SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Memorandum

16535

To: **Owens McCullough, P.E.**

From: **Derek Caldwell, P.E., PTOE**

Date: **March 26, 2019**

Subject: **O'Neil Street Public Works Redevelopment**
South Portland

Introduction

The former South Portland Public Works facility, located on O'Neil Street, is currently proposed to be redeveloped for residential use. In order to understand the potential traffic impact of this redevelopment we have calculated the projected trip generation of the new use and have collected existing traffic data in the surrounding area.

Existing Traffic

Automated Traffic Recorder (ATR) data was collected for the 48-hour period from Tuesday September 19th to Wednesday September 20th, 2017 at the following three locations:

1. Cottage Road between O'Neil Street and Clemons Street
2. O'Neil Street between Cottage Road and the former DPW Facility
3. Pitt Street between Walnut Street and Hillside Avenue

This data was collected when the DPW Facility was operational, so it is assumed that a portion of the traffic data includes vehicles that would no longer be on these roadways due to the closure of the facility.

The ATR data includes directional traffic counts given in 15-minute intervals and the measured speed of each vehicles. This information is summarized in Table 1 and shown on the attached plan.

Table 1 – Traffic Data Summary

ATR	Location	ADT (veh)	K (%)	D (%)	85th Percentile Speed (MPH)
1	Cottage Road	16,146	8.3%	65.5%	35
2	O'Neil Street	458	10.9%	52.0%	23
3	Pitt Street	304	11.5%	68.6%	22

Where:
ADT=Average Daily Traffic
K=Percentage of ADT occurring during Peak Hour
D=Directional Distribution Percentage of Peak Hour

In addition, a MaineDOT traffic count (Count Station 01504) conducted in 2016 on Cottage Road southeast of South Richland Street identified an Average Annual Daily Traffic (AADT) volume of 14,630 vehicles.

Traffic observations were performed in the area on Tuesday September 26th and Wednesday September 17th, 2017 from 7:00 AM to 8:30 AM. The main focus of these observations was the Cottage Road westbound approach to the signalized intersection at Highland Avenue and South Richland Street. Maximum queues on this approach were observed to form back to the intersection with O'Neil Street, a distance of approximately 550 feet. Any formed queue was dissipated within one cycle of the signal. This queue was inconsistent and did not form every signal cycle. A large number of pedestrians, assumed to be students headed to Mahoney Middle School or Brown Elementary, would often actuate the exclusive pedestrian phase. When this phase is active, it would be expected for all vehicular approaches to experience a short duration of increased queues.

Trip Generation

Trip generation for the proposed development was calculated using the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition.* It is our understanding that the development is to consist of the following:

- 9 Single Family Homes
- 16 Apartments
- 13 Condominiums

Land Use Code (LUC) 220 – Single Family Detached Housing and LUC 220 – Multifamily Housing (Low-Rise) were used for this calculation. For the purposes of trip generation calculations, the apartments and condominiums are both considered to be low-rise multifamily type housing.

75 John Roberts Road – Suite 1A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206

Table 2 -Trip Generation
9 Single Family Homes
LUC 210 – Single Family Detached Housing

Time Period	Equation	Total	Enter	Exit
Weekday	Ln(T) = 0.92 Ln(X) + 2.71	113	56	57
AM Peak Hour	Ln(T) = 0.91 Ln(X) + 0.20	9	2	7
PM Peak Hour	Ln(T) = 0.94 Ln(X) + 0.34	11	7	4

T= No. of Trips X=Dwelling Units

Table 3 -Trip Generation
29 Apartments/Condominiums
LUC 220 – Multifamily Housing (Low-Rise)

Time Period	Equation	Total	Enter	Exit
Weekday	T = 7.56(X) - 40.86	178	89	89
AM Peak Hour	Ln(T) = 0.94 Ln(X) - 0.29	18	5	13
PM Peak Hour	T = 0.66(X) + 1.41	21	12	9

T= No. of Trips X=Dwelling Units

Table 4 -Trip Generation
Total

Time Period	Total	Enter	Exit
Weekday	291	145	146
AM Peak Hour	27	7	20
PM Peak Hour	32	19	13

As shown in the above table, this development is projected to generate a total of 27 trips during the AM Peak Hour and 32 trips during the PM Peak Hour.

Crash History

Crash data was obtained from MaineDOT for the intersection of O'Neil Street and Cottage Road for the three-year period of 2015-2017. Two crashes were identified in the vicinity, with one being a rear end

75 John Roberts Road – Suite 1A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206

collision and one involving a vehicle going off the road. Both crashes were noted to occur during snow conditions. This data does not indicate any existing unsafe conditions at this intersection.

Analysis

It can be assumed that the traffic counts collected in 2017, specifically those on O'Neil Street and Pitt Street, consist of a large portion of DPW related traffic. The projected trip generation for this development is less than that of the recorded 2017 traffic volumes on O'Neil Street. Therefore, it can be expected that a residential use of the proposed magnitude would result in an approximately equal or lesser amount of traffic on the area roadways.

This development would extend O'Neil Street creating a new public way between Cottage Road and Pitt Street which does not presently exist. With this extension, it can be expected that project generated traffic may enter/exit the development by way of either Pitt Street or Cottage Road. The attached figure shows the projected trip distribution, assuming an even 50% split of trips entering from Pitt Street and Cottage Road. As noted above, these projected volumes are less than or approximately equal to the volumes recorded in 2017 which included traffic associated with the DPW facility.

In addition, the current configuration of the neighborhood roadways does not seem to provide benefit for a driver to cut thru the using the local roadways when travelling to/from areas outside the general neighborhood area. The majority of traffic on the local roadways is likely be that with a destination or origin in the area.

The extension of O'Neil Street would not be favorable thoroughfare for those travelling to/from points outside the immediate neighborhood. The extended O'Neil Street would serve as a similar route as Walnut Street does under existing conditions. The low traffic volumes on Pitt Street indicate the majority of traffic travelling thru the neighborhood at this point is local traffic generated by the existing dense residential neighborhood. A portion of the traffic that currently uses Walnut Street to travel towards Hillside Street and Sawyer Street would potentially use the newly configured O'Neil Street, but this is not expected to be a large volume.

Conclusion

The proposed O'Neil Street residential development is estimated to generate a total of 27 vehicular trips during the AM Peak Hour and 32 trips during the PM Peak Hour. When compared to the existing traffic volumes collected on the adjacent roadways, which included traffic associated with the former DPW Facility, this development is not expected to have a negative impact on the traffic operations or safety of the surrounding area roadways. In addition, the proposed O'Neil Street extension is not expected to create new unfavorable traffic patterns for the area.

75 John Roberts Road – Suite 1A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206