Our File: 2431-60007-00

# TECHNICAL MEMO - SUPPLEMENT

**To**
Alex Ramos-Espinoza
Director of Engineering Services
District of Kitimat
270 City Centre
Kitimat, BC, V8C 2H7

**Prepared by**
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**Re**
Sandhill Traffic Impacts on Haisla Blvd at Eurocan Way

**Date**
March 3, 2023

## 1. Background and Problem Definition

Further to the traffic analysis for the Haisla Blvd / Eurocan Way intersection modelling the waste soil haul activities as proposed by Sandhill Materials Inc. (see Technical Memo, February 1, 2023), the District of Kitimat has requested additional information concerning the residual traffic capacity at the study intersection. Specifically, the District has asked:

- What is the threshold of additional traffic at the intersection before improvements are required?
- Can the intersection accommodate the expected design vehicles associated with the waste soil haul movements.

This supplemental Technical Memo was requested to address these questions.

## 2. Existing Traffic Volumes

The traffic volumes were counted at the Haisla Blvd / Eurocan Way intersection on June 6, 2019, which was before the pandemic affected traffic volumes. These volumes were scaled to the 2023 peak season through the application of:

1. A seasonal factor of 1.04 (as derived from MoTI permanent count station P-47-8, on Highway 37 in Kitimat) to scale the June volumes to the summer peak; and
2. A traffic growth factor of 1.08 (based on 2% growth per year for four years).

The adjusted 2023 traffic volumes are shown in Figure 1.

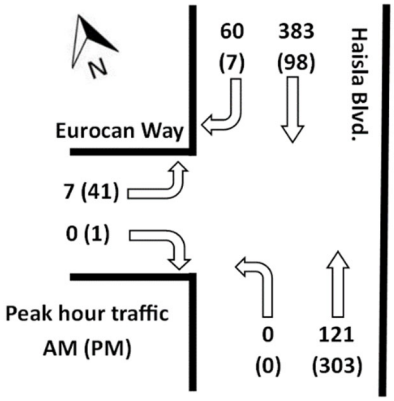


*Figure 1: Estimated 2023 Traffic Volumes*

# 3. Traffic Analysis

Modelling the adjusted peak hour traffic volumes in Figure 1, and adding 10 vph to each of the four turning movements on Eurocan Way (i.e. double the expected number of haul trips assumed in the original memo), the expected intersection performance in the 2023 weekday peak hours is outlined in Table 1.

*Table 1: 2023 Weekday Peak Hour Intersection Performance – Haisla Blvd at Eurocan Way*

| Scenario | Measure | Eurocan Way | | | Frontage Road Access | | | Haisla Blvd | | | | | | Total I/S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | |
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| **AM Peak Hour** | | | | | | | | | | | | | | |
| 2023 Adjusted Volumes | LOS | B | B | B | B | B | B | A | A | A | A | A | A | A |
| | V/C | 0.09 | 0.09 | 0.09 | 0.01 | 0.01 | 0.01 | 0.01 | 0.10 | 0.10 | 0.00 | 0.00 | 0.05 | |
| | Delay (s) | 14.1 | 14.1 | 14.1 | 12.9 | 12.9 | 12.9 | 8.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 |
| | $Queue_{95}$ (m) | 2.2 | 2.2 | 2.2 | 0.1 | 0.1 | 0.1 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| **PM Peak Hour** | | | | | | | | | | | | | | |
| 2023 Adjusted Volumes | LOS | B | B | B | B | B | B | A | A | A | A | A | A | A |
| | V/C | 0.18 | 0.18 | 0.18 | 0.01 | 0.01 | 0.01 | 0.01 | 0.24 | 0.24 | 0.00 | 0.00 | 0.00 | |
| | Delay (s) | 14.4 | 14.4 | 14.4 | 12.6 | 12.6 | 12.6 | 7.5 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 2.1 |
| | $Queue_{95}$ (m) | 4.9 | 4.9 | 4.9 | 0.1 | 0.1 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |

The expected waste soil haul traffic is not expected to cause any significant impact to the intersection capacity. The southbound right turn lane is more than sufficient to accommodate any foreseeable increases to traffic demand, and the 35 metre northbound left turn storage should be sufficient for at least 140 vph (based on TAC formulae). The only expected laning improvement may be the conversion of the northbound acceleration lane to a southbound left turn lane if and when there is a significant increase in traffic volumes turning into the frontage road on the east side of Haisla Blvd.

Using the Synchro model and TAC signal warrant calculations, the following sensitivity analysis was conducted to determine what additional traffic would likely trigger the need for an upgrade to the traffic control (e.g. signalization):

- The estimated traffic demand in 2023 (including the waste soil haul traffic) would satisfy 14% of the warrant for signalization, and the intersection would operate as shown in Table 1.
- If the peak hour traffic volumes increased by 50 vph on all turning movements into and out of Eurocan Way, and the northbound and southbound through movements on Haisla Blvd increased by 100 vph each, the intersection would still operate at LOS “A”, but traffic on the Eurocan Way (eastbound) approach would experience a delay just over 25 seconds in each peak hour (i.e. LOS “D”). This would satisfy approximately 54% of the warrant for signalization.
- If the peak hour traffic volumes increased by 100 vph on all turning movements into and out of Eurocan Way and on the Haisla Blvd through movements, the intersection would operate at LOS “C”, with over 70 seconds average vehicle delay on the Eurocan Way (eastbound) approach (i.e. LOS “F”). At this traffic demand, the intersection would be a candidate for signalization.

# 4. Geometric Analysis

As discussed in the Traffic Summary memo from February 1, 2023, the existing Haisla Blvd / Eurocan Way intersection has been constructed to a high standard, with dedicated lanes for southbound right turns and northbound left turns, as well as acceleration lanes on Haisla Boulevard in both directions. The turning geometry has been designed to accommodate industrial truck traffic, and should therefore accommodate the new waste soil haul traffic. As a cursory evaluation of the intersection geometry, the turning paths were analyzed with AutoTurn software on a scaled air photo of the intersection using a dump truck (9.1 metre length) and a pup trailer (12.4 metre length). The results are shown in Figure 2.

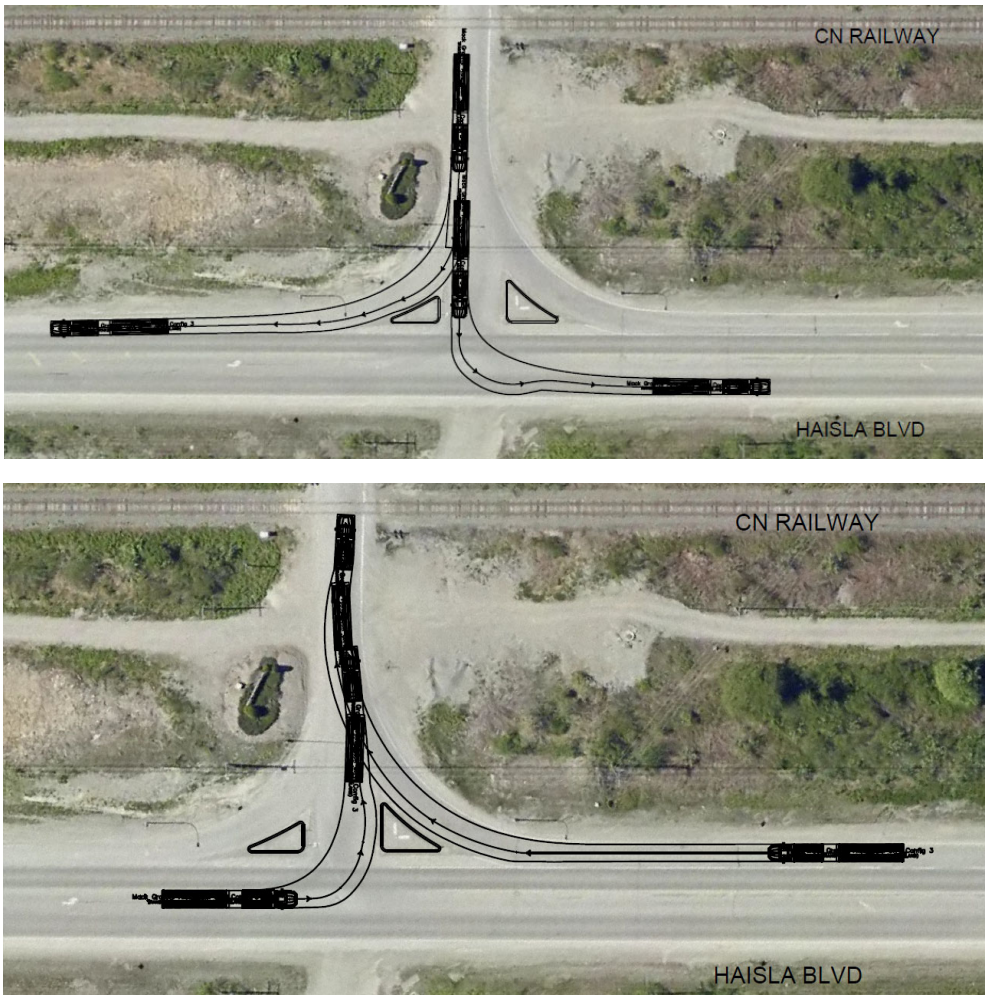


*Figure 2: Dump Truck and Pup Trailer Turning Movements – Haisla Blvd at Eurocan Way*

The Haisla Blvd / Eurocan Way intersection is expected to accommodate the turning movements of the haul trucks with little or no overtracking, especially for the predominant movements to and from the north.

# 5. Findings and Recommendations

The Haisla Blvd / Eurocan Way is expected to operate at LOS "A" with the 2023 traffic volumes, with little or no impact from the small addition of traffic from the waste soil haul activities. The southbound right turn lane is designed to accommodate any foreseeable increases in traffic demand, and the northbound left turn lane should accommodate up to 140 vph of storage. The only potential change to the existing laning is the conversion of the northbound acceleration lane to a southbound left turn lane if and when there is a significant increase in traffic turning into the frontage road on the east side of Haisla Boulevard.

If there was an additional 100 vph on each of the turning movements into and out of Eurocan Way, as well as the northbound and southbound through movements on Haisla Blvd, traffic on the Eurocan Way (eastbound) approach would experience over 70 seconds of delay. At this point, the intersection would be recommended for signalization.

The Haisla Blvd / Eurocan Way intersection is expected to accommodate the turning movements of the haul trucks with little or no overtracking, especially for the predominant movements to and from the north.

# 6. Closure

This Technical Memo Supplement for the Haisla Blvd / Eurocan Way analysis has been prepared by McElhanney Ltd. (McElhanney) for the benefit of Sandhill Materials Inc and the District of Kitimat. The information and data contained herein represent McElhanney's best professional judgment in light of the knowledge and information available to McElhanney at the time of preparation.

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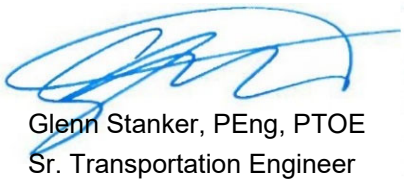
If you require any further assistance, please call me at 778-693-2199.

Yours truly,

McElhanney Ltd.



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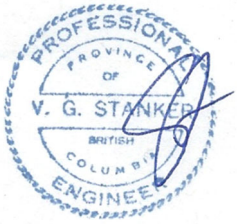


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