Memorandum

To:	Jeff Moi, General Manager of Engineering and Operations	File #:	11-5460-03-04
		Date:	September 29, 2021
From:	Geoffrey Keyworth, Transportation Engineer		
Subject:	**Pedestrian Crossing Time Study Findings**		

The Transportation Association of Canada (TAC) announced last year that its committee would be updating the 2014 Manual of Uniform Traffic Control Devices for Canada (MUTCDC) with a tentative release date for Spring 2021. One of the updates included in the new edition is the latest recommended pedestrian crossings speeds at signalized intersections. The new proposed crossing speeds are as follows:

a) *A walking speed of 0.8 m/s should be used in cases where at least 20 percent of pedestrians crossing the signalized intersection use assistive devices for mobility. An assistive device is defined as any non-motorized device that assists a pedestrian in the walking task (e.g., walkers, canes, and manual wheelchairs). This walking speed applies to all types of signalized crossings (whether the crossing is equipped with accessible pedestrian signals or not).*

b) *A walking speed of 0.9 m/s should be used in cases where at least 20 percent of pedestrians crossing the signalized intersection are older pedestrians (65 years of age or older).*

c) *A walking speed of 1.0 m/s should be used to accommodate the general population.*

The traffic signals in Port Moody currently use a pedestrian crossing speed of 1.2 m/s, a speed that is a challenge for seniors and mobility and visually impaired users. Increasing the pedestrian crossing time would help remove physical barriers, improve comfort, and generally prioritize pedestrians. A study was initiated to review and provide recommendations based on the new crossing speeds and impacts to each intersection and respective turning movements. In the study, 15 intersections were selected based on average daily traffic volume and pedestrian traffic throughout the week.

Staff also reviewed the impact of providing a Leading Pedestrian Interval (LPI), also known as Advance Walk, at several intersections. LPIs enable pedestrians to enter intersections earlier by delaying the associated vehicle green phase, usually by about five (5) seconds. By delaying vehicle movement, pedestrians can enter the crossing safely and emphasize their presence by becoming more visible during turning movements. LPIs have been shown to improve safety for pedestrians in several cities, including Vancouver, Surrey, and New York.

Below are the intersections selected along with proposed leading pedestrian intervals and new crossing speeds:

Table 1 – Selected Intersections for Implementation

Intersection	Proposed Crossing Speed (m/s)	Leading Pedestrian Interval?
Albert Street / Barnet Highway at St. Johns Street	1.0	No
Kyle Street at St. Johns Street	1.0	No
Grant Street at St. Johns Street	1.0	No
Moody Street at St. Johns Street	0.9	Yes
Hugh Street at St. Johns Street	0.9	Yes
Williams Street at St. Johns Street	0.9	Yes
Buller Street at St. Johns Street	0.9	Yes
Moray Street at St. Johns Street	0.9	Yes
Dewdney Trunk Road at Barnet Highway	1.0	No
Barnet Highway at Ioco Road	1.0	No
Suter Brook Way at Ioco Road	1.0	Yes
Murray Street / Guildford Way at Ioco Road	1.0	Yes
Newport Drive at Ioco Road	0.8	Yes
Ungless Way / Heritage Mountain Boulevard at Ioco Road	0.8	Yes
Clarke Street at Moody Street	1.0	No

The St. Johns Street and Ioco Road corridors have historically been designed to provide the best traffic flow with minimal congestion and delays. For St. Johns Street, the traffic signals prioritize westbound traffic in the morning the westbound direction and eastbound traffic in the afternoon. For Ioco Road, the traffic signals prioritize southbound traffic in the morning and northbound traffic in the afternoon. Although this has been effective at moving traffic, the signal timing plans sacrifice pedestrian priority and crossing clearance time in favour of vehicle movement. New cycle lengths and time of day (TOD) plans are proposed to provide a better level of service for pedestrians and minimize the delay increases due to the new crossing times.

Proposed New Cycle Lengths

1. AM: 118 seconds
2. Mid-Day: 110 seconds with several intersections operating uncoordinated
3. PM: 118 seconds
4. Weekend: 110 seconds with several intersections operating uncoordinated

The new TOD plans are as follows:

1. AM: Monday–Friday (0630–0800)
2. Mid-Day: Monday–Friday (0800–1600)
3. PM: Monday–Friday (1600–1800)
4. Weekend: Saturday and Sunday (0800–1800)

<u>Implications on Morning Peak Period</u>

The Ioco Road corridor current AM cycle length is 90 seconds and would need to increase to 118 seconds to match the St. Johns Street AM cycle length and accommodate the new crossing times. Most intersections and respective turning movements would experience an increase in delay, although some would see reduced delays for certain movements. The intersections below would be most significantly affected by these proposed changes:

Table 2 – AM Turning Movement Considerations

Intersection	Turning Movement	Before Average Delay (s)	New Average Delay (s)	Change (s)
Dewdney Trunk Road at Barnet Highway	Westbound left-turn	53	104	+51
Dewdney Trunk Road at Barnet Highway	Westbound through	23	67	+43
Barnet Highway at Ioco Road	Westbound through	39	102	+63
Barnet Highway at Ioco Road	Northbound right-turn	246	285	+39

Implications on Mid-Day and Weekend

In the mid-day and on weekends, it was recommended to use 110 cycle lengths for both corridors while modifying several intersections to operate uncoordinated. The current cycle length for the St. Johns Street corridor is 98 seconds and the Ioco Road corridor is 90 seconds. An uncoordinated traffic signal operates independently with the main street given passive green and cross streets operated by vehicle calls or pedestrian push-button activation. The following intersections are proposed to operate uncoordinated:

1. Albert Street/Barnet Highway at St. Johns Street
2. Moody Street at Clarke Street
3. Moray Street at St. Johns Street
4. Murray Street/Guildford Way at Ioco Road

Based on the analysis completed, operating the four proposed intersections uncoordinated would result in a better level of service with decreased delays.

Implications on Afternoon Peak Period

The Ioco Road corridor current PM cycle length is 94 seconds and would need to increase to 118 seconds to match with the St. Johns Street PM cycle length and accommodate the new crossing times. Several intersections are expected to have increased delay, while others would have minor improvements. The following intersections would be most significantly affected by these changes:

Table 3 – PM Turning Movement Considerations

Intersection	Turning Movement	Before Average Delay (s)	New Average Delay (s)	Change (s)
Albert Street / Barnet Highway at St. Johns Street	Westbound through	49	88	+39
Moray Street at St. Johns Street	Eastbound through	66	111	+45
Moray Street at St. Johns Street	Westbound left-turn	95	162	+67
Dewdney Trunk Road at Barnet Highway	Westbound left-turn	75	142	+67
Barnet Highway at Ioco Road	Northbound right-turn	320	364	+44
Ungless Way / Heritage Mountain Boulevard at Ioco Road	Eastbound left-turn	82	154	+72

Overall, across the remaining intersections, the increased delays would be moderate, ranging from 10 seconds to 30 seconds. Several turning movements would see improvement or better performance, such as decreased waiting time.

Automated Push Buttons

Last year, several intersections in the City were modified with automated pedestrian push-buttons set up with activation between 0700 and 2100. The current traffic signals with automated pedestrian pushbuttons are listed below:

Table 4 – Automated Pedestrian Pushbuttons Locations (as of June 10, 2020)

Kyle Street at St. Johns Street	Capilano Road at Murray Street
Grant Street at St. Johns Street	Suter Brook Way at Ioco Road
Moody Street at St. Johns Street	Murray Street at Ioco Road
Hugh Street at St. Johns Street	Newport Way at Ioco Road
William Street at St. Johns Street	Heritage Mountain Boulevard / Ungless Way at Ioco Road
Bullet Street at St. Johns Street	Balmoral Drive at Guildford Way
Moray Street at St. Johns Street	Ungless Way at Guildford Way
Klahanie Drive West at Murray Street	Noons Creek Drive at Ungless Way
Klahanie Drive East at Murray Street	

On April 13, 2021, based on a Transportation Committee recommendation, Council approved retaining automated push buttons on a permanent basis including having staff develop criteria to identify where they should remain, be removed, or be expanded in the future. These criteria are still under development, but should consider factors such as pedestrian volume, proximity to pedestrian generators, pedestrian demographics, and impact to traffic.

Staff is recommending retaining automated pedestrian pushbuttons on a permanent basis at:

- Kyle Street at St. Johns Street
- Grant Street at St. Johns Street
- Ungless Way/Heritage Mountain Blvd at Ioco Road
- Newport Drive at Ioco Road,
- Klahanie Drive West at Murray Street,
- Klahanie Drive East at Murray Street,
- Capilano Road at Murray Street, and
- Murray Street/Guildford Way at Ioco Road.

These intersections service high pedestrian volumes throughout the day due to proximity to the Shoreline Trail, Klahanie Village, Suter Brook Village, Newport Village, and City Hall. In addition, traffic volumes are significantly lower during non-peak hours, allowing for vehicle calls on cross streets with minor impacts to traffic flow in the north and southbound directions on Ioco Road and in the westbound and eastbound directions on Murray Street. The remaining locations would be returned to normal operations. Removing the automated pushbutton setup would increase manual pedestrian pushbutton response time and vehicle calls on cross streets while satisfying flow along St. Johns Street in the westbound and eastbound directions.

One additional consideration for removing automated pedestrian pushbuttons is to ensure proper activation of audible indicators. On older model pushbuttons that are deployed at certain locations in the City, audible indicators (Canadian Melody for the east-west direction and cuckoo sound for the north-south direction) do not activate unless the buttons are pushed, which

activates the sounds. Forcing the audible sounds to activate at all times requires modification within the traffic signal controller cabinet.

Staff have received requests for additional pedestrian clearance times along St. Johns Street and Ioco Road. This initiative supports the City's Master Transportation Plan goals of making walking a great transportation choice by creating safe, comfortable and complete streets and Council's Strategic goals to encourage lifelong healthy and active living.

Staff recommend proceeding with the following motion:

> *THAT the new pedestrian crossing clearance times be implemented for the 15 identified traffic signals as outlined and recommended in the report dated September 1, 2021 from the Engineering and Operations – Infrastructure Engineering Services Division regarding Pedestrian Crossing Time Study.*

Vinh Chung, the City's Transportation Engineering Technologist, authored significant sections of this memorandum.