

**Trip Generation Evaluation  
Gateway Master Plan Lot #3 – Portland, Maine  
(JN 3271)**

**Date:** February 27, 2017  
**Subject:** Trip Generation Evaluation  
20 Thames Street Residential Condominium  
Lot #3 – Portland Gateway Project  
**To:** Ara Aftandilian, EssexNorth Portland LLC  
**From:** Randy Dunton / Emily Tynes, Gorrill Palmer

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### **Introduction**

The Portland Gateway project is a mixed use development that includes residential condominiums, ground floor retail space, office space, and residential rental units. The site is located off Fore Street, adjacent to the recently permitted AC Hotel in Portland, Maine. The Portland Gateway project is planned to include three buildings, on three separate lots, Lots #2, #3, and #4. Lot #1 is the recently permitted AC Hotel. The first of the remaining three lots to be developed is Lot #3, which is located at 20 Thames Street and is proposed to include either office space or retail space on the ground floor and 28 residential condominium units total on floors 2 through 6. The following is a summary of the methodology and results of the trip generation evaluation for Lot #3.

### **Methodology**

To forecast the trip generation for Lot #3, Gorrill Palmer (GP) used the Institute of Transportation Engineers' publication, *Trip Generation*, Seventh Edition; Land Use Code (LUC) 230 – Residential Condominium/Townhouse, LUC 710 – General Office Building, and LUC 814 – Specialty Retail Center. Later versions of ITE's *Trip Generation* are available, but have not yet been accepted by the MaineDOT. Since this evaluation was done to determine if Lot #3 would require a MaineDOT Traffic Movement Permit (TMP), the Seventh Edition was used.

### **Results**

The trip generation is based on 5,000 sf of either retail or office and 28 condominium units. The trip generation has been forecast for two options; Option 1 with 5,000 sf of office with 28 condominiums and Option 2 with 5,000 sf of retail with 28 condominiums. The following table summarizes the trip generation for Lot #3 for both options:



**Trip Generation Summary**

Land Use	Trip Generation				
	AM Adj St	PM Adj St	AM Gen	PM Gen	Sat Gen
<b>Option 1</b>					
Condominiums	12	15	12	15	13
Office	17	16	17	16	3
<b>Total</b>	<b>29</b>	<b>31</b>	<b>29</b>	<b>31</b>	<b>16</b>
<b>Option 2</b>					
Condominiums	12	15	12	15	13
Retail	4	14	34	25	19
<b>Total</b>	<b>16</b>	<b>29</b>	<b>46</b>	<b>40</b>	<b>32</b>

As shown in the table, for both options the trip generation is forecast to be less than the 99 trip end threshold to require a Traffic Movement Permit. It should be noted that this is a conservative trip generation because the actual size of the retail or office space is estimated to be approximately 4,675 sf as shown on the site plan, and the forecast trip generation has been based on 5,000 sf. to allow some buffer.

**Conclusion**

Since the forecast trip generation is less than 99 trip ends during a peak hour, a **TMP is not required for Lot #3** for either option. However, it should be noted that when determining the need for a TMP for Lot #2 and/or Lot #4, the traffic from Lot #3 must be included in the evaluation, regardless of if the site has been subdivided and there are separate owners.

JN:  
 Project Description:  
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3271  
 Portland Gateway  
 Portland, Maine  
 February 23, 2017

Gorrill-Palmer Consulting Engineers, Inc.  
 707 Sable Oaks Drive  
 South Portland  
 Maine 04106

**Residential Condominium/Townhouse  
 Land Use Code (LUC) 230**

Dwelling Units: 28

**Average Rate**

Time Period	ITE Trip Rate	Sample Size	Trip Ends	Directional Split *		Directional Distribution		R <sup>2</sup>
				IN	OUT	IN	OUT	
Weekday	T = 5.86 (X)	54	164	50%	50%	82	82	N/A
Peak Hour of Adjacent Street Traffic 7-9 AM	T = 0.44 (X)	59	12	15%	85%	2	10	N/A
Peak Hour of Adjacent Street Traffic 4-6 PM	T = 0.52 (X)	62	15	65%	35%	10	5	N/A
AM Peak Hour of Generator	T = 0.44 (X)	52	12	20%	80%	2	10	N/A
PM Peak Hour of Generator	T = 0.52 (X)	50	15	65%	35%	10	5	N/A
Saturday	T = 5.67 (X)	30	159	50%	50%	80	79	N/A
Saturday Peak Hour of Gen.	T = 0.47 (X)	27	13	55%	45%	7	6	N/A

\* Percentages rounded to nearest 5%

**Fitted Curve Equation**

Time Period	ITE Trip Rate	Sample Size	Trip Ends	Directional Split *		Directional Distribution		R <sup>2</sup>
				IN	OUT	IN	OUT	
Weekday	$\ln(T) = 0.85 \ln(X) + 2.55$	54	218	50%	50%	109	109	0.83
Peak Hour of Adjacent Street Traffic 7-9 AM	$\ln(T) = 0.80 \ln(X) + 0.26$	59	19	15%	85%	3	16	0.76
Peak Hour of Adjacent Street Traffic 4-6 PM	$\ln(T) = 0.82 \ln(X) + 0.32$	62	21	65%	35%	14	7	0.80
AM Peak Hour of Generator	$\ln(T) = 0.82 \ln(X) + 0.17$	52	18	20%	80%	4	14	0.80
PM Peak Hour of Generator	$T = 0.34 (X) + 38.31$	50	48	65%	35%	31	17	0.83
Saturday	$T = 3.62 (X) + 427.93$	30	529	50%	50%	265	264	0.84
Saturday Peak Hour of Gen.	$T = 0.29 (X) + 42.63$	27	51	55%	45%	28	23	0.84

\* Percentages rounded to nearest 5%

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**General Office Building  
 Land Use Code (LUC) 710**

Square Feet 5,000

**Trip Ends Based on Fitted Curve Equation**

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split *		Directional Distribution		R <sup>2</sup>
				IN	OUT	IN	OUT	
Weekday	$\ln(T) = 0.77 \ln(X) + 3.65$	133	78	50%	50%	67	66	0.80
AM Peak Hour	$\ln(T) = 0.80 \ln(X) + 1.55$	17	217	90%	10%	15	2	0.83
PM Peak Hour	$T = 1.12(X) + 78.81$	84	235	15%	85%	13	71	0.82
Saturday	$T = 2.14(X) + 18.47$	29	17	50%	50%	15	14	0.66
Peak Hour of Generator	$\ln(T) = 0.81 \ln(X) - 0.12$	3	10	55%	45%	2	1	0.59

\* Percentages rounded to nearest 5%

**Trip Ends Based on Average Rate**

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split *		Directional Distribution		R <sup>2</sup>
				IN	OUT	IN	OUT	
Weekday	$T = 11.01(X)$	55	78	50%	50%	28	27	---
AM Peak Hour	$T = 1.55(X)$	8	217	90%	10%	7	1	---
PM Peak Hour	$T = 1.49(X)$	7	235	15%	85%	1	6	---
Saturday	$T = 2.37(X)$	12	17	50%	50%	6	6	---
Saturday Peak Hour of Gen.	$T = 0.41(X)$	2	10	50%	50%	1	1	---

\* Percentages rounded to nearest 5%

PM Peak Hour:  $T = 1.49/1.55$  (AM Peak) 16 15% 85% | 2 14 0.82

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3271  
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**Specialty Retail Center  
 Land Use Code (LUC) 814**

Gross Floor Area (ft<sup>2</sup>): 5,000

**Average Rate**

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split *		Directional Distribution		R <sup>2</sup>
				IN	OUT	IN	OUT	
Weekday	T = 44.32 (X)	222	4	50%	50%	111	111	---
Peak Hour of Adjacent Street Traffic 7-9 AM**	---	---	---	---	---	---	---	---
Peak Hour of Adjacent Street Traffic 4-6 PM	T = 2.71 (X)	14	5	45%	55%	6	8	---
AM Peak Hour of Generator	T = 6.84 (X)	34	4	50%	50%	17	17	---
PM Peak Hour of Generator	T = 5.02 (X)	25	3	55%	45%	14	11	---
Saturday	T = 42.04 (X)	210	3	50%	50%	105	105	---
Saturday Peak Hour of Gen.***	---	---	---	---	---	---	---	---

AM Peak of Adjacent Street 7-9 AM\*\*\* T = 0.275 (PM Peak Hour) 4  
 Saturday Peak Hour\*\*\* T = 1.325 (PM Peak Hour) 19

60% 40% | 2 2  
 50% 50% | 10 9

\*\*Based on ratio of AM/PM traffic for LUC 820, Shopping Center

\* Percentages rounded to nearest 5%

\*\*\*Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 820 - Shopping Center

**Fitted Curve Equation**

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split *		Directional Distribution		R <sup>2</sup>
				IN	OUT	IN	OUT	
Weekday	T = 42.78 (X) + 37.66	252	4	50%	50%	126	126	0.69
Peak Hour of Adjacent Street Traffic 7-9 AM	---	---	---	---	---	---	---	---
Peak Hour of Adjacent Street Traffic 4-6 PM	T = 2.40 (X) + 21.48	33	5	45%	55%	15	18	0.98
AM Peak Hour of Generator	T = 4.91 (X) + 115.59	140	4	50%	50%	70	70	0.90
PM Peak Hour of Generator	---	---	---	---	---	---	---	---
Saturday	---	---	---	---	---	---	---	---
Saturday Peak Hour of Gen.	---	---	---	---	---	---	---	---

\* Percentages rounded to nearest 5%  
 (---) Not Given

AM Peak of Adjacent Street 7-9 AM\*\*\* T = 0.275 (PM Peak Hour) 9  
 Saturday Peak Hour\*\*\* T = 1.325 (PM Peak Hour) 44

60% 40% | 5 4  
 50% 50% | 22 22

\*\*Based on ratio of AM/PM traffic for LUC 820, Shopping Center

\*\*\*Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 820 - Shopping Center