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File:	111700574	Date:	May 17, 2019

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**Reference: Traffic Analysis - Prairie Avenue Intersections at Shaughnessy Street, Flint Street, Oxford Street and Wellington Street, Port Coquitlam, BC**

**Background**

The City of Port Coquitlam has retained Stantec Consulting Ltd to design roadway upgrades along Prairie Avenue. 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 as a traffic calming measure at four signalized intersections, (i.e. Prairie Avenue Intersections at Shaughnessy Street, Flint Street, Oxford Street and Wellington Street).

All four intersections are signalized; however, Prairie/ Flint and Prairie/ Wellington are pedestrian activated signals for crossings across Prairie Avenue.

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.

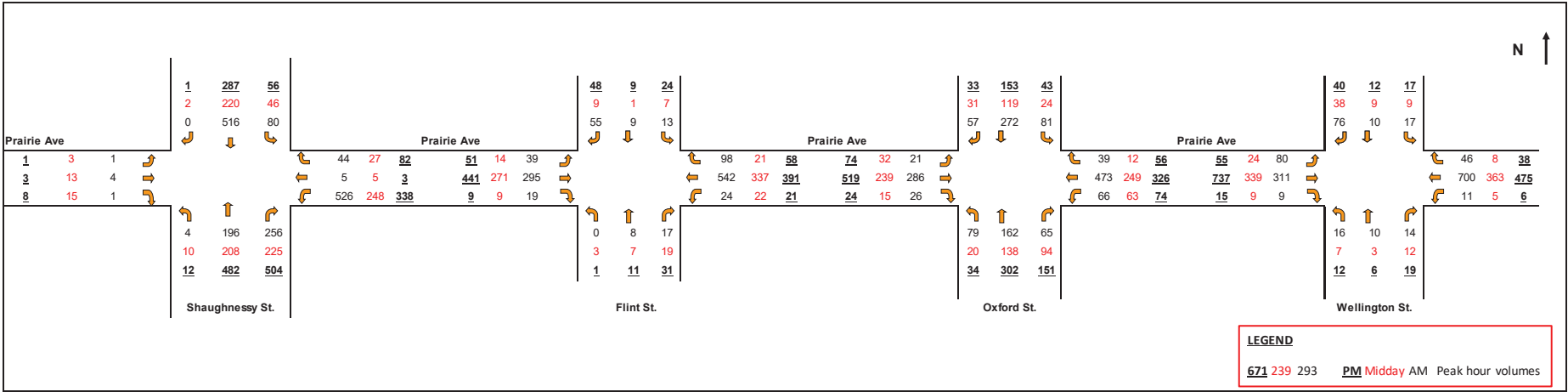
**Traffic Volumes**

Turning movement counts at the three study intersections were provided by City of Port Coquitlam. As the counts were conducted in the past (from 2007 to 2018) 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 study intersections for the 2019 AM, Midday and PM peak periods.

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Figure 1: 2019 Peak Hour Turning Movement Counts



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## 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 Shaughnessy Street	AM	LOS	A	B	A	A
		Delay (s)	9.2	11.5	4.1	8.8
		v/c ratio	0.02	0.68	0.35	0.01
		95% Queue(m)	1	49	20	1
	Mid-day	LOS	A	A	A	A
		Delay (s)	7.4	9.6	4.4	6.0
		v/c ratio	0.07	0.27	0.34	0.40
		95% Queue(m)	3	12	18	20
	PM	LOS	A	B	A	A
		Delay (s)	9.2	14.0	5.0	7.6
		v/c ratio	0.03	0.58	0.75	0.42
		95% Queue(m)	2	40	76	22
Prairie Avenue at Flint Street	AM	LOS	A	A	A	B
		Delay (s)	5.2	5.0	6.3	8.4
		v/c ratio	0.35	0.56	0.04	0.16
		95% Queue(m)	17	35	2	7
	Mid-day	LOS	A	A	A	A
		Delay (s)	4.6	4.8	6.4	7.6
		v/c ratio	0.24	0.31	0.06	0.03
		95% Queue(m)	10	15	3	1
	PM	LOS	A	A	B	A
		Delay (s)	5.4	5.0	7.7	8.5
		v/c ratio	0.44	0.9	0.09	0.22
		95% Queue(m)	25	28	4	10
Prairie Avenue at Oxford Street	AM	LOS	A	A	A	B
		Delay (s)	9.3	7.7	8.8	18.7
		v/c ratio	0.50	0.60	0.45	0.75
		95% Queue(m)	31	41	24	71
	Mid-day	LOS	A	A	A	A
		Delay (s)	6.0	6.3	6.3	6.9
		v/c ratio	0.27	0.32	0.27	0.22
		95% Queue(m)	12	15	12	10

May 17, 2019

Brent Niehaus

Page 4 of 4

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	PM	LOS	A	A	B	A
		Delay (s)	7.7	10.0	17.3	8.0
		v/c ratio	0.61	0.61	0.75	0.31
		95% Queue(m)	41	43	71	15
Prairie Avenue at Wellington Street	AM	LOS	A	A	A	B
		Delay (s)	5.5	5.8	8.5	12.0
		v/c ratio	0.37	0.72	0.07	0.27
		95% Queue(m)	20	57	3	14
	Mid-day	LOS	A	A	A	A
		Delay (s)	4.7	4.4	7.2	6.9
		v/c ratio	0.27	0.30	0.04	0.08
		95% Queue(m)	13	13	2	3
	PM	LOS	A	A	B	A
		Delay (s)	4.9	4.9	11.6	8.3
		v/c ratio	0.59	0.45	0.10	0.11
		95% Queue(m)	45	24	5	5

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 options. The traffic queues are expected to be minimal. The maximum 95<sup>th</sup> percentile queue of 76m is expected at Shaughnessy Street NB approach in the PM peak hour which is about 11 cars. During PM peak period this intersection carries heavy volumes of northbound to eastbound traffic, which are channelized through a dedicated right turn lane with a right turn island. Maintaining the channelization is recommended by implementing a slip lane to the proposed traffic circle at this intersection.

## 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,

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