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*Traffic and Transportation Engineers*

To: Mr. Bill Petit, P.E.  
PennDOT District Executive  
ATTN: Ms. Lyndsie DeVito, PennDOT Project Manager

From: Jim French, P.E.  
French Engineering, LLC

Re: Traffic Forecast  
Erie Bayfront Highway (S.R. 4034)  
I-79 to East 12th Street  
City of Erie  
PennDOT Engineering District 1-0

Date: October 27, 2014

The purpose of this technical memo is to document the overall methodology for forecasting future traffic demand on the Erie Bayfront Highway (S.R. 4034) from I-79 in the west to East 12th Street in the east. The forecast was performed using an *Excel* workbook, which accompanies this memo. This memo is intended to provide an "executive summary" level of detail and not to document the details programmed into the various cells in the spreadsheet. More details are available upon request and through investigation of the various sheets in the workbook.

### **Known and Anticipated Developments**

Through discussions with economic and transportation-related stakeholders in the Erie area, five prospective developments were identified that were incorporated into the traffic forecast. The locations of these developments are illustrated on the attached location map. They are as follows (from west to east):

*Getgo Gas Station / Convenience Market* - This development is in the TIS development stage, and is assumed to include 16 fueling stations. It is located on the Bayfront Highway between Greengarden Boulevard and Lincoln Avenue. It is anticipated that this development will be open in approximately one year.

*Cobblestone Hotel* - This 54-room hotel is located on the south side of the Bayfront Highway opposite of Lawrence Pier driveway. It is near completion and is anticipated to be open soon. The intersection of its driveway with the Bayfront Highway will be signalized as part of the development.

*Bayfront Place* - This is property owned / controlled by the Convention Center Authority and is located north of the Bayfront Highway to the west of Sassafra Street Extension / the existing Convention Center. It is to include a 192-room Courtyard by Marriott hotel which should be open in approximately one year. Various other components can be included on the property but at this point they are speculative and several years off from development. A "for instance" plan was prepared in 2012, which was the basis for the assumptions for the rest of the property. The

assumptions were as follows: 46,000 SF of retail, 34,000 SF of office space, a 6,000 SF restaurant, 72 apartments, and 25 townhouses / carriage homes. The "for instance" plan is provided in the attachments to this memo. 946 parking spaces would be provided on site, which appears to include excess parking that can be used for patrons of other properties in the area.

*Harbor Place* - This property is owned by Scott Enterprises and is located between State Street and Holland Street, north of the Bayfront Highway. It is a multi-use development that is to include 220 hotel rooms, 28,500 SF of retail, 43 townhouses, 123,000 SF of office space, 100 apartments, and a 4,500 SF restaurant. It is anticipated that this development will progress on a faster schedule than Bayfront Place, but at this point there is no known schedule for the development. It is anticipated to include 1,700 parking spaces, which will provide ample parking for both Harbor Place and off-site destinations in the area. A proposed pedestrian bridge over State Street that is to connect in the vicinity of UPMC Hamot suggests that some hospital parking will be attracted to this new parking garage. A conceptual site plan for Harbor Place is provided in the attachments.

*Ore Dock Road Industrial* - "Develop Erie" is currently pursuing a project to upgrade the docks near Ore Dock Road and develop the remainder of the property in this area as industrial. It is anticipated that once the docks are upgraded, that additional freight will be attracted to this area, but it is uncertain as to whether its ground transportation will be via truck or rail. There is also approximately 50 acres of undeveloped property in this area that is likely to be developed industrial. A wood pellet processing plant was identified as an example of the type of industrial development that might be attracted to this area.

**Trip Generation**

The trip generation was performed using ITE Trip Generation (9th Edition). For the Bayfront Place and Harbor Place, an internal capture rate of 20% was assumed based on the information in the ITE Trip Generation Handbook. Pass-by trips for the Getgo gas station were assumed to be 63% in the AM Peak and 66% in the PM Peak. There were no pass-by trips assumed for the retail or restaurant components of the Bayfront Place or Harbor Place developments since, due to their location and the overall parking dynamic of the area, it is not anticipated that they will generate a significant amount of pass-by activity.

Table 1 contains a summary of the total "new" trip generation for five proposed developments in the area. Note that the pass-by trips for the gas station are not included, and that internal capture has been applied. Trips associated with excess parking spaces at the Bayfront Place and Harbor Place developments are also not included.

Table 1 - Trip Generation Summary (New External Trips Only)

Development	AM Inbound	AM Outbound	PM Inbound	PM Outbound
Getgo Gas Station	49	49	52	52
Cobblestone Hotel	17	12	17	16
Bayfront Place	176	114	197	243
Harbor Place	292	137	199	302
Ore Dock Road Industrial	294	60	75	282

## **Background Growth Rate**

A background growth rate of 0.15% per year (compound) was applied, as per the latest PennDOT Bureau of Planning and Research guidance for urban non-interstates in Erie County. A design horizon of 20 years was assumed, resulting in total background growth of 3.04% for the 20-year period. Background growth was applied to all movements in the study area.

## **Trip Distribution**

A few different trip distribution patterns were assumed depending on the specific generator in question. They are as follows:

### *Getgo Gas Station*

It was not necessary to be concerned with the pass-by trips associated with this gas station since the gas station driveways are not being modeled or forecasted. The new trips associated with the gas station were assumed to be drawn from the immediate local area since there are a number of these types of facilities across the area, including one a quarter mile to the east at the intersection of West 8th Street and the Bayfront Highway. In short, the new trips were spread evenly (20% each) across the following five origins / destinations:

Lincoln Avenue to the north  
Lincoln Avenue to the south  
Greengarden Boulevard to the north  
Greengarden Boulevard to the south  
Bayfront Highway to the west.

### *Cobblestone Hotel*

The Cobblestone Hotel will attract longer distance traffic, just as the Bayfront Place, Harbor Place, or Ore Dock Industrial developments. However, it is much smaller in scope and is not a high traffic generator. As such, a coarse trip distribution was desired to keep from having very small flows to assign to the network. The assumed trip distribution was as follows:

Bayfront West - 40%  
Bayfront East - 40%  
State Street - 20%

### *Bayfront Place, Harbor Place, and Ore Dock Industrial*

Because these are major regional generators with relatively high trip generations, the trip distributions for these developments were spread out over many possible origins / destinations. The assumed trip distribution was as follows:

I-79 / Bayfront Highway to the west - 25%  
PA 290 / Bayfront Highway to the east - 25%  
State Street - 15%

Cranberry St - 5%  
Holland St - 5%  
Sassafras St - 5%  
12th St to the west - 5%  
8th St to the west - 5%  
12th St to the east - 3%  
6th Street to the east - 7%

In the overall, it was assumed that approximately 50% of the traffic will come from longer distances that utilize the interstate / regional highway system. For the 50% that comes from the Erie metropolitan area, State Street should have a higher percentage (15%) than the other streets since it represents the main connector to downtown Erie. The others were split evenly at 5% except that in the east, 6th Street was favored over 12th Street slightly since the traffic shed east of the Bayfront Highway for 6th Street is clearly larger than 12th Street.

### **Traffic Assignment**

Traffic was assigned to the network according to the logic established in the trip distribution. In the traffic forecasting workbook, each development is treated separately, with the excess parking associated with Bayfront Place and Harbor Place treated separately from the rest of the development. At Harbor Place, the Holland Street and State Street access points were treated separately. Finally, the inbound and outbound flows for each development are treated separately. This was done to ensure that trips were not lost and that flows balanced between intersections where appropriate.

For Harbor Place, the traffic was assigned between the State Street and Holland Street access points as follows:

- In the AM peak, the total site traffic was split 50/50 between the two access points because the background flows on each of these streets is low and roughly equal.
- In the PM peak, because background flows are heavier, the site traffic was split such that the final traffic assignment (background plus projected) would have an equal amount of total traffic using each street.
- In both cases, the traffic assigned to Holland Street was at least equal to the trip generation for the residential units located directly on Holland Street.

Finally, it is worth noting that for traffic originating or destined for 12th Street to the west of the study area, traffic was introduced to the network via Greengarden Boulevard to the south, since there is no direct connection between the Bayfront Highway and West 12th Street.

### **Parking Garages at Bayfront Place and Harbor Place**

The proposed parking on the Bayfront Place and Harbor Place properties appear at first glance to have a significant amount of excess parking that would be available to the public at large. Harbor Place is planned to have 1,700 spaces with a pedestrian bridge connecting the parking garage to UPMC Hamot near French Street. The Bayfront Place appears to have approximately

946 spaces on site. As such, these two sites will have approximately 2,646 spaces but only have a combined peak hour directional flow of approximately 545 vph.

Some assumptions were required to account for the vehicles that would be attracted to these excess parking spaces. It was noted that the Harbor Place property currently provides some parking for UPMC Hamot, and as such some of these trips are already accounted for in the baseline traffic counts. In addition, it was desired to treat the parking garage trips as "pass-by" for vehicles already on the Bayfront Highway. For parking patrons that are not currently on the Bayfront Highway (e.g., a trip that might begin and end in the downtown area without ever using the Bayfront Highway), they were treated as "new" trips. The overall means of handling these parking spots is as follows:

### *Trip Generation*

For both the Bayfront Place and Harbor Place, in each of the peak periods, the maximum directional flow was subtracted from the total number of parking spaces, and 40% of the excess was applied in the peak commuter flow direction (inbound in the AM and outbound in the PM) and 10% was applied in the opposite direction.

### *Trip Distribution*

The following trip distribution was applied to the excess parking space trips:

Bayfront Highway East - 30%  
Bayfront Highway West - 30%  
State Street - 20%  
Holland Street - 20%

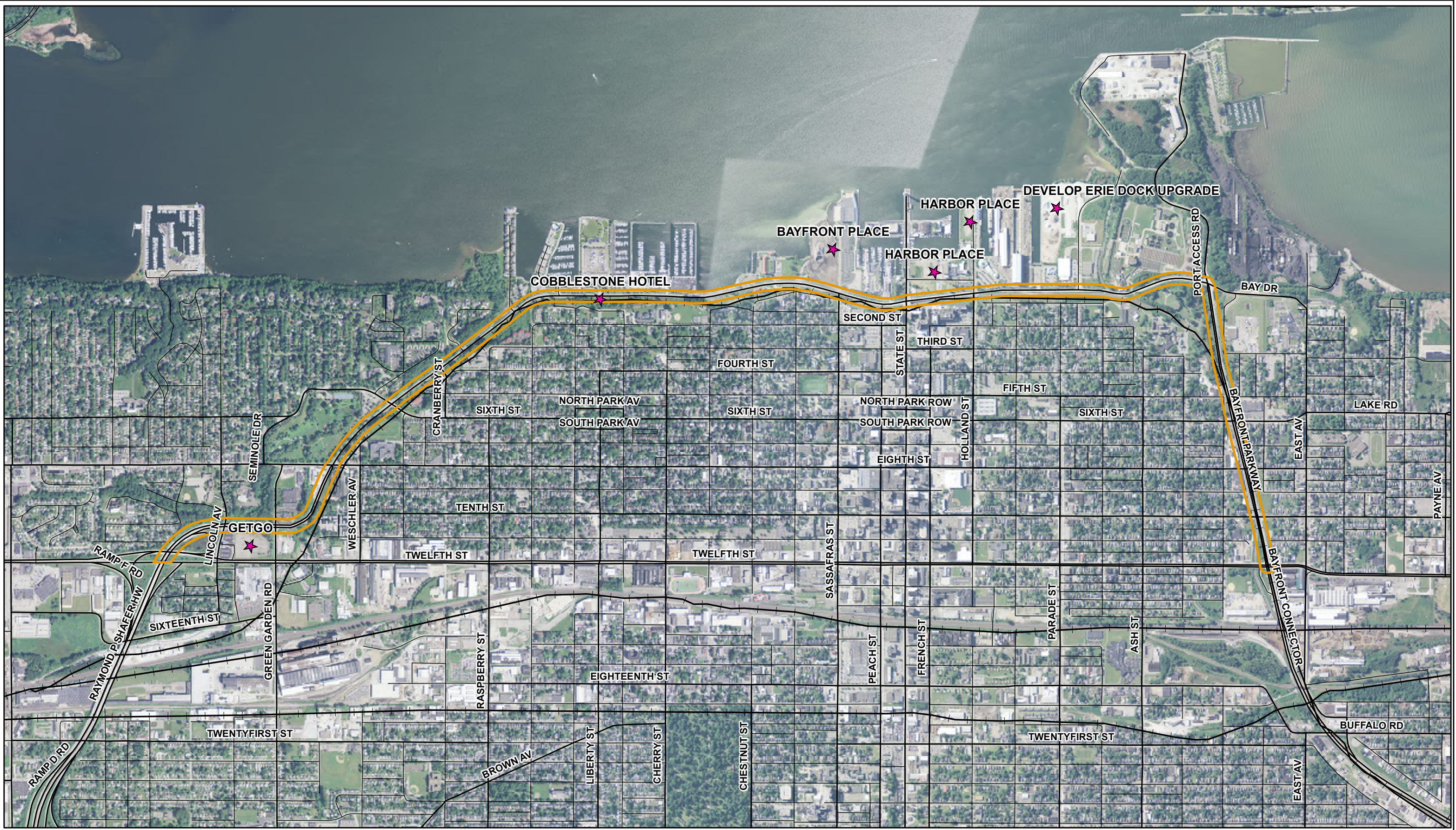
The trips coming in and out of State Street and Holland Street were treated as new trips. The trips from Bayfront West were treated as pass-by trips and were deducted from flows turning into and out of State Street and Holland Street. The trips from Bayfront East were also treated as pass-by trips and were deducted from flows in and out of East 12th Street, East 10th Street, and East 6th Street. It was assumed that these trips would have turned off the Bayfront Highway at one of these locations and parked downtown, but in the projected condition would stay on the Bayfront and park at one of these new facilities.

### **Concluding Remarks**

A spreadsheet driven, bottom-up approach to forecasting traffic in the area was used so that the implications of the various assumptions that went into building the forecast would be readily apparent and could be easily changed. The trip generation assumptions that define the magnitude and composition of the various developments can be changed most easily, and will require virtually no manual input. The distribution of traffic among the various origins / destinations that are already included in the forecast can also be readily changed. Adding origins / destinations to the trip distribution or adding new developments to the trip generation will require the most amount of manual changes to the forecast.








Path: C:\Users\ds\Desktop\Erie Bayfront\Figure 1 Proposed Development Corridor Area.mxd



TITLE:  
**Proposed Developments Map**  
**Erie Bayfront Parkway Corridor Study**  
 City of Erie  
 Erie County, Pennsylvania

LEGEND:

	Proposed Development		Local Road
	Study Corridor		Active Railroad
	State Road		



NOTES:  
 1.) Aerial imagery provided by USDA NRCS.

DWN:	DFS	FIGURE NO.:	<b>1</b>
CHKD:	JMS	SHEET NO.:	1 of 1
DATE:	10/27/2014	PROJECT NO.:	5485



# CHAPTER 5 PREFERRED CONCEPT PLAN |

## “For Instance” Development Schematic





**SITE CALCULATIONS**

<b>PROPERTY ACREAGE (Average)</b>	
South Parcel (South of Front Street)	= 4.0 Acres
North Parcel (North of Front Street)	= 5.0 Acres
East Parcel (Holland Street Pier)	= 3.0 Acres
<b>Total Property =</b>	<b>= 12.0 Acres</b>

**PARKING REQUIRED**

<b>Hotel 1</b>	110 units		
<b>Hotel 2</b>	110 units		
<b>Total Hotel =</b>	<b>220 units @ 1 space / unit</b>		<b>= 220 spaces</b>
<b>Office 1</b>	10,000 s.f. / floor x 4 =	40,000 s.f.	
<b>Office 2</b>	15,000 s.f. / floor x 4 =	60,000 s.f.	
<b>Office 3</b>	6,000 s.f. / floor x 3 =	18,000 s.f.	
<b>Office 4</b>	5,000 s.f. / floor x 1 =	5,000 s.f.	
<b>Total Office =</b>	<b>123,000 @ 1 space / 500 s.f.</b>		<b>= 246 spaces</b>
<b>Restaurant 1</b>	4,500 s.f.		
<b>Total Rest =</b>	<b>4,500 s.f. @ 1 space / 60 s.f.</b>		<b>= 75 spaces</b>
<b>Retail 1</b>	7,000 s.f.		
<b>Retail 2</b>	10,500 s.f.		
<b>Retail 3</b>	6,000 s.f.		
<b>Retail 4</b>	5,000 s.f.		
<b>Total Retail =</b>	<b>28,500 s.f. @ 1 spaces / 350 s.f.</b>		<b>= 82 spaces</b>
<b>Activity Center</b>	9,000 s.f.		
<b>Total Activity =</b>	<b>9,000 s.f. @ 1 space / 350 s.f.</b>		<b>= 26 spaces</b>
<b>Town home</b>	43 units		
<b>APT / Condo</b>	100 units		
<b>Total Housing =</b>	<b>143 units @ 1 spaces / unit</b>		<b>= 143 spaces</b>
<b>Total Parking Required</b>			<b>= 800 spaces</b>

**PARKING POTENTIAL**

<b>Garage 1</b>	114 spaces / level x 5 =	= 570 spaces
<b>Garage 2</b>	130 spaces / level x 5 =	= 650 spaces
<b>Garage 3 (Residential Individual Garages)</b>		= 42 spaces
<b>Garage 4 (Residential at Pier)</b>		= 264 spaces
<b>Lot 1</b>		= 76 spaces
<b>Lot 2</b>		= 35 spaces
<b>State Street</b>		= 20 spaces
<b>Front Street</b>		= 32 spaces
<b>Internal Street</b>		= 15 spaces
<b>Total Parking Available =</b>		<b>= 1,700 spaces (900 surplus)</b>

