

PROPOSED PHASE II – BAY HOUSE**Portland, Maine****Traffic Impact Assessment****Introduction**

Eaton Traffic Engineering performed a traffic impact study in 2005 for a development named Village at Ocean Gate located east of Franklin Arterial and south of Congress Street in Portland, Maine. This development involved the demolition of the Village Restaurant and construction of 176 condominium units, a 4,000 square foot restaurant and 3,950 square feet of street level retail development. The development has been since been renamed “Bay House” and the mix of development has been altered from the original proposal, with final approval occurring in August 2012 as part of a Conditional Zone Agreement. This Assessment is intended to summarize the changes in estimated trip generation associated with the revised development and quantify the traffic/trip generation associated with the proposed Phase II of Bay House, which will consist of the addition of 39 residential units.

Development Land Use

As noted in the Introduction, the original land use mixture for the site included 176 condo units, a 4,000 sf restaurant and 3,950 sf of retail floor area. Trip generation estimates at that time – 6/12/06 - are summarized below:

Land Use	Total Trips	Enter	Exit
Restaurant (4,000 sf)	30	20	10
Condos (176 Units)	67	43	24
Retail (3,950 sf)	20	10	10
Total	117	73	44

As noted previously, the Village Restaurant was razed as part of the project, thus the trips formerly associated with the restaurant can be deducted from the newly generated trips to determine the net trip generation associated with the project. A direct traffic count conducted at the restaurant on Tuesday, February 28, 2006 was conducted for the PM peak hour, and determined existing PM peak hour traffic generation to be 77 trips. Accordingly the net trip generation associated with the new development was determined to be 28 trips – a level not requiring a MDOT Traffic Movement Permit, and of such low magnitude as to have minimal if any impact on traffic flow in the area.

In August 2012 a final conditional zoning agreement was reached with the City for Phase I of the development, allowing for 110 condo units, a 150-200 seat restaurant and sidewalk level retail (which ended up totaling 5,785 square feet). The projected trip generation associated with this level of development is summarized below:

Land Use	Total Trips
Rest. (150-200 seats)	39-52
Condos (110 Units)	42
Retail (5,785 sf)	29
Total	110-123

The developer chose to develop only 86 condo units and the street level retail, which resulting in the following trip generation estimate:

Land Use	Total Trips
Condos (86 Units)	33
Retail (5,785 sf)	29
Total	62

Phase II Development

For Phase II, the developer proposes to develop an additional 39 condominium units, which will increase trip generation by 15 trips. This will result in total trip generation of 77 vehicle trips (Phase I + II), which will still be below the trip generation estimate associated with the August 2012 Conditional Zoning Agreement.

→ ORIGINAL STUDY

Traffic Impact Study

PROPOSED VILLAGE AT OCEAN GATE
Portland, Maine

Prepared for

Sebago Technics
Westbrook, Maine



Brunswick, Maine

May 2006

PROPOSED VILLAGE AT OCEAN GATE
Middle and Newbury Streets / Portland, Maine
Traffic Impact Study

Introduction

The Village at Ocean Gate, LLC plans to construct a Condominium/Restaurant/Retail development on the site of the existing Village Café restaurant located between Middle and Newbury Streets just west of Hancock Street (see Figure 1), as well as on the parking lot (serving Village Café) located between Federal and Newbury Street just west of Hancock Street. 156 high-rise condominium units plus a 4,000 square foot restaurant and 3,950 square feet of retail will be located on the sites. Access to parking will be via both Middle and Newbury Streets, similar to what currently exists.

Pre-Development Weekday Peak Hour Traffic Volumes

A great deal of volume data in the vicinity of the site already exists as a result of the traffic study that was conducted for the Westin Hotel and Residences project one block away. To supplement this data a manual turning movement count was conducted at the intersection of India Street @ Newbury Street on Wednesday, September 7, 2005 from 4:00 to 6:00 PM. This data will be merged and balanced with the traffic data from the Westin project. In addition, there is traffic generated from other nearby approved developments that must be included in the analysis:

The Westin Hotel and Residences
The Longfellow at Ocean Gateway
Ocean Gateway
Pearl Place

Somerset Market Place
Federal Street Town Houses
Fore Street Office

To accomplish this, the 2007 post-development traffic volumes for the Longfellow at Ocean Gateway study (the most recent project in the approval process - Gorrill-Palmer Consulting Engineers, March 2006, Figure 9) was utilized (it contains all of the above noted developments, including the Village project), and modified by subtracting the traffic associated with the Village project (Figure 6 of the Longfellow traffic study) because the Village project has been modified (fewer residential units, more retail) since the Gorrill-Palmer report was prepared. The new pre-development PM peak hour traffic volumes are presented in Figure 2.

Weekday PM Peak Hour Trip Generation

Weekday PM peak hour trip generation was calculated using the publication Trip Generation – Seventh Edition¹ for land use codes 232 “High-Rise Condominium/Townhouse” and 931 “Quality Restaurant”. The nature of the retail space is unknown at this time, but given the location it will probably be either for the convenience of the residents of this site and others nearby, or will be a destination type of retail. A generic retail rate of 5 trips per 1,000 square feet of floor area was used to estimate PM peak hour trip generation. Estimated trip generation is summarized below:

¹ Institute of Transportation Engineers, 2003

Land Use	Total Trips	Enter	Exit
Restaurant (4,000 sf)	30	20	10
Condos Phase 1 92 Units	35	22	13
Condos Phase 2 64 Units	24	15	9
Retail (3,950 sf)	20	10	10
Total	109	67	42

The proposed development is projected to generate 109 peak hour trips during the weekday PM peak hour (of the adjacent street), which normally would require a MDOT Traffic Movement Permit. Because this is a multi-use development (retail, restaurant and residential) it is expected that there will be some trips between the various uses (i.e. residents will patronize the retail and restaurant). Based upon the data in the Trip Generation Handbook², captured internal trips between residential and retail uses in a multi-use development can range from 9 percent to 53 percent in the PM peak hour. Using a conservative capture rate of 10 percent (11 trips) the net off-site trip generation is reduced to 98 trips. Also in this case, an existing land use (the current Village Café) is operating and generates trips. Accordingly the existing PM peak hour traffic associated with the existing Village Café can be deducted from the projected trips from the proposed development to determine overall net trip generation. The existing restaurant has 450 seats and based upon ITE trip generation rates the existing restaurant generates and estimated 117 trips (78 enter/ 39 exit) during the weekday PM peak hour. Accordingly, the proposed development is estimated to generate -19 net new trips (8 entering/ 1 exiting). The City of Portland questioned this methodology and requested that a trip generation survey of the Village Café be conducted from 3:00 PM to 6:00 PM. The survey was done on Tuesday, February 28, 2006 – clearly not the peak season for the area. The peak hour occurred from 5:00 – 6:00 PM and

² Ibid

totaled 77 trips (39 entered/ 38 exiting). Only 2 of these trips were from on-street parking – all other trips parked in the Village Café lots. Using the conservative (lower) 77 PM peak hour trips as pre-existing traffic, overall net PM peak hour trip generation is projected to be 21 trips (98 – 77). This clearly does not meet MDOT Traffic Movement Permit thresholds (100+ trips), nor does it even indicate the potential for any significant impacts on streets in the vicinity of the site. Figure 3 presents site generated PM Peak Hour traffic in the vicinity of the site - India @ Middle and India @ Newbury Streets.

Post-Development 2007 PM Peak Hour Traffic Volumes

Post-development weekday PM peak hour volumes are the combination of pre-development volumes presented in Figure 2, and site generated traffic presented in Figure 3. Figure 4 presents projected 2007 weekday PM peak hour post-development traffic volumes.

Operational Assessment Pre/ Post-Development Traffic Volumes

Capacity analysis was performed for the pre- and post-development PM peak hour traffic projections for the intersections of India @ Middle and Newbury Streets using the procedures contained in the Highway Capacity Manual³. Capacity analysis provides a quantitative assessment of the quality of traffic flow at an intersection, and "rates" this quality in terms of its Level of Service (LOS). LOS ratings range from A to F and much like a school rank card, A indicates very good conditions, and F indicates extremely congested conditions with long delays.

LOS for unsignalized intersections such as India @ Newbury and Middle Streets is based upon average control delay, which takes into account the delay involved in entering a vehicle queue,

³ , Highway Capacity Manual, HCM2000, Transportation Research Board, 2000

waiting in a vehicle queue and start-up delay. The relationship between LOS and average total delay is shown below:

Level of Service Measurement for Unsignalized Intersections

Level of Service	Average Total Delay Per Vehicle
A	□ 10 Seconds
B	>10 - □ 15 Seconds
C	>15 - □ 25 Seconds
D	>25 - □ 35 Seconds
E	>35 - □ 50 Seconds
F	□ 50 Seconds

The computer software Synchro/SimTraffic, which replicates the procedures in the Highway Capacity Manual, was used in the analysis. In addition, the west approach of Middle Street at the India @ Middle intersection was assumed to have an exclusive right turn lane as recommended in the Longfellow traffic study. The results of the analysis of the unsignalized intersections of India @ Middle and Newbury are presented on the following page (summaries of the LOS/Performance Analysis attached). As the analysis results indicate, there is minimal impact on the existing LOS and control delay due to the low net new trip generation associated with the proposed development. Because the delay (for both pre- and post-development traffic projections) at the intersection of India @ Middle was high for the west approach, the Manual on Uniform Traffic Control Devices was used to determine if a traffic signal was warranted under Warrant 3 “Peak Hour”. For the average two-way peak hour volume on India Street (706 vehicles) the Middle Street Through-Left Turn volume would have to be approximately 3250

vehicles per hour. The actual average peak hour volume for the eastbound approach is approximately 212 vehicles per hour and the warrant is not satisfied.

Unsignalized Intersection Analysis

Movement	Pre-Development		Post-Development	
	LOS	Control Delay	LOS	Control Delay
India @ Middle				
India NB Left	A	2.4	A	2.4
India SB Left	A	1.2	A	1.2
Middle EB	F	>50	F	>50
Middle WB	F	>50	F	>50
India @ Newbury				
India NB Left	A	0.2	A	0.2
India SB Left	A	0.6	A	0.7
Newbury EB	B	14.0	B	14.0
Newbury WB	C	20.1	C	20.6

Safety

Safety data for the most recent available 3 year period (2002-04) was obtained from the Accident Records Section of MDOT for roadways in the vicinity of the site. A summary of the accident history in the area is presented in the table on the following page.

MDOT guidelines for identification of a High Crash Location (HCL - indicating a potential safety deficiency) is that a location must experience both 8 or more accidents in a 3 year period and have a Critical Rate Factor of 1.00 or greater. None of the locations satisfy the criteria.

2002-04 Accident History in Site Vicinity

LOCATION	2002-04 ACCIDENTS	ANNUAL AVERAGE	CRITICAL RATE FACTOR ⁴
India @ Newbury	0	0	0
India / Newbury to Middle	4	1.33	1.72
India @ Middle	0	0	0
Newbury/ India to Hancock	1	0.33	1.23
Hancock @ Newbury	0	0	0
Middle / India to Hancock	1	0.33	<1.00
Hancock @ Middle	0	0	0.19

Parking

Parking demand has been calculated on the basis of the City of Portland Land Use Ordinances. Condominium parking demand has been calculated at 1.25 spaces per unit. Restaurant parking demand is based upon the net area served (i.e. not including kitchen, storage, etc.), which is estimated at 2,250 square feet at 1 space per 150 square feet. Retail land uses have an ordinance rate of 1 per 200 square feet. Demand calculation for Phases I and II are summarized on the following page.

⁴ The Critical Rate Factor is a statistical measure which compares the accident frequency at a location to similar locations throughout the State. A Critical Rate Factor of 1.00 or greater indicates that the location has a higher frequency of accidents than would be expected due to random occurrence, with a 99 percent level of confidence.

Parking Demand Calculation
Village at Ocean Gate

Land Use	Size	Rate	Parking Spaces
Phase I			
Condominiums	22 Units	1.25/Unit	115
Restaurant	4,000 sf	1/150 sf	27
Commercial	3,950 sf	1/200 sf	20
Total Phase I			162
Phase II			
Condominiums	64 Units	1.25/Unit	80
Total Phase II			80
Total Village at Ocean Gate			242

The above calculations are based upon “stand alone” parking rates. In Phase I, 158 parking spaces are to be provided, which appears to reflect a shortage of 4 spaces. However, this is a mixed use development and the peak parking demand for the various land uses does not occur at the same time of day. For example, during the day many residents will be away from the condominiums and the spaces vacated will serve the retail and restaurant parking demand. During the evening the parking demand for the condominiums and the restaurant will coincide, but the demand for parking for retail will be minimal if at all. Accordingly the demand for spaces during the peak evening demand period is likely to be around 150 or less spaces.

For Phase II the parking demand is 80 spaces and 49 spaces are being provided. Overall parking demand for both Phases is 242 spaces on a stand-alone basis, 230 when shared parking impacts are considered, and 206 (230 – 10% of 230) factoring in captive market impacts. Total parking supply for both phases is 207 spaces.

Access Analysis – Village and Longfellow Parking Garage Entrance/Exit Locations

The Middle Street access points to the Village and Longfellow parking garages are not aligned; the offset of the centerlines of the access points is about 30 feet (Village access is east of Longfellow). The City has raised the issue as to whether a conflict on Middle Street would be caused by overlapping left turns. The left turn into the Village garage entrance is relatively heavy (40 vehicles in the PM peak hour), but the left turn entry into the Longfellow access is quite light (4 vehicles in the PM peak hour). To analyze this situation, the Synchro/SimTraffic program was used to model the operation of the two entrances during the PM peak hour. The PM peak hour volumes on Middle Street are shown on Figure 5 in the Appendix. The analysis (5 iterations of the Simtraffic model with different number seeding – summary in the Appendix) indicates that the left turn from the east (into Longfellow) will have a 95th percentile queue of 15 feet, not enough to block the left turn into the Village from the west. Because the eastbound traffic on Middle Street drops significantly east of the Longfellow entrance, there is virtually no queue projected by the model for the left turn into the Village garage.

Summary of Findings

The proposed development is projected to generate 21 net new vehicle trips during the PM peak hour - 13 entering and 8 exiting the site. The intersections of India Street @ Middle and Newbury Streets are projected to experience no significant degradation of level of service due to the low magnitude of net new traffic generated. There are no High Crash Locations in the immediate vicinity of the site, based upon 2002-04 accident data. The offset alignment of the Village and Longfellow garage access points on Middle Street is not anticipated to result in any significant left turn overlap conflict.

→ Revised Trip Gen

Weekday PM Peak Hour Trip Generation – Revised 6-12-06

Weekday PM peak hour trip generation was calculated using the publication Trip Generation – Seventh Edition¹ for land use codes 232 “High-Rise Condominium/Townhouse” and 931 “Quality Restaurant”. The nature of the retail space is unknown at this time, but given the location it will probably be either for the convenience of the residents of this site and others nearby, or will be a destination type of retail. A generic retail rate of 5 trips per 1,000 square feet of floor area was used to estimate PM peak hour trip generation. Estimated trip generation is summarized below:

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¹ Institute of Transportation Engineers, 2003

² Ibid

development is estimated to generate -12 net new trips (-11 entering/ -1 exiting). The City of Portland questioned this methodology and requested that a trip generation survey of the Village Café be conducted from 3:00 PM to 6:00 PM. The survey was done on Tuesday, February 28, 2006 – clearly not the peak season for the area. The peak hour occurred from 5:00 – 6:00 PM and totaled 77 trips (39 entered/ 38 exiting). Only 2 of these trips were from on-street parking – all other trips parked in the Village Café lots. Using the conservative (lower) 77 PM peak hour trips as pre-existing traffic, overall net PM peak hour trip generation is projected to be 28 trips (105 – 77). This clearly does not meet MDOT Traffic Movement Permit thresholds (100+ trips), nor does it even indicate the potential for any significant impacts on streets in the vicinity of the site. Figure 3 presents site generated PM Peak Hour traffic in the vicinity of the site - India @ Middle and India @ Newbury Streets.

Revised Level of Service Analysis – 6-12-06

Based upon the revised trip generation presented in Figure 3, Post-Development 2007 traffic projections in the vicinity of the site were revised and are presented in Figure 4. Level of service analysis was re-calculated and summaries are attached. LOS analysis for the intersection of India Street @ Middle Street assumed all way stop control with a right turn lane on the west approach of Middle Street as per the City's direction regarding the Longfellow project. Summaries of the LOS analysis are attached.