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MEMORANDUM

TO: file	DATE: September 11, 2019
FROM: Daniel Riendeau	PROJECT #: 19-014
PROJECT: Television Road Bridge Environmental Assessment	
SUBJECT: Traffic Volume Review	

1. Introduction

The City of Peterborough is conducting a Municipal Class Environmental Assessment (EA) for the partial or complete replacement of the Television Road Bridge over South Meade Creek.

The bridge is located between Keene Road and Maniece Avenue. Television Road is a key arterial road that links Highways 7 and 115 to Parkhill Road East and County Road 4 east of Peterborough.

This memo reviews the available traffic data in the vicinity of the bridge to assess the existing and future traffic demand. The 2012 Transportation Master Plan had identified the need to widen this subject section of Television Road in the 2021 to 2026 horizon.

2. Traffic Data

An automatic traffic recorder (ATR) was installed on Television Road south of Maniece Avenue from May 9 to May 23, 2019. This period included a statutory holiday: Victoria Day (Monday, May 20). The hourly volumes measured in each direction are illustrated in **Figure 1**.

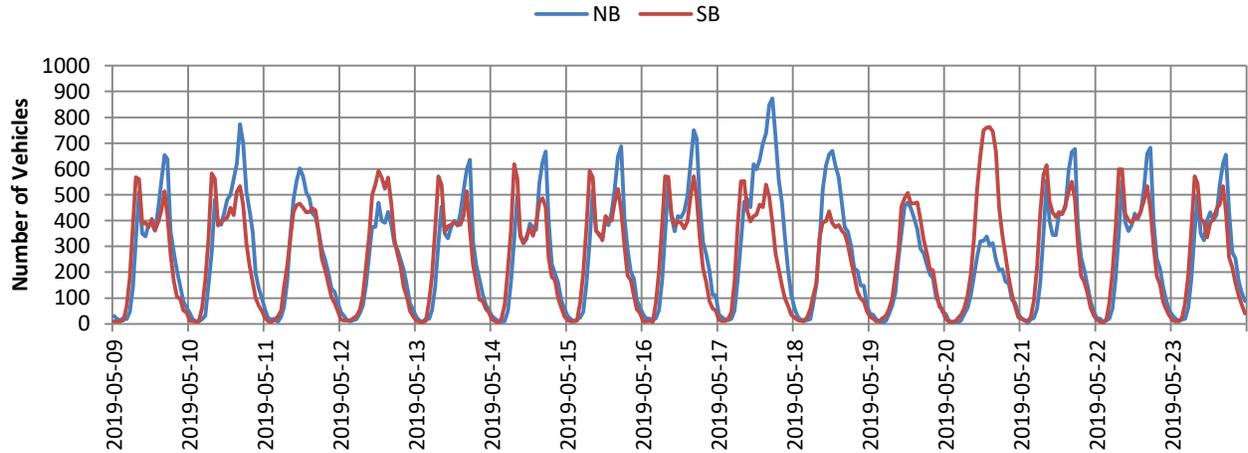


Figure 1: Hourly Traffic Volumes on Television Road South of Maniece Avenue

During most weekdays, the daily traffic pattern in each direction is that of a typical commuting route, with a peak in the morning and another peak in the afternoon. In this case, the majority of traffic is going southbound during the morning peak hour and northbound during the afternoon peak hour. The traffic volumes are consistent from one weekday to the next, with the following exceptions:

- Slightly higher traffic volumes in the afternoon on Friday, May 10 and Thursday, May 16
- Significantly more northbound traffic on Friday, May 17 and southbound on Monday, May 20 (Victoria Day)

A different pattern is observed during the weekends, with a single peak in the middle of each day. The majority of traffic is going northbound at the beginning of the weekend and southbound at the end of the weekend. This is amplified during the Victoria Day long weekend, with substantially greater northbound traffic on Friday and Saturday and greater southbound traffic on Monday as a result of cottage/recreational traffic to and from Highways 7 and 115.

3. Average Weekday Traffic

The hourly traffic volumes during an average weekday (Monday to Thursday, excluding Thursday, May 16 and Monday, May 20) are illustrated in **Figure 2**.

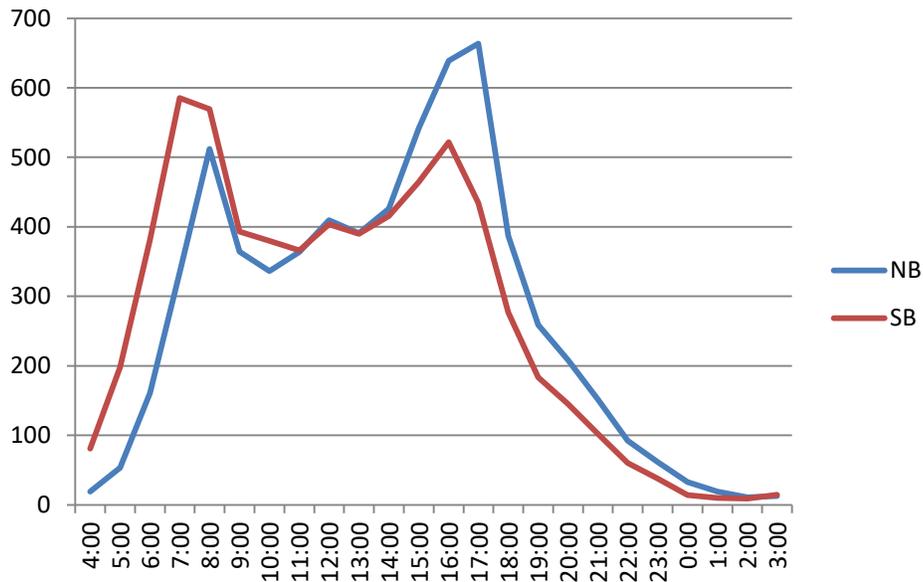


Figure 2: Weekday Average Hourly Traffic Volumes on Television Road South of Maniece Avenue

The average daily traffic (ADT) and the morning and afternoon peak hour traffic volumes in each direction are presented in **Table 1**. It is noted that, based on the traffic counts, the peak hour volumes are relatively balanced with a 55/45 directional split and they represent approximately 9% of the average daily traffic (ADT) volume.

Table 1: Existing (2019) Weekday Traffic Volumes on Television Road South of Maniece Avenue

Period	AM Peak Hour (veh/h)		PM Peak Hour (veh/h)		ADT (veh/d)
	Southbound ↓	Northbound ↑	Southbound ↓	Northbound ↑	
2019 Existing	569	512	522	639	12,885

4. Traffic Projections

The traffic volume projections for the horizon years 2024 (5 years), 2029 (10 years) and 2039 (20 years) presented below include the trip generation assumptions from the Proposed Ashborough Village Traffic Impact Study (TIS), as presented in the February 2018 Response to City’s Comments.

The anticipated net trips to be generated by the Ashborough Village and the Safe Harbour developments are presented in **Table 2**.

Table 2: Project-Generated Trips Travelling on Television Road South of Maniece Avenue

Development Project	AM Peak Hour (veh/h)		PM Peak Hour (veh/h)	
	↓	↑	↓	↑
Safe Harbour	73	23	70	113
Ashborough Village	129	51	117	165
TOTAL	202	74	187	278

In addition to the proposed development projects, it is assumed that the background traffic will grow because of other potential developments near Television Road. The aforementioned TIS assumed a growth rate of 2%, at the City’s request, to account for the possible development of a Canoe Museum, residential units at Hunter Street and Armour Road, and a new public school.

For the purpose of this analysis, a growth rate of 2% is assumed from 2019 to 2029. Beyond 2029, the opportunities for development will be reduced and a growth rate of 1% is assumed from 2029 to 2039. The resulting traffic volumes combining the background growth and the trip generation from the proposed Safe Harbour and Ashborough Village developments are presented in **Table 3**.

Table 3: Projected Traffic Volumes on Television Road South of Maniece Avenue

Period	AM Peak Hour (veh/h)		PM Peak Hour (veh/h)		ADT (veh/d)
	↓	↑	↓	↑	
2024 Horizon	831	639	763	983	18,500
2029 Horizon	896	698	823	1,057	20,000
2039 Horizon	969	764	890	1,138	21,600

5. Construction Traffic Management

Alternative routes that could potentially be available during construction are not suitable to accommodate 13,000 or more vehicles/day. If a detour is established, the majority of traffic will take the most direct route regardless of the route that is signed. For many motorists, the route with the least out-of-way travel would be Maniece Avenue to Ashburnham Drive. Maniece Avenue is a local residential street with a narrow pavement width and no shoulders or sidewalk to accommodate pedestrians, as shown in **Photo 1**. In addition to the safety concerns and social impacts that would be associated with routing arterial traffic onto a local street, Maniece Avenue also has substandard reverse curves and restricted sight distances at the intersection with Ashburnham Drive which would also be significant safety concerns. Burnham Line would attract a portion of

any diverted Television Road traffic, due to the limited distance for out of way travel, but the narrow roadway width, gravel surface and an unsignalized at-grade railway crossing, shown in **Photo 2**, would all represent safety concerns for any increase in traffic volume.



Photo 2: Maniece Avenue



Photo 1: Burnham Line

Temporary closure of Television Road with the designation of a detour route during construction is therefore not considered to be a viable option. To maintain traffic on Television Road during construction, staging options include:

- 1) Reducing Television Road to a single lane at the structure using temporary traffic signals, or
- 2) Maintaining 2 lanes of traffic during construction

Capacity analyses for Option 1 – Reducing Television Road to a single lane structure were completed using Synchro and are summarized in **Table 4**. Existing (2019) weekday traffic volumes were found to be approaching the capacity of a single lane structure. During the PM peak hour, the roadway would operate at level of service E. With existing average weekday traffic demands so close to the capacity of a single lane bridge ($v/c = 0.94$), temporary traffic signals are unlikely to be able to accommodate the additional weekend cottage / recreational traffic during the summer. Area development is continuing and with that the traffic demands on Television Road will continue to increase, and the ability to utilize traffic signals to stage construction, reducing Television Road to a single lane, becomes less likely. By 2024, the average weekday traffic demands during the pm peak hour will have increased to the point that the demand would far exceed the capacity, with the road operating at level of service F and with traffic queues over half a km in length.

Table 4: PM Peak Hour Capacity of a Single Lane Structure during Construction

Horizon Year	Delay (sec.)	95th Percentile Queue (m)	V/C Ratio	Level of Service
	NB / SB	NB / SB	NB / SB	NB / SB
Existing	71.2 / 75.9	#296.7 / #248.6	0.94 / 0.92	E / E
2024	239.9 / 244.5	#537.1 / #432.8	1.44 / 1.44	F / F

- 95th percentile traffic demand exceeds the capacity, actual queue may be longer

6. Recommendations

The existing traffic volume on the Television Road Bridge currently reaches 13,000 vehicles per day. Accounting for the proposed nearby development projects and an anticipated traffic growth of 2% per year from 2019 to 2029 and 1% from 2029 to 2039, traffic demand is expected to increase to 20,000 vehicles per day by 2029, and to 21,600 vehicles per day by 2039. The existing traffic demands in the area of the structure are already sufficient to consider widening to 4 lanes as recommended by the Transportation Master Plan. It is therefore recommended that the proposed replacement structure be constructed to accommodate the planned widening of Television Road.

The existing (2019) weekday peak hour traffic demands on Television Road are already at or very near the capacity of a single lane bridge to stage the construction, and weekend cottage traffic would greatly exceed the capacity of a single lane bridge. The substantial increase in traffic observed during the Victoria Day long weekend is expected to be typical of many weekends through the summer cottage season. The increased weekend traffic should be considered as part of the construction traffic management plan. To better accommodate weekend traffic and in the event that the construction of a replacement structure is delayed beyond 2020, it is recommended that construction staging be developed to allow 2 lanes of traffic to be maintained during peak periods.