup>th</sup> Avenue is nearly

built-out and that 88<sup>th</sup> Avenue will remain as the main access to adjacent properties, traffic volume reduction on 216<sup>th</sup> Street is not anticipated. For the purpose of this memorandum, the opening day ADT volumes on the 216<sup>th</sup> Street segment north of 88 Avenue is expected to remain the same as the existing ADT volumes found in the Township traffic data. Further, the forecast 2045 horizon year ADT volumes on this segment of 216<sup>th</sup> Street were observed to be similar to the existing and opening day scenarios; therefore, this corridor is not expected to be impacted significantly by traffic travelling between Highway 1 and the Port Kells Industrial Area via 96 Avenue.

Based on the EMME forecast traffic volumes, traffic flows were noted to be using 86A Crescent to access 212<sup>th</sup> Street before heading north towards the existing Walnut Grove area. EMME estimated that up to 50% of the 216<sup>th</sup> Street may use this route to access Walnut Grove instead of staying on 216<sup>th</sup> Street and 88<sup>th</sup> Avenue. It is understood that the Township will monitor the future traffic volumes on the local roads to determine if traffic calming strategies are necessary to retain through traffic on 216<sup>th</sup> Street.

Based on the reviewing findings in this memorandum, the estimated ADT volumes are summarized in **Figure 3-1** for the existing scenario, **Figure 3-2** for the opening day scenario and **Figure 3-3** for the 2045 horizon year.



**Figure 3-1: ADT on 216<sup>th</sup> Street between Interchange and Telegraph Trail**

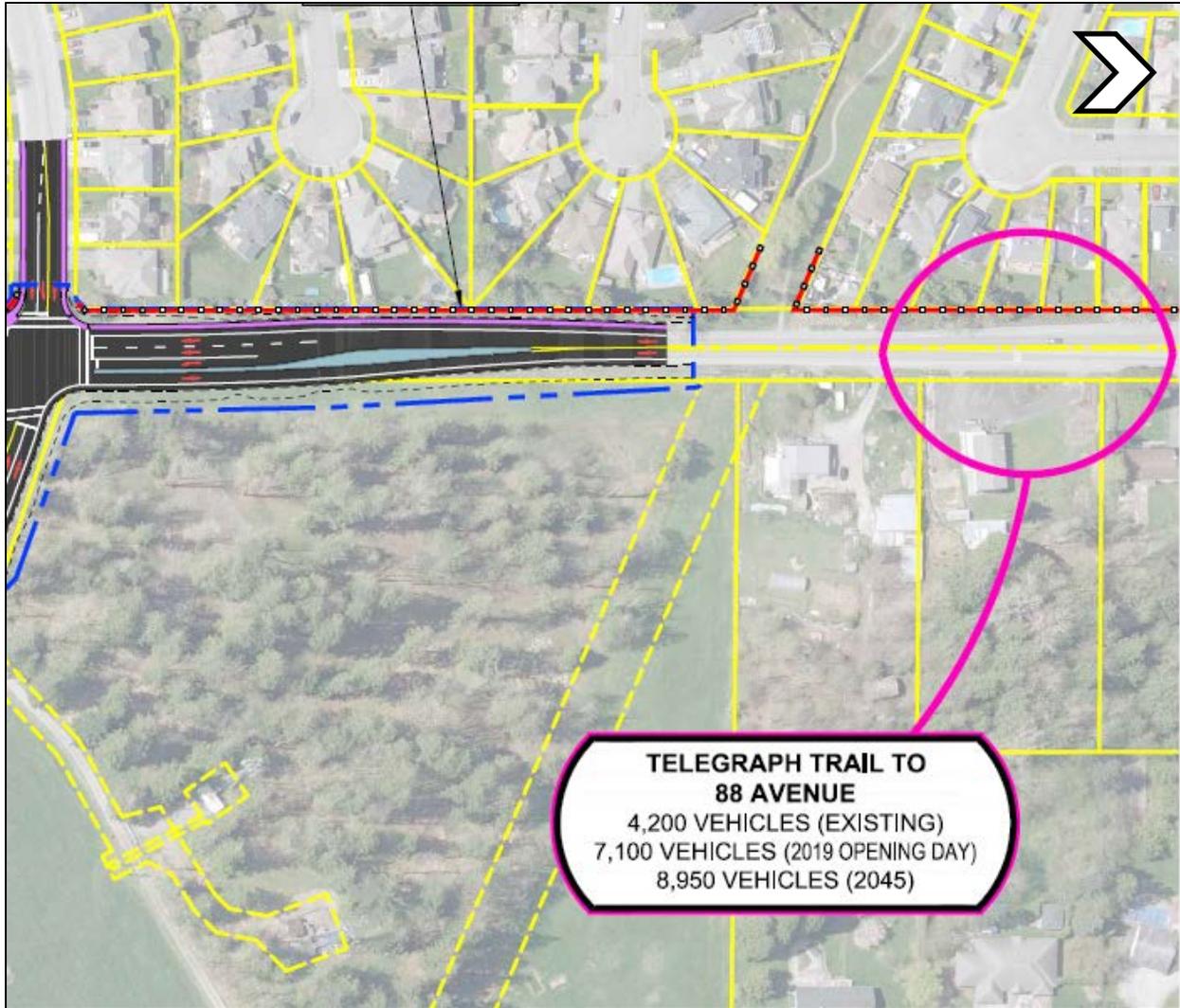


Figure 3-2: ADT on 216<sup>th</sup> Street between Telegraph Trail and 88<sup>th</sup> Avenue



**Figure 3-3: ADT on 216<sup>th</sup> Street North of 88<sup>th</sup> Avenue**

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