



1210 Fourth Avenue  
Prince George, B.C. V2L 3J4  
Tel. (250) 562-1977  
Fax (250) 562-1967

City of Prince George  
3990 18<sup>th</sup> Avenue  
Prince George BC, V2N 4R8

Date: July 25<sup>th</sup>, 2024  
L&M Project: 1432-16

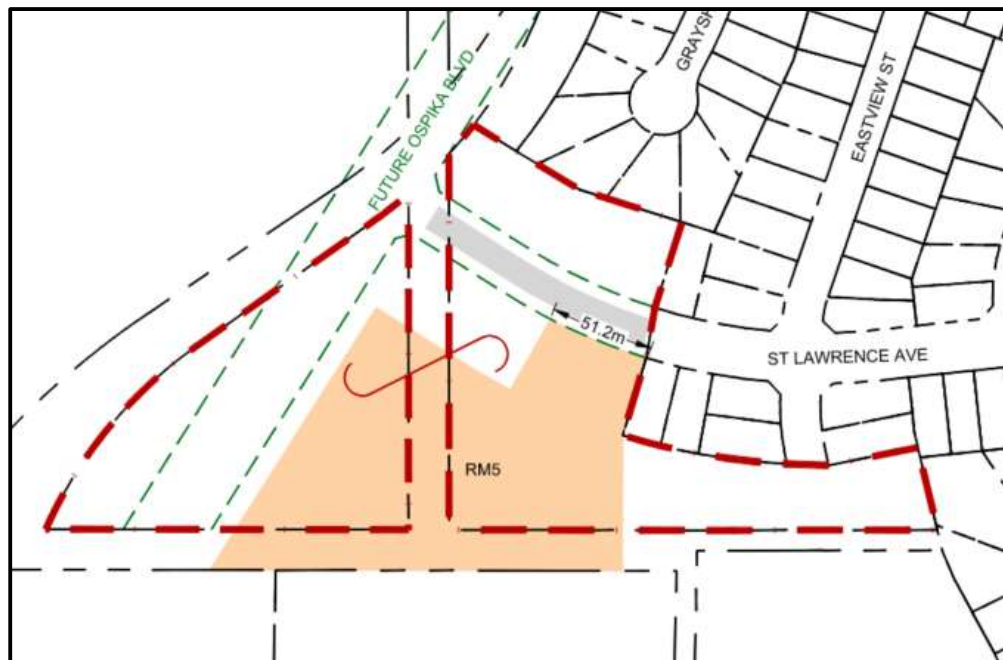
**Attention: Chris Vliegthart**  
**Supervisor, Transportation Services**

**Reference: Traffic Impact Study Update Letter**  
**Rezoning and OCP Amendment Application No. CP100205 & RZ100808**

Dear Mr. Vliegthart,

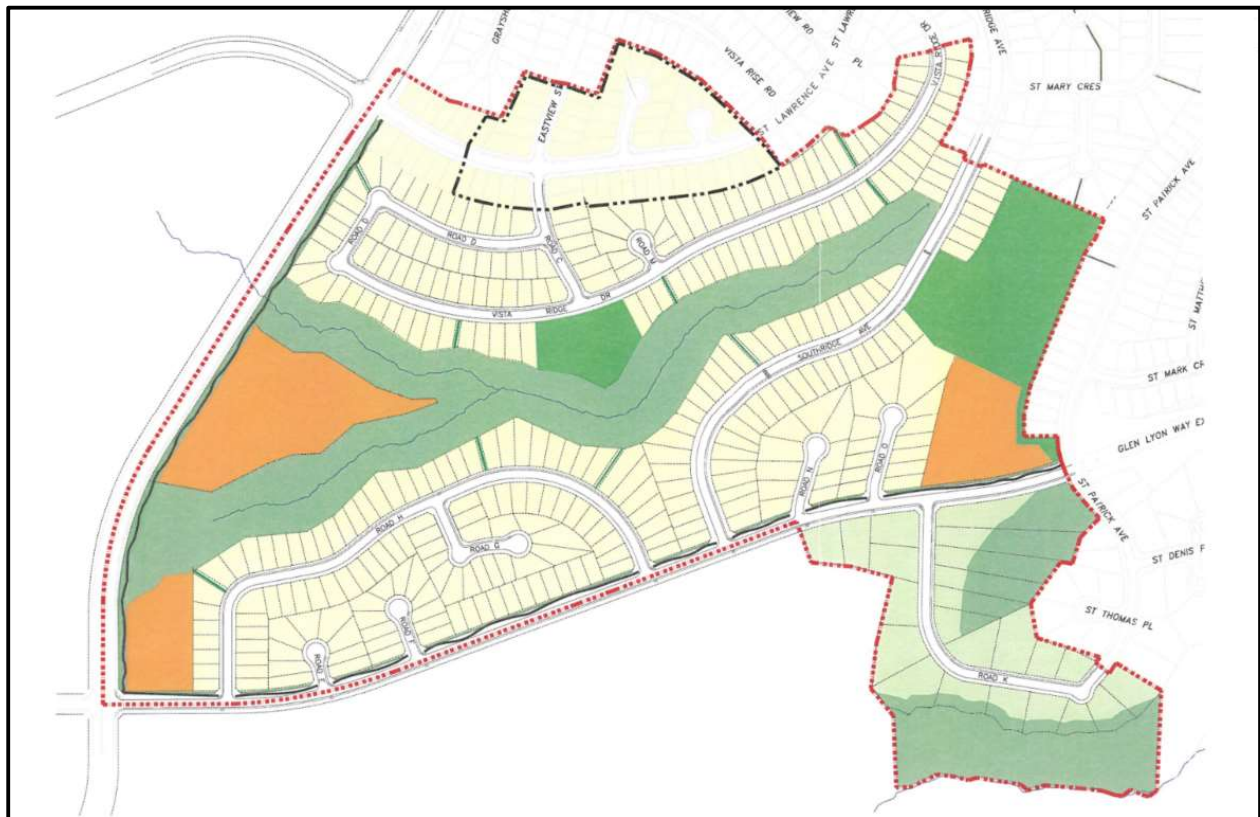
On behalf of Ridgecrest Development Group, L&M Engineering is please to provide you with this Traffic Impact Study Update Letter for the subject property located at 8640 St. Lawrence Avenue. The property is currently split-zoned RS2: Single Residential, AG: Greenbelt, AF: Agriculture and Forestry.

Ridgecrest Developments Group Inc. is proposing to rezone approximately 1.91ha of the property to RM5: Multiple Residential, to facilitate future multi-phased medium-high density multi-family development on the property.



**Exhibit 1: Rezoning Area**

In April 2009 L&M Engineering prepared a TIS in support of the rezoning (RZ100286) for the Glen Lyon Cascades development area. The 2009 TIS analyzed five (5) intersections surrounding the development area to determine the impacts that the future development of the Glen Lyon Cascades would have on the surrounding road network. Additionally, L&M Engineering prepared a Traffic Impact Study Update Letter in 2021 for a rezoning (RZ100694) near the south end of St. Lawrence. The City of Prince George has requested that the recommendations made in the 2009 TIS and the 2021 TIS Update Letter be reviewed and updated, if necessary, based on the development of the proposed multi-family site on St Lawrence Avenue.



**Exhibit 2: 2009 Rezoning Area**



**Exhibit 3: 2021 Rezoning Area**

## **1.0 2009 TRAFFIC IMPACT STUDY RECOMMENDATIONS (RZ100286)**

The 2009 TIS included the following recommendations:

1. Restrict development on St. Patrick Ave until St Patrick Ave is looped to Southridge Ave via the construction of Glen Lyon Way.
2. Install a four way stop to replace the existing two way stop signs on Southridge Avenue after the construction of approximately 350 single family dwelling homes.
3. Review the requirements for signalization at St Lawrence Ave and Domano Blvd. after 50% of the development has been constructed and occupied.

In reference to recommendation No. 3 above, the St. Lawrence and Domano Boulevard intersection was signalized in 2020.

## **2.0 2021 TRAFFIC IMPACT STUDY UPDATE LETTER RECOMMENDATIONS (RZ100694)**

The 2021 TIS Update Letter was prepared to re-evaluate the recommendations outlined in the 2009 TIS report. New traffic counts were completed in 2021 and were compared to the projected traffic volumes calculated in the 2009 TIS. The 2021 traffic counts were slightly lower than the 2009 projected volumes. As a result, the 2021 Update Letter concluded that the

recommendations made in the 2009 report remain valid and should still be used to help guide development.

### **3.0 2024 SCOPE DEVELOPMENT (RZ100808)**

1. Use the 2021 traffic counts at Southridge Avenue and St Lawrence Avenue and the proposed rezoning trip generation volumes to update the recommendation for the installation of stop signs to create a 4-way stop intersection.
2. Review collision history for Southridge Avenue and St. Lawrence Avenue.
3. Review St. Lawrence Avenue and Domano Boulevard signal timing based on traffic count data provided by the City of Prince George.

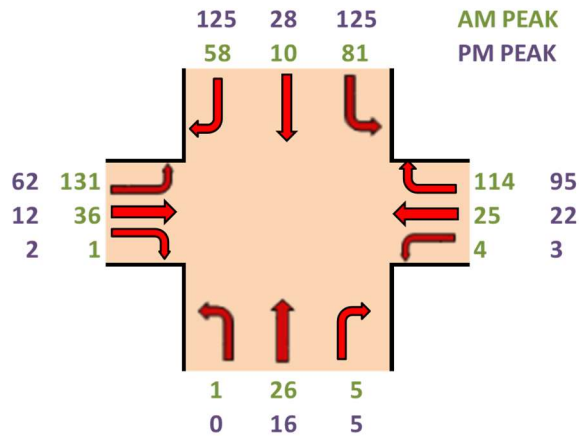
Since the 2021 counts were completed, four new single-family dwellings have been constructed within the 2009 rezoning area. A 23 lot single-family subdivision has been constructed at the south end of Southridge Avenue, A 60-unit townhouse development is currently being constructed near the south end of Southridge Avenue, and a 24 lot single-family subdivision is currently under construction at south end of Eastview Street. Currently, none of these developments have occupied homes.

Additionally, the developer has submitted a subdivision application to create 10 single-family lots at the west end of St. Lawrence Avenue, adjacent to the proposed rezoning. Since these subdivisions are currently under construction and occupied homes are anticipated within the next year or so, the traffic from these developments have been included in the traffic analysis covered in this update letter.

### **4.0 2021 TRAFFIC COUNT**

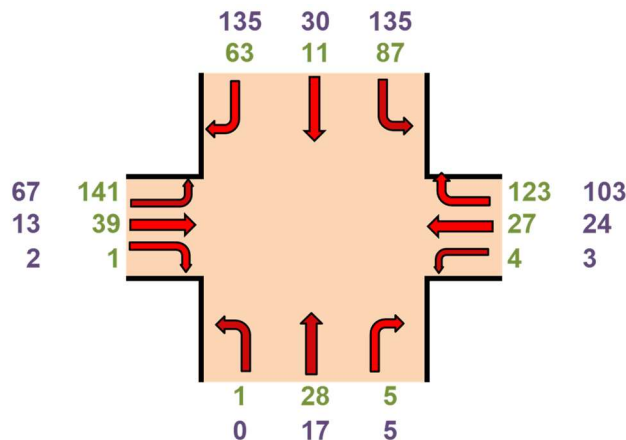
#### **4.1 2021 Existing Background Traffic Counts**

Traffic counts were conducted at the St Lawrence Avenue and Southridge Avenue intersection on March 16, 2021 during the AM Peak from 6:00am to 9:00am and during the PM Peak from 3:00pm to 6:00pm. Traffic Counts were divided into 15-minute increments and were categorized by vehicle class. The AM and PM Peak hour volumes are illustrated in Exhibit 4.



**Exhibit 4: St. Lawrence & Southridge 2021 Traffic Count Volumes**

The analysis completed in this update letter has assumed that houses are going to be built in 2025. As such the traffic counts have been projected to the year 2025. A growth rate of 2% was used in order to remain consistent with the existing study. Exhibit 5 displays the traffic counts projected to the year 2025.



**Exhibit 5: St. Lawrence & Southridge 2025 Projected Traffic Count Volumes**

## 5.0 2024 TRAFFIC ANALYSIS

### 5.1 St. Lawrence and Eastview Trip Generation

The proposed trip generation for the proposed rezoning was developed using the Institute of Transportation Engineers (ITE) Trip Generation Manual 10<sup>th</sup> Edition rate according to the proposed land use. The trip generation is based on Multifamily Housing Mid-Rise (ITE: 221).

As previously mentioned, the developer has an active subdivision plan at the terminus of Vista Ridge Drive and Eastview Street. The intent of the subdivision application is to create 24 new single-family lots. The developer also has plans to subdivide a portion of land at the end of St Lawrence Avenue to create an additional 10 single-family lots adjacent to the proposed rezoning. In July 2024, new density regulations were put in place to allow up to four dwellings on single-family/duplex zoned properties. It is not anticipated that every lot owner will construct a four-unit dwelling on single-family sized lots; however, it is reasonable to assume that the subdivision could average approximately two dwellings per lot. As such it has been assumed that the 34 proposed lots could be occupied by approximately 68 dwelling units. Additionally, four single family dwellings have been constructed and occupied since the 2021 traffic counts.

The single-family trip generation for the St. Lawrence/Eastview area was calculated based on 72 single-family dwellings (68 anticipated dwelling + 4 dwelling constructed since 2021 counts).

**Table 1 – St. Lawrence/Eastview Peak Hour Trip Generation Rates**

Peak Period	ITE Code:	Trip Gen. Variable	Trip Gen. Variable Value	Average Rate	In %	Out %	Total Trip Gen.	In (vph)	Out (vph)
<b>St. Lawrence &amp; Eastview Developments</b>									
<b>Multi-Family Housing – Mid-Rise (ITE Code 221)</b>									
AM	221	Occupied Dwelling Units	238	0.42	26	74	<b>100</b>	26	74
PM	221	Occupied Dwelling Units	238	0.42	64	36	<b>100</b>	64	36
<b>Single Family Detached Housing (ITE Code: 210)</b>									
AM	210	Dwelling Units	72	0.74	23	77	<b>53</b>	13	40
PM	210	Dwelling Units	72	0.99	63	37	<b>71</b>	45	26
<b>AM Net Increase</b>							<b>153</b>	39	114
<b>PM Net Increase</b>							<b>171</b>	109	62

## 5.2 Southridge Avenue Developments Trip Generation

The Southridge Avenue trip generation was developed using the Multi-Family Housing Low-Rise land use (ITE Code: 220) and the Single Family Detached Housing land use (ITE Code: 210). Similar to the St. Lawrence and Eastview subdivisions, it has been assumed that two dwellings will be constructed on each of the 23 single-family lots.

<b>Table 2 – Southridge Peak Hour Trip Generation Rates</b>									
<b>Peak Period</b>	<b>ITE Code:</b>	<b>Trip Gen. Variable</b>	<b>Trip Gen. Variable Value</b>	<b>Average Rate</b>	<b>In %</b>	<b>Out %</b>	<b>Total Trip Gen.</b>	<b>In (vph)</b>	<b>Out (vph)</b>
<b>St. Lawrence &amp; Eastview Developments</b>									
<b>Multi-Family Housing – Low-Rise (ITE Code 220)</b>									
AM	220	Occupied Dwelling Units	60	0.39	20	80	<b>23</b>	5	18
PM	220	Occupied Dwelling Units	60	0.52	65	35	<b>31</b>	20	11
<b>Single Family Detached Housing (ITE Code: 210)</b>									
AM	210	Dwelling Units	46	0.74	23	77	<b>34</b>	8	26
PM	210	Dwelling Units	46	0.99	63	37	<b>46</b>	29	17
<b>AM Net Increase</b>							<b>57</b>	13	44
<b>PM Net Increase</b>							<b>77</b>	49	28

### 5.3 Trip Distribution & Trip Assignment

Two separate Trip Distributions have been prepared for the St. Lawrence/Eastview developments and the Southridge Developments (Figures 1 & 3). The Trip Distributions were created using the percentages outlined in the original TIS. Based on the Trip Distributions and utilizing the trip generation volumes, the Trip Assignment volumes were calculated (Figures 2 & 4). All Trip Distribution and Trip Assignment Figures are enclosed.

### 5.4 St. Lawrence & Southridge 4-Way Stop Analysis

The 2009 TIS recommended that a 4-Way stop be installed at the intersection of St. Lawrence Avenue and Southridge Avenue once 350 single family homes have been constructed. The 2009 4-way stop recommendation was triggered once the intersection experienced a LOS E. The 2021 TIS Update Letter revised the recommendation wording to state ‘350 dwelling units’ rather than ‘350 single family homes’.

Based on dwelling counts provided by the City of Prince George, 119 houses and 37 legal secondary suites have been constructed within the 2009 rezoning area. Therefore, the original recommendation for a four-way stop would be triggered once 174 more dwelling units are constructed and occupied. This equates to exactly the number of townhouses and single-family dwellings (assuming two dwellings per lot) outlined in this letter, excluding the proposed multi-family rezoning. Since all of the lots will likely be registered by 2025, it is recommended that the four-way stop be installed as part of the proposed rezoning.

The west leg of St. Lawrence Avenue is fairly steep and runs at an approximate grade of 7.5% with an intersection approach grade of approximately 2.5-3% that extends 30m from the asphalt edge on Southridge Avenue. The City Design Guidelines indicate that the approach grade should remain at 3% or less for 15m from the adjacent road edge. The Transportation Association of Canada (TAC) guidelines recommend 3% or less for 20m. Both the City Design Guidelines and TAC recommendations are met.

Additionally, the braking distance and stopping sight distance were reviewed for the west leg of the intersection. Based on the TAC calculation the braking distance for the 3% approach is 30m. The TAC stopping distance requirement is 65m. The current sight line to the proposed stop sign location is approximately 60m. Since the stopping sight distance requirement is not quite met, it is recommended to install a W-11 'Stop Ahead' sign further west along St. Lawrence Avenue. The MoTI Standard Traffic Signs and Pavement Marking manual recommends that the W-11 sign should be installed 45m from the stop sign location.



**Exhibit 6: Stop Ahead Sign**

### **5.5 St. Lawrence & Southridge Collision History**

The City of Prince George requested L&M to review the collision history at the St. Lawrence Avenue and Southridge Avenue intersection to determine if there has been a consistent pattern in types of collisions. There has been concern, expressed by the City, about installing a four-way stop at this intersection due to the road grade of St. Lawrence Avenue and slippery winter conditions. The main objective of reviewing the collision history was to determine if rear end collisions on St. Lawrence have been an issue and if this issue would be compounded by a new four-way stop.

The City provided crash incident data from ICBC for the intersection from 2013 to 2022. Over this time period there have been a total of 10 accidents, 2 resulting in injury and 8 resulting in property damage only. Of these 10 accidents none have been reported as a rear



end collision on St. Lawrence. One incident was reported as a vehicle losing control in icy conditions on St. Lawrence and drifting into the opposing lane. One incident was caused by a vehicle reversing from there driveway and being impacted by high snowbanks. The other eight incidents involved vehicles either running through the stop signs on Southridge or trying the turn onto St Lawrence from Southridge and being struck by a vehicle travelling along St. Lawrence. Based on the ICBC information, a four-way stop would likely improve the safety of the intersection. It should reduce the number of accidents caused by a vehicle prematurely turning on St. Lawrence from Southridge and being struck by a vehicle travelling along St. Lawrence.

### **5.6 St. Lawrence & Domano Signal Timing**

The City of Prince George provided L&M with traffic count volumes for the St. Lawrence and Domano Boulevard intersection. Based on the data provided the peak hour of traffic was recorded on October 31, 2023. L&M was asked to review the existing signal timing to determine if the traffic signal was operating sufficiently. Based on the Synchro analysis for the October 31<sup>st</sup> peak hour, all intersection movements are operating at an LOS C (average delays) or better. The current signal timing should remain in operation.

## **6.0 RECOMMENDATIONS**

1. A four-way stop intersection should be implemented at the intersection of St. Lawrence Avenue and Southridge Avenue as part of this rezoning. The west leg of the intersection should include a 'Stop Ahead' sign approximately 45m before the stop sign due to limited sight lines.
2. All other recommendations made in the 2009 Traffic Impact Study remain valid and should be followed as further development occurs.

Yours very truly,

**L&M ENGINEERING LIMITED**

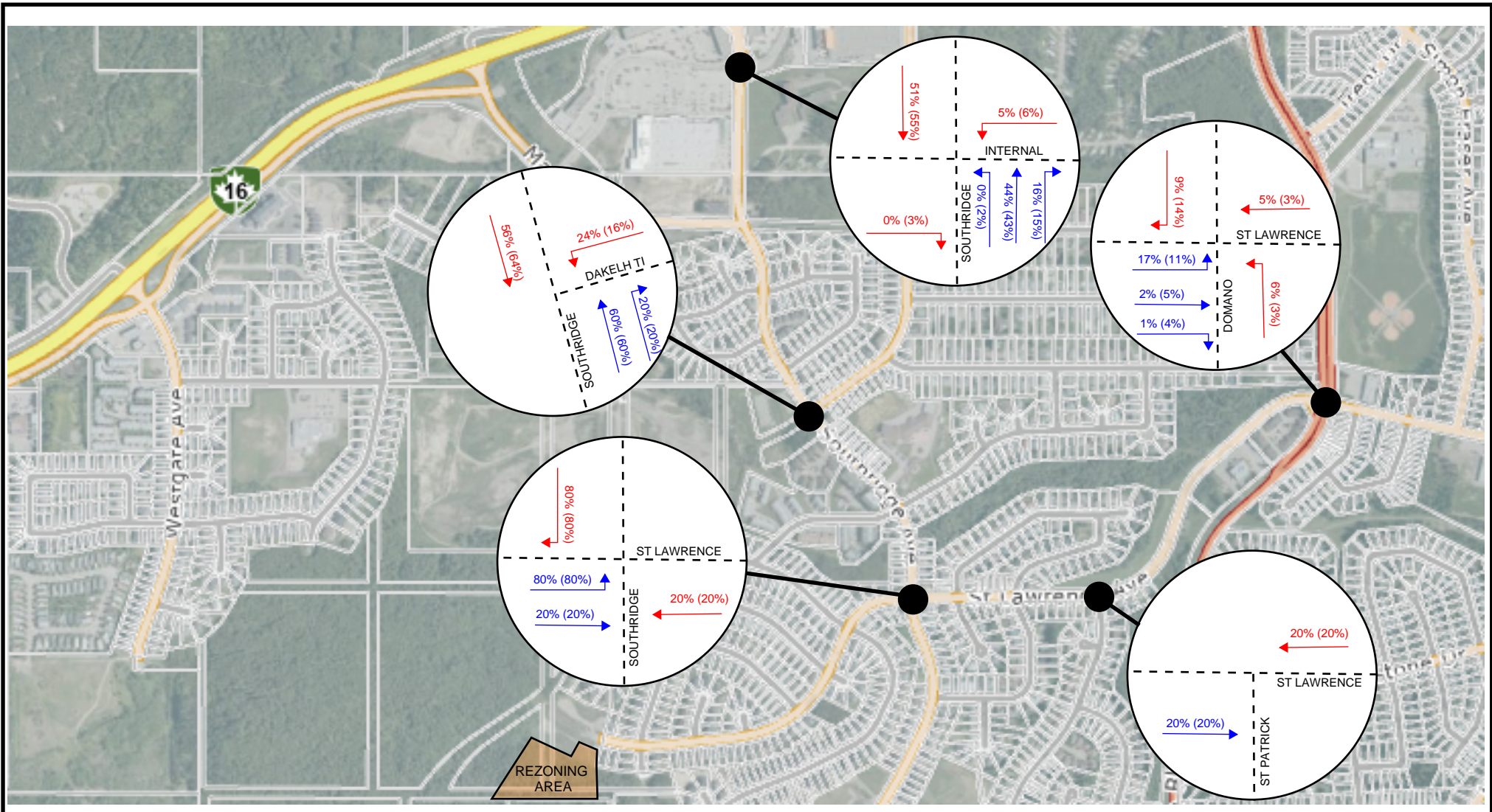
**Prepared By:**

A handwritten signature in black ink, appearing to read 'T. Fjellstrom', with a horizontal line extending to the right.

Tanner Fjellstrom, P. Eng  
Associate

Copy to: Mo Golam, Ridgecrest Development Group

G:\Job Files\1400\1432 - 657180 BC Ltd - Mo Golam\16 - St Lawrence Ave Rezoning & 2 Lots SD\00 - Planning\04 - TIS\TIS Update Letter.docx




DRAWN: TF
CHECKED: TF
ENGINEER: TF
PROJECT FILE: 1432-16
DATE: JULY 23rd, 2024

CONSULTANTS PROJECT No.  
**1432-16**

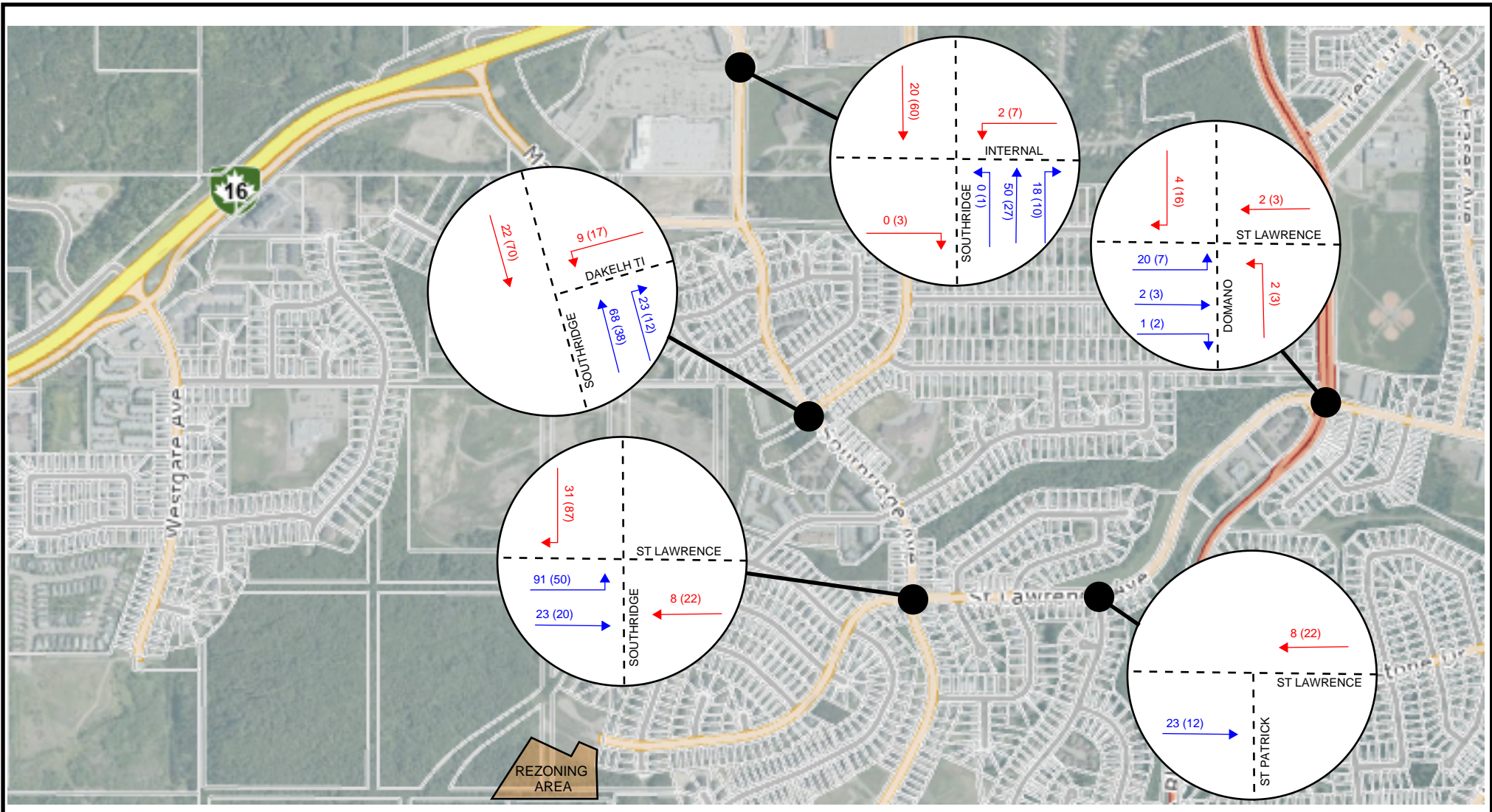
DRAWING No.  
**FIG. 1**

RIDGECREST DEVELOPMENT GROUP INC.  
ST. LAWRENCE REZONING  
ST. LAWRENCE / EASTVIEW  
TRIP DISTRIBUTION



**ENGINEERING LIMITED**

1210 FOURTH AVENUE  
PRINCE GEORGE, B.C.  
V2L 3J4  
TEL. (250) 562-1977  
FAX (250) 562-1967



DRAWN: TF
CHECKED: TF
ENGINEER: TF
PROJECT FILE: 1432-16
DATE: JULY 23rd, 2024


CONSULTANTS PROJECT No.	<b>1432-16</b>
DRAWING No.	<b>FIG. 2</b>

RIDGECREST DEVELOPMENT GROUP INC.

ST. LAWRENCE REZONING

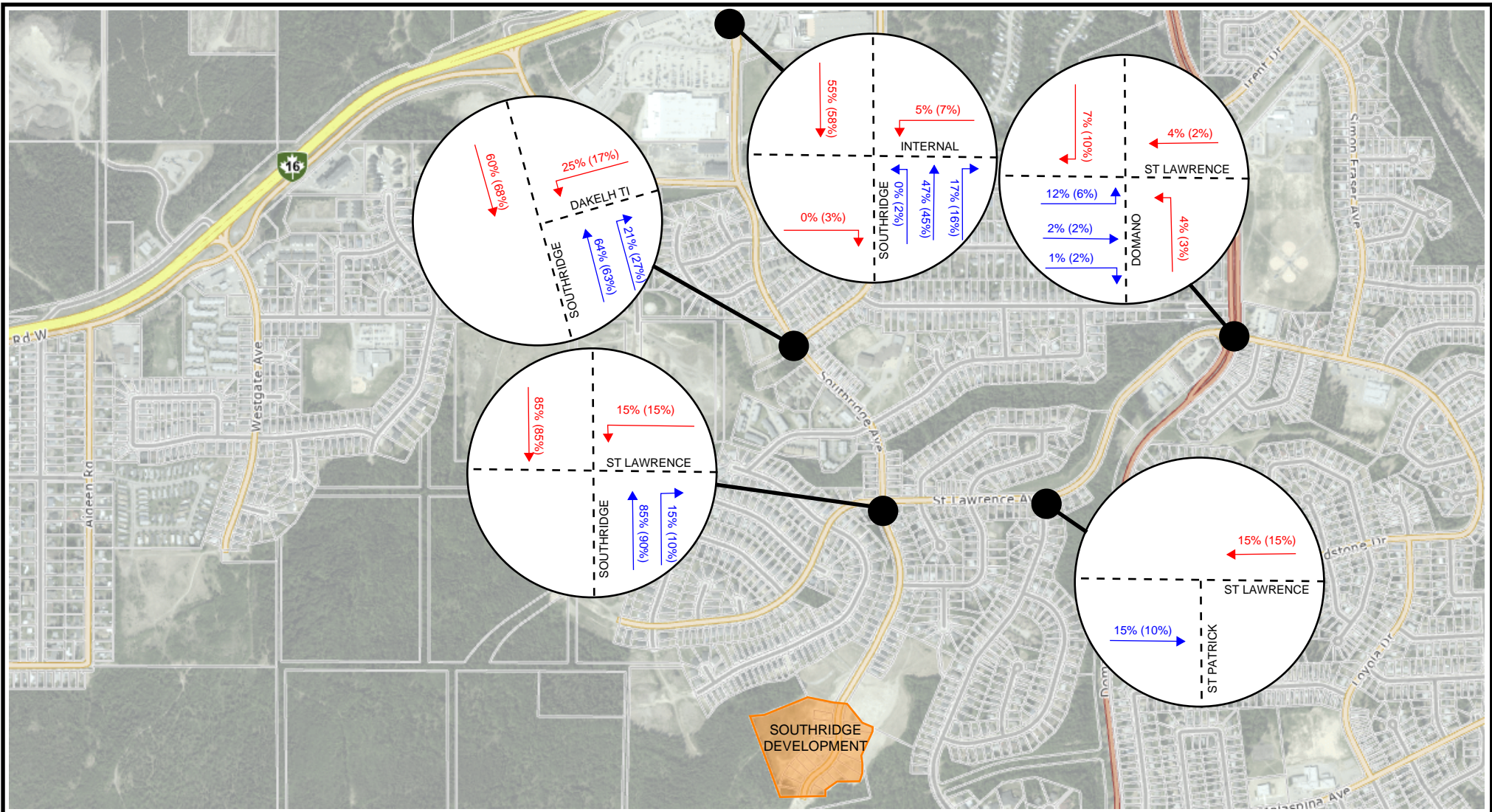
ST. LAWRENCE / EASTVIEW

TRIP ASSIGNMENT



**ENGINEERING LIMITED**

1210 FOURTH AVENUE  
 PRINCE GEORGE, B.C.  
 V2L 3J4  
 TEL. (250) 562-1977  
 FAX (250) 562-1967




DRAWN: TF
CHECKED: TF
ENGINEER: TF
PROJECT FILE: 1432-16
DATE: JULY 23rd, 2024

CONSULTANTS PROJECT No.  
**1432-16**

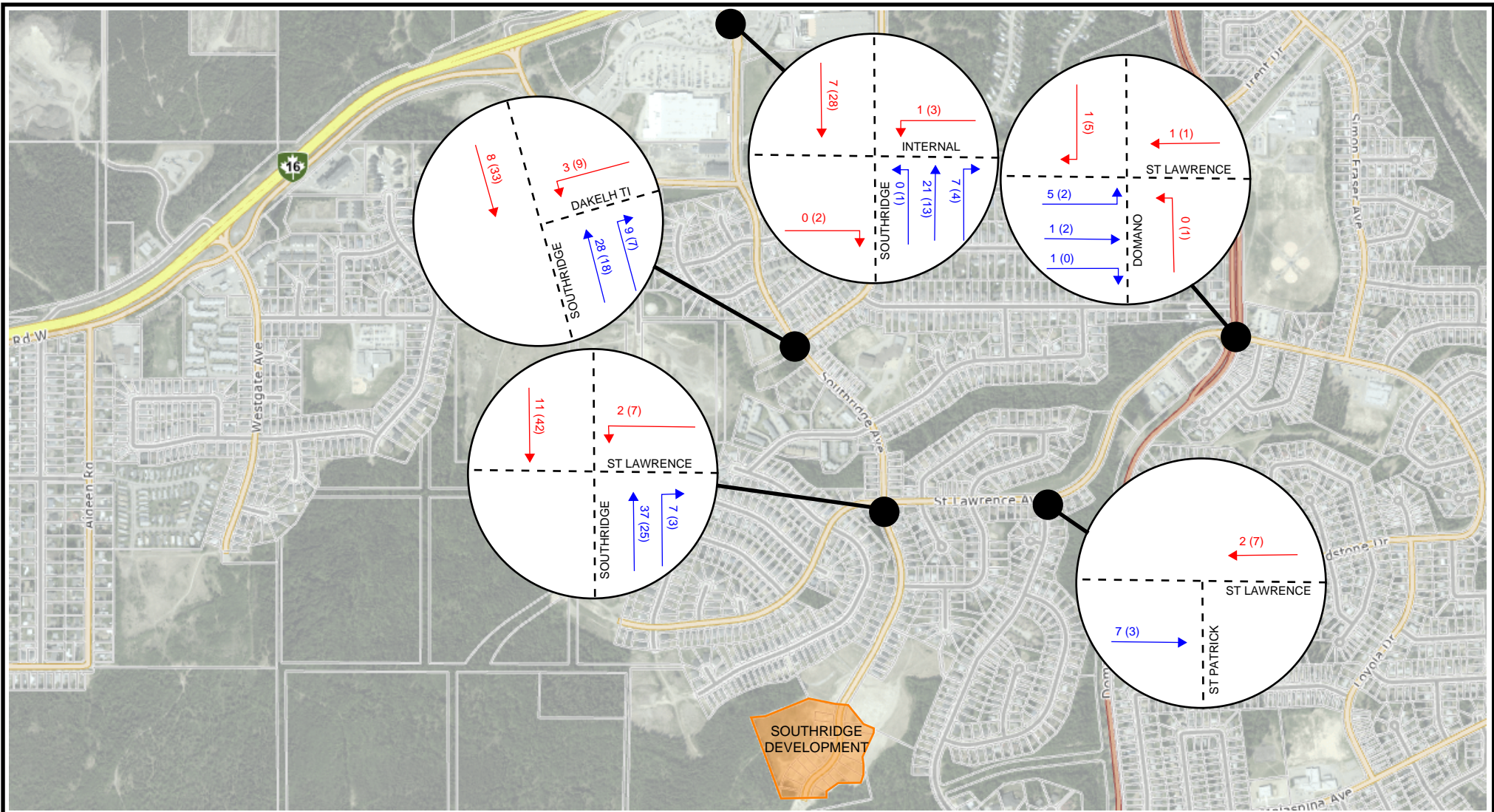
DRAWING No.  
**FIG. 3**

RIDGECREST DEVELOPMENT GROUP INC.  
ST. LAWRENCE REZONING  
SOUTHRIDGE DEVELOPMENTS  
TRIP DISTRIBUTION



**ENGINEERING LIMITED**

1210 FOURTH AVENUE  
PRINCE GEORGE, B.C.  
V2L 3J4  
TEL. (250) 562-1977  
FAX (250) 562-1967




DRAWN: TF
CHECKED: TF
ENGINEER: TF
PROJECT FILE: 1432-16
DATE: JULY 23rd, 2024

CONSULTANTS PROJECT No.  
**1432-16**

DRAWING No.  
**FIG. 4**

RIDGECREST DEVELOPMENT GROUP INC.  
 ST. LAWRENCE REZONING  
 SOUTHRIDGE DEVELOPMENTS  
 TRIP ASSIGNMENT



**ENGINEERING LIMITED**

1210 FOURTH AVENUE  
 PRINCE GEORGE, B.C.  
 V2L 3J4  
 TEL. (250) 562-1977  
 FAX (250) 562-1967