

---

To:	Brent Niehaus	From:	Ahmad Puri
	Stantec Consulting Ltd., Surrey		Stantec Consulting Ltd., Burnaby
File:		Date:	February 1, 2019

---

**Reference: Traffic Analysis - Prairie Avenue Intersections at Newberry Street, Cedar Drive and Fremont Street, Port Coquitlam, BC**

**Background**

The City of Port Coquitlam has retained Stantec Consulting Ltd to design roadway upgrades along Prairie Avenue between Coast Meridian Road and Fremont Street. Prairie Avenue is a local arterial east-west road linking Shaughnessy St to the Trans Canada Trail on the Pitt River dike. Traffic circles are proposed in the preferred Option (Option 3) as a traffic calming measure at three intersections, i.e., Prairie Avenue at Newberry Street, Cedar Drive and Fremont Street.

Prairie / Newberry is an unsignalized two-way intersection with free flow along Prairie Avenue. Prairie / Cedar is a signalized intersection. Cedar provides an alternate access to the Northeast Coquitlam area via Victoria Drive, as well as to Minnekhada Regional Park. Prairie / Fremont is an all way stop controlled intersection. Fremont is the border between urban and rural developments.

The proposed traffic circles would operate with a single entry and exit lane on all four approaches. A traffic analysis was performed by Stantec to evaluate the traffic performance of the three proposed traffic circles under existing AM, Mid-day and PM peak hour conditions. This memo summarizes the traffic analysis results.

**Traffic Volumes**

Turning movement counts at the three study intersections were provided by City of Port Coquitlam. As the counts were conducted in 2013/2014 a traffic growth factor was applied to bring them to 2019 level. The growth factor was derived from the city's transportation master plan 2013, which states that "the peak period traffic volumes in Port Coquitlam are expected to increase by anywhere from 20% to 50% on various corridors by 2031". This translates to a growth of between 1.11% to 2.78% per year. Hence an average 2% per year linear growth was assumed for this analysis.

Figure 1 shows the 2019 turning movement volumes at the three study intersections for the 2019 AM, MIDDAY and PM peak periods.

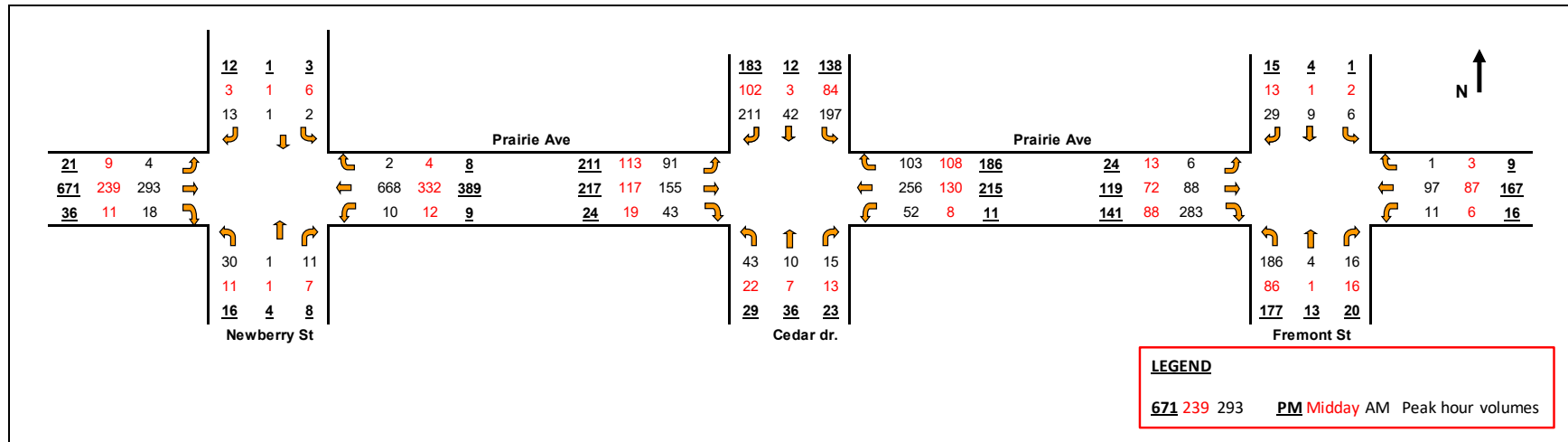
February 1, 2019

Brent Niehaus

Page 2 of 4

Reference: Traffic Analysis - Prairie Avenue Intersections at Newberry Street, Cedar Drive and Fremont Street, Port Coquitlam, BC

Figure 1: 2019 Peak Hour Turning Movement Counts



**Reference:** Traffic Analysis - Prairie Avenue Intersections at Newberry Street, Cedar Drive and Fremont Street, Port Coquitlam, BC

## Traffic Analysis

The traffic performance of the study intersections was evaluated with a one entry and exit lanes on all approaches and a single circulatory lane. Sidra software which is based on Highway Capacity Manual (HCM) methodologies was used to model the intersections.

Traffic performance results in terms of Level of Service (LOS), average vehicular delay (seconds/vehicle), 95th percentile queue lengths (meters) and volume to capacity (v/c) ratios are summarized in Table 1.

**Table 1: Peak Period Intersection Performance with Traffic Circle configuration**

Scenario	Peak	MOE	EB	WB	NB	SB
Prairie Avenue at Newberry Street	AM	LOS	A	A	A	A
		Delay (s)	4.3	4.5	9.2	9.7
		v/c ratio	0.26	0.52	0.05	0.03
		95% Queue(m)	12	33	2	2
	Mid-day	LOS	A	A	A	A
		Delay (s)	4.5	4.4	8.2	9.1
		v/c ratio	0.20	0.27	0.03	0.03
		95% Queue(m)	9	12	1	1
	PM	LOS	A	A	B	A
		Delay (s)	4.4	4.6	11.0	7.1
		v/c ratio	0.51	0.32	0.06	0.04
		95% Queue(m)	31	15	3	2
Prairie Avenue at Cedar Drive	AM	LOS	A	A	A	B
		Delay (s)	8.0	6.4	9.8	12.5
		v/c ratio	0.40	0.44	0.19	0.66
		95% Queue(m)	21	22	9	51
	Mid-day	LOS	A	A	A	A
		Delay (s)	6.6	5.3	8.7	7.3
		v/c ratio	0.26	0.26	0.07	0.19
		95% Queue(m)	12	12	3	8
	PM	LOS	A	A	B	A
		Delay (s)	7.9	6.7	10.3	7.9
		v/c ratio	0.47	0.44	0.21	0.45
		95% Queue(m)	26	22	10	24
Prairie Avenue at Fremont Street	AM	LOS	A	A	A	A
		Delay (s)	4.3	6.4	8.8	6.9
		v/c ratio	0.37	0.15	0.26	0.07
		95% Queue(m)	19	6	11	3
	Mid-day	LOS	A	A	A	A
		Delay (s)	4.6	5.2	7.9	5.6
		v/c ratio	0.14	0.10	0.11	0.02
		95% Queue(m)	6	4	4	1
	PM	LOS	A	A	A	A

February 1, 2019

Brent Niehaus

Page 4 of 4

**Reference:** Traffic Analysis - Prairie Avenue Intersections at Newberry Street, Cedar Drive and Fremont Street, Port Coquitlam, BC

		Delay (s)	4.2	5.7	8.8	5.9
		v/c ratio	0.29	0.11	0.18	0.07
		95% Queue(m)	14	5	7	3

Sidra results show that all approaches at the study intersections are expected to operate at acceptable LOS A/B for all peak periods. There are no capacity issues for the traffic circle option. The traffic queues are expected to be minimal. The maximum 95<sup>th</sup> percentile queue of 51m is expected at Cedar Avenue SB approach in the AM peak hour which is about 6 cars. All other queues are expected to remain under 35m.

## CLOSURE

We trust the information documented herein will help choose the right upgrade option. Please do not hesitate to contact the undersigned should you have any questions

Regards,

**Ahmad Puri** PEng., MEng.  
Traffic Engineer

Phone: (604) 696 8416  
ahmad.puri@stantec.com