

# Shropshire Associates LLC

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Traffic Engineering, Transportation Planning & Design

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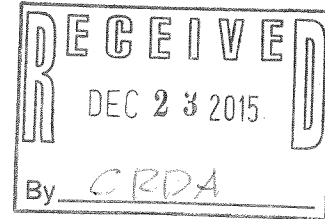
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December 14, 2015

Mr. Jon Barnhart  
Arthur W. Ponzio Company & Associates, Inc.  
400 North Dover Avenue  
Atlantic City, NJ 08401

(via email: jbarhart@awponzio.com)

Re: **Traffic Engineering and Air Quality Analysis  
Polecoaster – Atlantic City  
Atlantic City, Atlantic County, NJ  
SA Project No. 15180**



Dear Mr. Barnhart:

At your request, Shropshire Associates LLC has prepared the following Traffic Engineering Assessment and Air Quality report for the construction of the proposed Polecoaster amusement facility to be located between Martin Luther King Boulevard and Kentucky Avenue, south of their intersections with Pacific Avenue, in Atlantic City, Atlantic County, NJ. The proposal development will include multiple amenities and amusement rides within the multi-story facility. The site will be bordered by existing parking facilities on Kentucky Avenue, between its intersections with Pacific Avenue and the boardwalk area.

Based on information provided by the applicant, the proposed facility will be staffed by a maximum of 224 full-time employees during peak operating times. The site will be operational 7-days a week from June through August, weekends only March through May and September through November, and be closed December through February. The purpose of this assessment is to determine the amount of traffic to be generated by the proposed amusement facility and to analyze its impact on the adjacent roadway network.

## Existing Conditions

A field reconnaissance was conducted to determine the features of the adjacent roadways in the study area. A brief description of the roads and intersections within the study area are provided below.

**Pacific Avenue** is a four-lane undivided roadway that is classified as an Urban Minor Arterial and under the jurisdiction of Atlantic City. In the vicinity of the site, Pacific Avenue has an approximate cartway width of 40 feet and a posted speed limit of 25 MPH. For the purpose of this study, Pacific Avenue is assumed to extend in a general east-west direction.

**Martin Luther King Boulevard** is a two-lane undivided roadway that is classified as an Urban Minor Arterial and under the jurisdiction of Atlantic City. Martin Luther King Boulevard extends in a general north-south direction and has an approximate cartway width of 48 feet.

**Kentucky Avenue** is a two-lane undivided roadway that is classified as an Urban Major Collector and under the jurisdiction of Atlantic City. In the vicinity of the site, Kentucky Avenue



has an approximate cartway width of 30 feet and a posted speed limit of 25 MPH. For the purpose of this study, Kentucky Avenue is assumed to extend in a general north-south direction.

The four-legged **Pacific Avenue/Martin Luther King Boulevard** intersection is controlled by a two-phase pre-timed traffic signal with a 100-second background cycle length. The eastbound and westbound Pacific Avenue approach each consist of a shared left-turn/through lane and through/right-turn lane, while the southbound Martin Luther King Boulevard approach consists of a shared left-turn/through lane and exclusive right-turn lane. The northbound Martin Luther King Boulevard approach consists of a single lane providing for all possible movements.

The four-legged **Pacific Avenue/Kentucky Avenue** intersection is controlled by a two-phase pre-timed traffic signal with a 100-second background cycle length. The eastbound and westbound Pacific Avenue approach each consist of a shared left-turn/through lane and through/right-turn lane, while the northbound and southbound Kentucky Avenue approaches each consist of a single lane providing for all possible movements.

### **Traffic Counts**

To determine the amount of traffic on the adjacent roadway network, manual turning movement counts (MTMC) were conducted at the study intersections in December 2015 during the Friday afternoon (4:00PM to 9:00PM) and Saturday midday (11:00AM to 2:00PM) peak periods. A summary of the traffic counts can be found in the appendix to this assessment, with the existing PM and Saturday peak hour volumes indicated in Figure 1.

It should be noted that historical traffic count data in the vicinity of the site shows higher traffic volumes along the adjacent roadway network in previous years. However, changes within Atlantic City have led to casino closures and a reduction in overall traffic volumes along Pacific Avenue, Martin Luther King Boulevard, and Kentucky Avenue during peak hour times. Therefore, these existing roadways have a substantial amount of available capacity to handle future increased traffic volumes as areas in the vicinity of the site get redeveloped.

### **Future Conditions**

The traffic resulting from the proposed Polecoaster amusement facility will not affect the adjacent roadway network until it is fully built-out and occupied, which is anticipated to be by the year 2016. Based on the *Annual Background Growth Table* prepared by NJDOT, a 1.50% annual traffic growth will occur in the vicinity of the site. Therefore, in order to estimate the 2016 No-Build volumes, the 1.50% annual growth was applied to the existing traffic volumes, which are illustrated in Figure 2.

### ***ITE Trip Generation***

As indicated above, the proposed Polecoaster amusement facility will be staffed by approximately 224 full-time employees at peak operations. The amount of traffic generated by the proposed development was estimated based on data published by the Institute of Transportation Engineers (ITE) in *Trip Generation, 9<sup>th</sup> Edition*. The proposed use is most similar to ITE Land Use 480: Amusement Park. The ITE trip generation estimates for the proposed Polecoaster amusement facility are indicated in Table 1 below.



It should be noted that our experience with development in Atlantic City as well as other coastal towns within New Jersey is that a large percentage of traffic that will be generated by this amusement facility will be non-vehicular trips. These trips will be a combination of public transportation and walking/pedestrian trips. Atlantic City has a well-established public transportation system that is widely used by visitors to the City's other major traffic generators and travel along the adjacent roadway network. In addition to these non-vehicular trips, it is anticipated that some of the trips to be generated by the proposed site will be multi-use trips, meaning they will be motorists that will park nearby and then patronize the proposed Polecoaster amusement facility as well as the nearby casinos, restaurants, and boardwalk facilities.

Therefore, Table 1 indicates the total amount of traffic to be generated by the proposed Polecoaster facility based on the ITE trip generation data as well as our conservative estimate for the trip generating potential based on a 25% reduction in vehicular trips based on the anticipation for public transportation, pedestrian, and multi-use trips.

Table 1 ITE Trip Generation – Polecoaster (224 full-time employees)						
Scenario	Friday PM Peak			SAT Peak Hour		
	In	Out	Total	In	Out	Total
ITE Trip Generation - 100%	68	44	112	300	217	517
Reduction - 25%	17	11	28	75	54	129
Total Trip Generation - 75%	51	33	84	225	163	388

The site traffic generated by the proposed amusement facility was distributed to the adjacent roadway network in a manner in which the patrons are expected to travel. The trip distribution analysis was done based upon the MTMC data at the nearby study intersections (Figure 3). The resulting site traffic assignment is illustrated in Figure 4. In order to project the 2016 Build traffic conditions, the 2016 No-Build traffic volumes were combined with the site traffic assignments and are illustrated on Figure 5.

**Operational Analysis**

In order to measure the quality of the traffic flow for the adjacent roadways and intersections, capacity analyses for the study intersections have been completed based upon the methods outlined in the *2010 Highway Capacity Manual*. Capacity analysis is a procedure used to estimate the ability of the roadway network to carry traffic. Capacity analyses are performed based on a Level of Service methodology. Level of Service (LOS) is a qualitative measure that characterizes the operational conditions of a roadway or intersection based on the perceptions by motorists and passengers. Levels of Service are defined for each type of facility (i.e. freeways, highways, signalized intersections, unsignalized intersections). These Levels of Service range from LOS A to LOS F, with a LOS A representing the best operating conditions and a LOS F representing the worst operating conditions.

The Levels of Service for signalized intersections are classified in terms of delay, which is based on the extent of driver discomfort and frustration, fuel consumption and lost travel time. The delay experienced by a motorist consists of many factors that relate to control, geometrics and traffic. Some of these factors include the quality of progression, traffic signal cycle length, the green ratio and the volume-to-capacity ratio. The determination for the Level of Service for an unsignalized intersection is based upon the average control delay associated with each minor



movement (i.e. yielding left-turn movements from the major roads and stop-controlled movements from the minor approaches). The Level of Service criteria for signalized and unsignalized intersections is summarized below in Table 2.

Table 2 Level of Service Criteria		
Level of Service	Unsignalized Delay (sec)	Signalized Delay (sec)
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

In order to assess the traffic impact of the proposed Polecoaster amusement facility, the roadway network has been evaluated under the Existing, No-Build and Build conditions using the above-described methodology. A detailed description of the study intersections' operations under the three scenarios is provided below, with the resulting Existing, No-Build and Build Levels of Service illustrated on Figures 6, 7 and 8 respectively. The capacity analysis worksheets are attached for reference.

***Pacific Avenue and Martin Luther King Boulevard Intersection***

Under existing conditions, the Pacific Avenue/Martin Luther King Boulevard signalized intersection operates at an overall LOS B during both the Friday PM and Saturday midday peak hours. The eastbound and westbound Pacific Avenue individual movements currently operate at a LOS B during both peak hours while the northbound and southbound Martin Luther King Boulevard individual movements function at a LOS C during the Friday PM and Saturday midday peak hours.

In the future 2016 No-Build and Build scenarios, all individual movements at the Pacific Avenue/Martin Luther King Boulevard signalized intersection will continue to operate at existing levels of service during both the Friday PM and Saturday midday peak hours. In addition, the intersection will continue to function at an overall LOS B during both peak hours throughout the Build conditions. The traffic resulting from the proposed Polecoaster amusement facility will cause no changes in the future levels of service at this study location.

***Pacific Avenue and Kentucky Avenue Intersection***

Under existing conditions, the Pacific Avenue/Kentucky Avenue signalized intersection operates at an overall LOS C during both the Friday PM and Saturday midday peak hours. The eastbound and westbound Pacific Avenue individual movements currently operate at a LOS C during both peak hours while the northbound and southbound Kentucky Avenue individual movements function at a LOS D during the Friday PM and Saturday midday peak hours.

In the future 2016 No-Build and Build scenarios, the majority of the individual movements at the Pacific Avenue/Kentucky Avenue signalized intersection will continue to operate at existing levels of service during both the Friday PM and Saturday midday peak hours



with the exception of the westbound Pacific Avenue left-turn/through movements, which will operate at a LOS D during the Saturday peak hour. Overall, the intersection will function at an overall LOS C during the Friday PM peak hour and LOS D during the Saturday midday peak hour. The traffic resulting from the proposed Polecoaster amusement facility will cause no significant changes in the future levels of service at this study location.

## **Air Quality Analysis**

### ***NJDEP Protocol***

The New Jersey Department of Environmental Protection (NJDEP) outlines an air quality evaluation protocol in *Air Quality Analysis for Intersections* (May 2004). NJDEP requires dispersion modeling to demonstrate that the National Ambient Air Quality Standards (NAAQS) for carbon monoxide will not be exceeded due to the additional traffic to be generated by a proposed development. As per N.J.A.C. 7:27-13.5, carbon monoxide concentrations shall not exceed 35 ppm for one-hour average concentrations and 9 ppm for eight-hour average concentrations.

Levels of service (LOS) results are the basis for determining whether or not an intersection requires dispersion modeling. Generally, a LOS A, B or C indicates that vehicle delays at an intersection are not significant enough to generate excessive CO concentrations. At signalized intersections, any movement that functions at a LOS D, E or F requires CO dispersion modeling. For unsignalized intersections, a LOS E or F on the stop-controlled approaches, and a LOS D, E or F for the major street left-turn movement indicates the need for CO dispersion modeling. The MOBILE6.2 Emission Factors and CAL3QHC modeling programs are used for dispersion modeling as specified by NJDEP.

### ***Data Analysis***

The intersections to be analyzed for air quality violations are dependent on the levels of service at each intersection. Based on the levels of service presented in this traffic engineering assessment and the latest NJDEP protocol, dispersion modeling is required for the Pacific Avenue/Kentucky Avenue study intersection. Dispersion modeling is performed during the peak hour that experiences the highest total volume at the intersection. Based upon this criterion, the study intersections were analyzed during the Saturday midday peak hour.

### ***Data Results***

Dispersion modeling was performed for the study intersections using the CAL3QHC program with input variables obtained from the MOBILE6.2 program. The MOBILE6.2 program estimates carbon monoxide emission factors for motor vehicles using default values issued by the NJDEP. These emission factors are calculated for various speeds and the anticipated build-out year. Table 3 summarizes the emission factors for the 2016 build year and the various posted speed limits within the study area. It should be noted that idle emission factors are based on a 2.5 MPH speed limit.



Table 3 2016 Vehicle Emission Factors (grams/vehicle-hour)		
Roadway	Speed Limit	Emission Factor
Idle	2.5 MPH	54.87
Pacific Avenue	25 MPH	10.30
Kentucky Avenue	25 MPH	10.30

The above emission factors were utilized to perform dispersion modeling for the required study intersections with the CAL3QHC program. The study intersections were modeled for the 2016 No-Build and Build conditions. The CAL3QHC program yields the maximum one-hour carbon monoxide concentrations at the study intersection for each scenario. The detailed CAL3QHC input and output files are attached to this report.

To obtain the one-hour average CO concentration, the default background concentration of 5.0 ppm for a suburban area was added to the modeled CO concentrations obtained from the CAL3QHC program. The eight-hour average CO concentration is obtained by multiplying the one-hour average CO concentration by a 0.7 persistence factor. The resulting CO concentrations are provided in Table 4 for each study intersection under the 2016 No-Build and Build conditions.

Table 4 Polecoaster – Study Intersection 2016 CO Concentrations (ppm)			
Study Intersection	Scenario	One Hour Average	Eight Hour Average
Pacific Avenue and Kentucky Avenue	No-Build	5.60	3.92
	Build	5.90	4.13

The results presented in the above table show that the CO concentrations resulting from the dispersion modeling presented in this report do not violate the NAAQS of 35 ppm for one-hour average concentrations and 9 ppm for eight-hour average concentrations. The maximum carbon monoxide concentrations for the 2016 Build conditions occur in the southeast quadrant of the Pacific Avenue/Kentucky Avenue signalized intersection. The maximum one-hour average CO concentration of 5.90 ppm does not exceed NAAQS standards; therefore, further improvements are not required at the study locations due to air quality conditions.

**Conclusion**

The proposed Polecoaster amusement facility development will have a minimal impact on the adjacent roadway network and at the study intersections based on the following findings:

- Based on the ITE trip generation data, the proposed Polecoaster amusement facility will generate a total of approximately 112 trips during the Friday PM peak hour and approximately 517 trips during the Saturday midday peak hour. However, it is anticipated that a significant portion of the site traffic will be non-vehicular trips, reducing the total trips indicated above. These trips will be a combination of public transportation trips, walking/pedestrian trips, and multi-use trips, meaning trips that



will patronize the proposed Polecoaster amusement facility as well as the nearby casinos, restaurants, and boardwalk facilities.

- The traffic resulting from the proposed Polecoaster amusement facility will cause no changes in the future individual and overall levels of service at the Pacific Avenue/Martin Luther King Boulevard signalized intersection during both the Friday PM and Saturday midday peak hours. Overall, the intersection will continue to function at existing levels of service throughout the 2016 Build scenario.
- The traffic resulting from the proposed Polecoaster amusement facility will cause minimal changes in the future individual and overall levels of service at the Pacific Avenue/Kentucky Avenue signalized intersection during the Saturday midday peak hour. Overall, the intersection will function at a LOS C during the Friday PM peak hour and LOS D during the Saturday midday peak hour under the 2016 Build conditions.
- Air quality dispersion modeling at the Pacific Avenue/Kentucky Avenue study intersection shows that concentration levels will not exceed NAAQS standards for air quality under the 2016 Build conditions. The maximum one-hour average CO concentration of 5.60 ppm will occur in the southeast quadrant of the intersection. This level does not violate the standards of 35 ppm for one-hour average concentrations and 9 ppm for eight-hour average concentrations. Therefore, no further improvements are required at the study intersection due to air quality conditions.

Should you have any questions or require additional information, please contact us.

Sincerely,  
**Shropshire Associates LLC**

A handwritten signature in black ink, appearing to read 'Nathan B. Mosley', written over a light blue horizontal line.

Nathan B. Mosley, P.E., C.M.E.  
Senior Project Manager  
NBM/jab  
Attachments

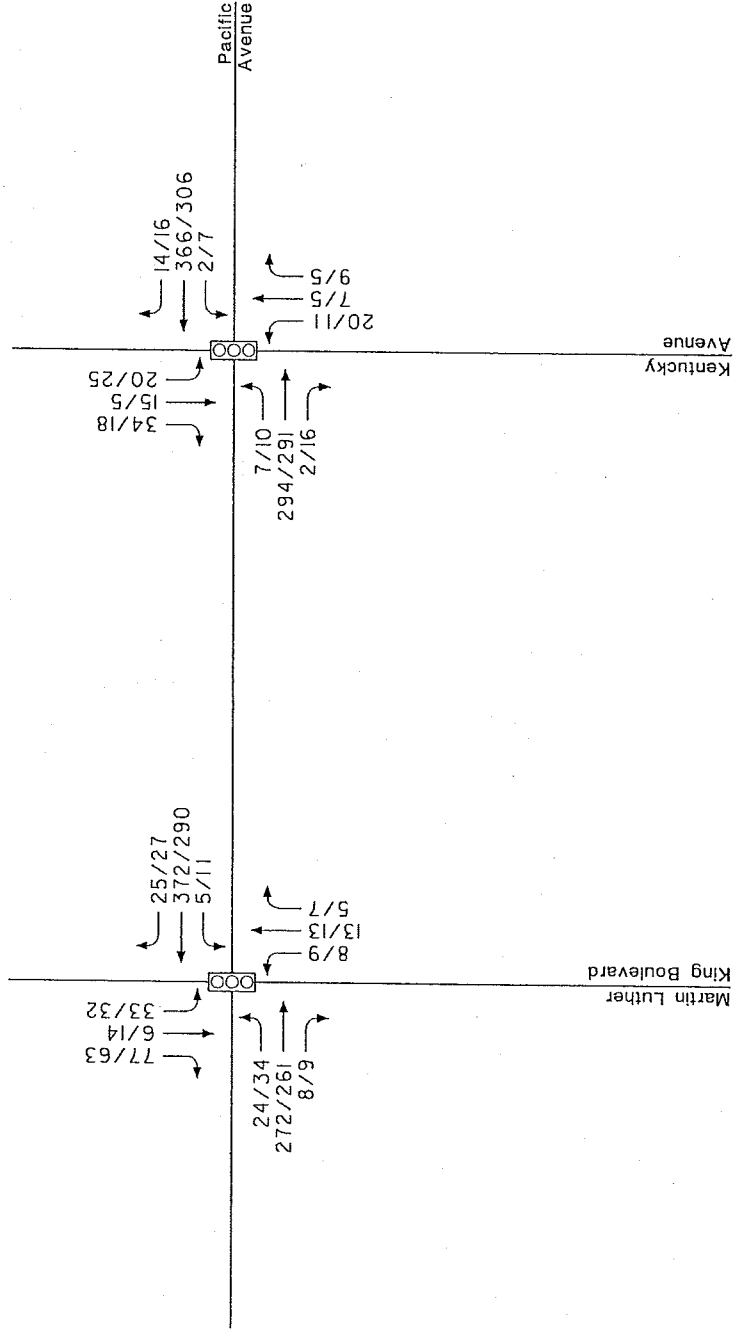
David R. Shropshire, P.E., P.P.  
Principal

cc: Arthur Ponzio (via email: [aponzio@awponzio.com](mailto:aponzio@awponzio.com))

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FIGURE 1  
 EXISTING VOLUMES



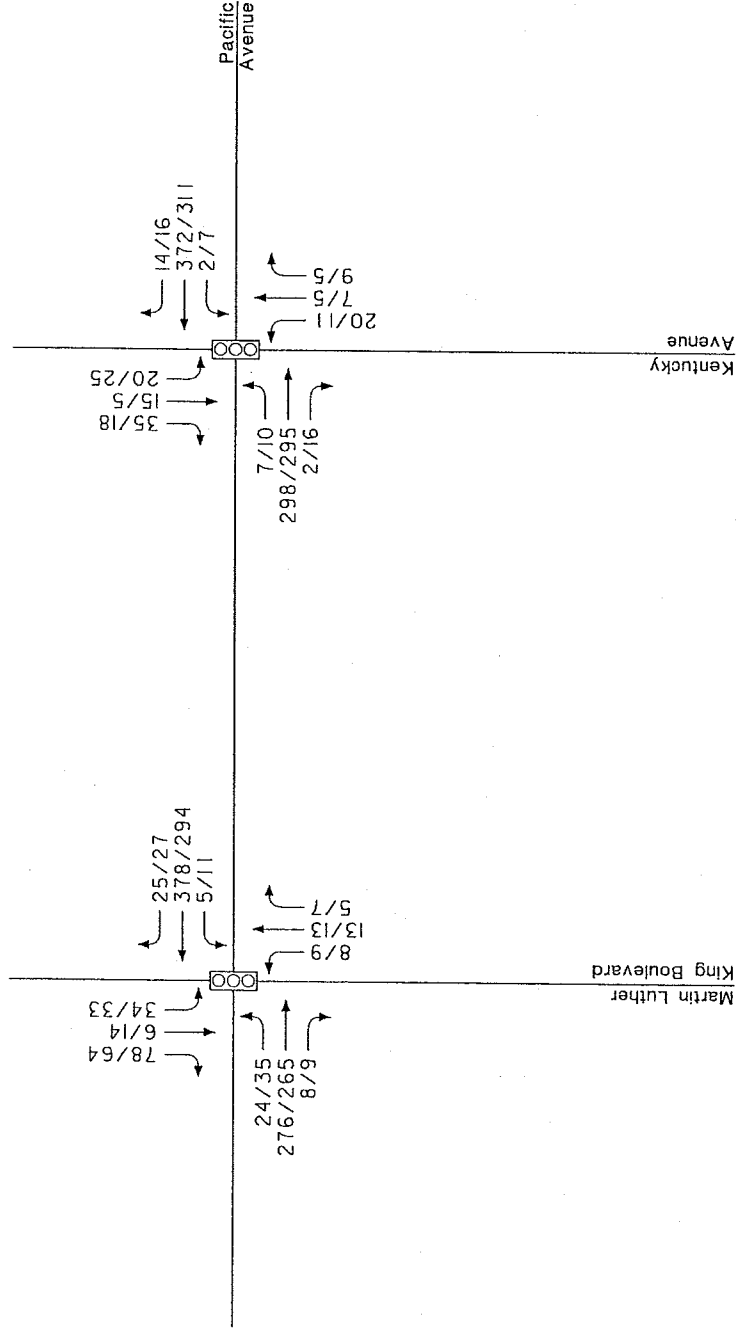
**Polecoaster**  
 Atlantic City, Atlantic County, New Jersey  
 December 2015

TRAFFIC SIGNAL  
 FRI/SAT PEAK HOUR

SA Project No. 15180

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## Polecoaster

Atlantic City, Atlantic County, New Jersey  
 December 2015

TRAFFIC SIGNAL  
 FRI/SAT PEAK HOUR

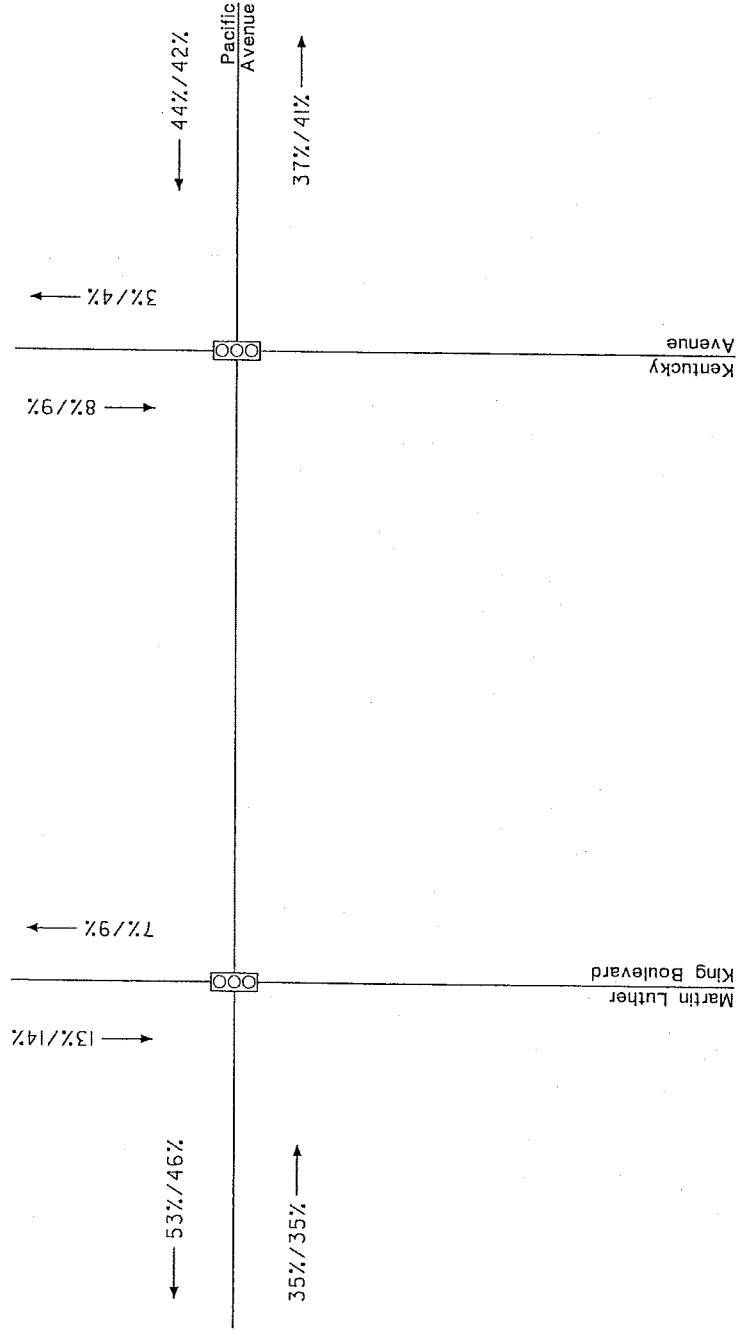
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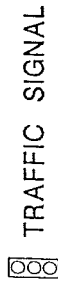
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FIGURE 3  
 TRIP DISTRIBUTION



## Polecoaster

Atlantic City, Atlantic County, New Jersey  
 December 2015



TRAFFIC SIGNAL

FRI/SAT PEAK HOUR

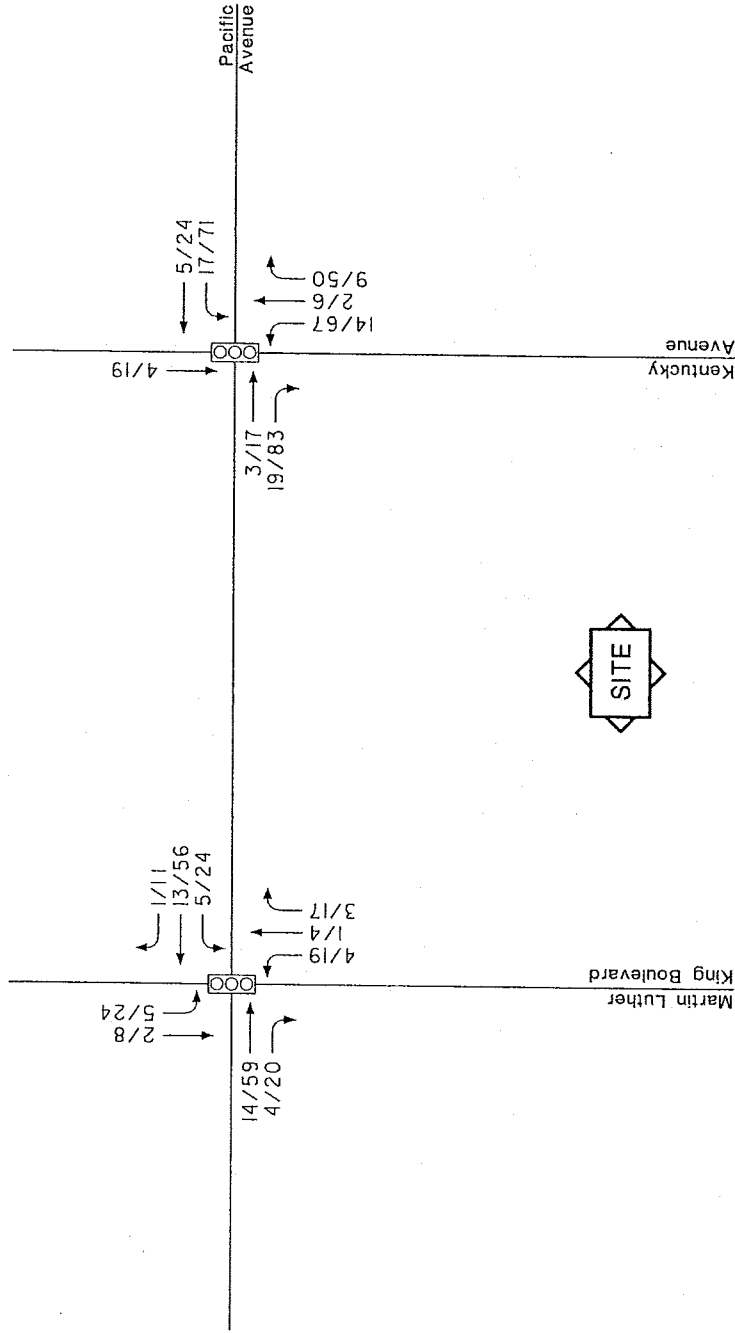
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FIGURE 4  
 SITE TRAFFIC



## Polecoaster

Atlantic City, Atlantic County, New Jersey  
 December 2015

TRAFFIC SIGNAL

FRI/SAT PEAK HOUR

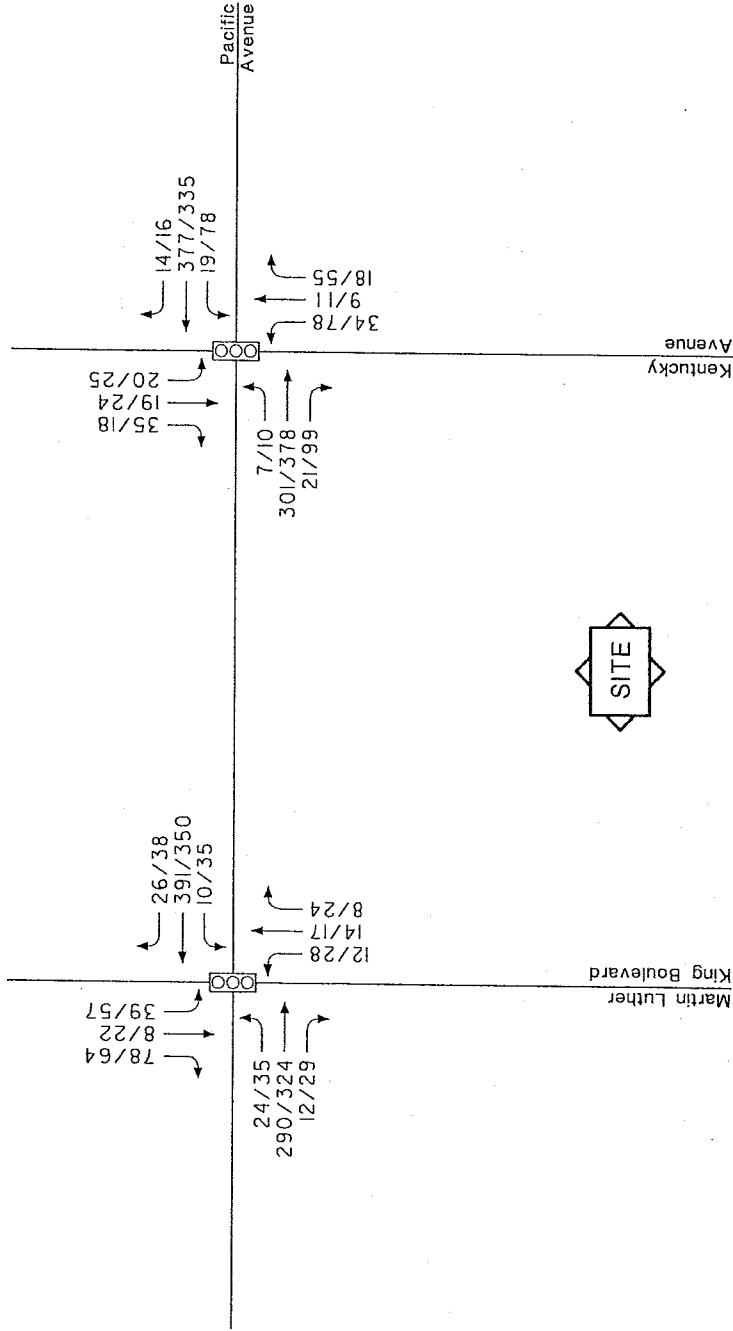
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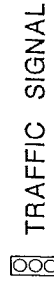
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FIGURE 5  
 BUILD VOLUMES



## Polecoaster

Atlantic City, Atlantic County, New Jersey  
 December 2015

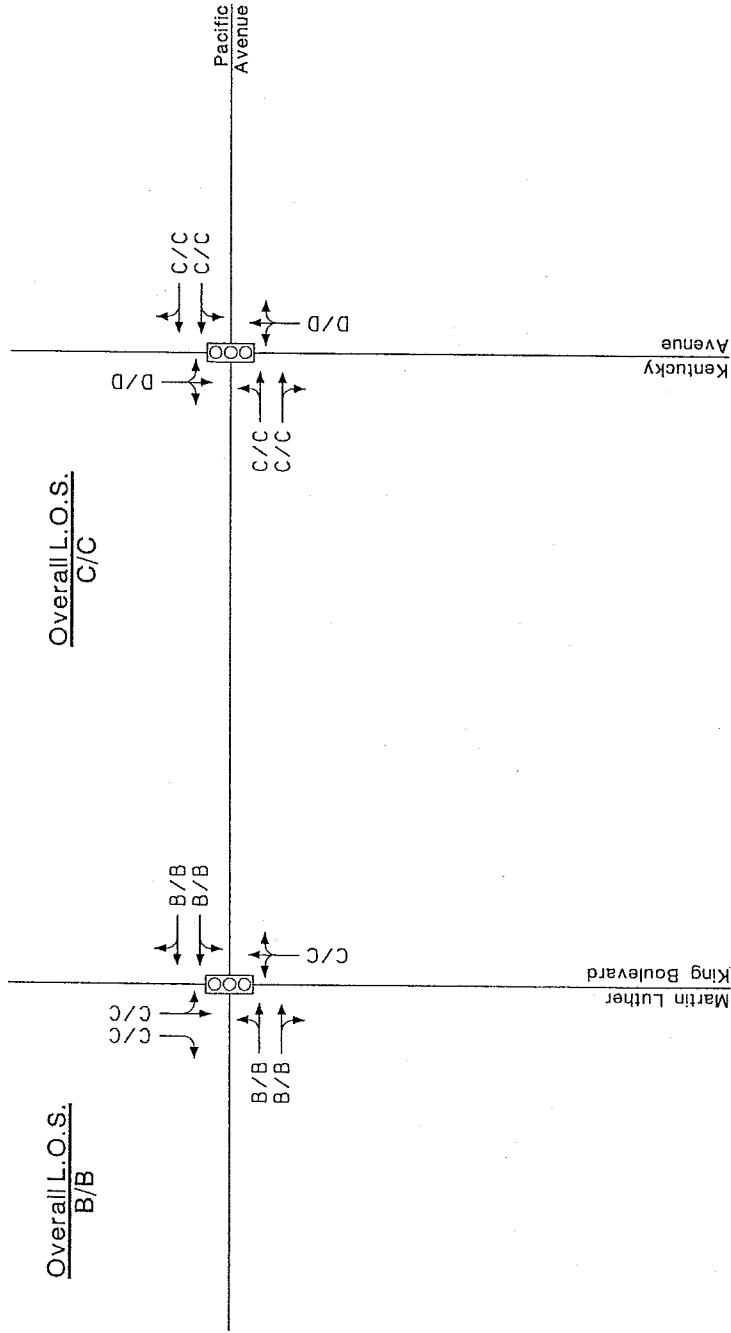
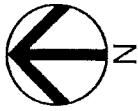


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FRI/SAT PEAK HOUR

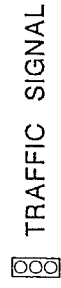
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## Polecoaster

Atlantic City, Atlantic County, New Jersey  
 December 2015



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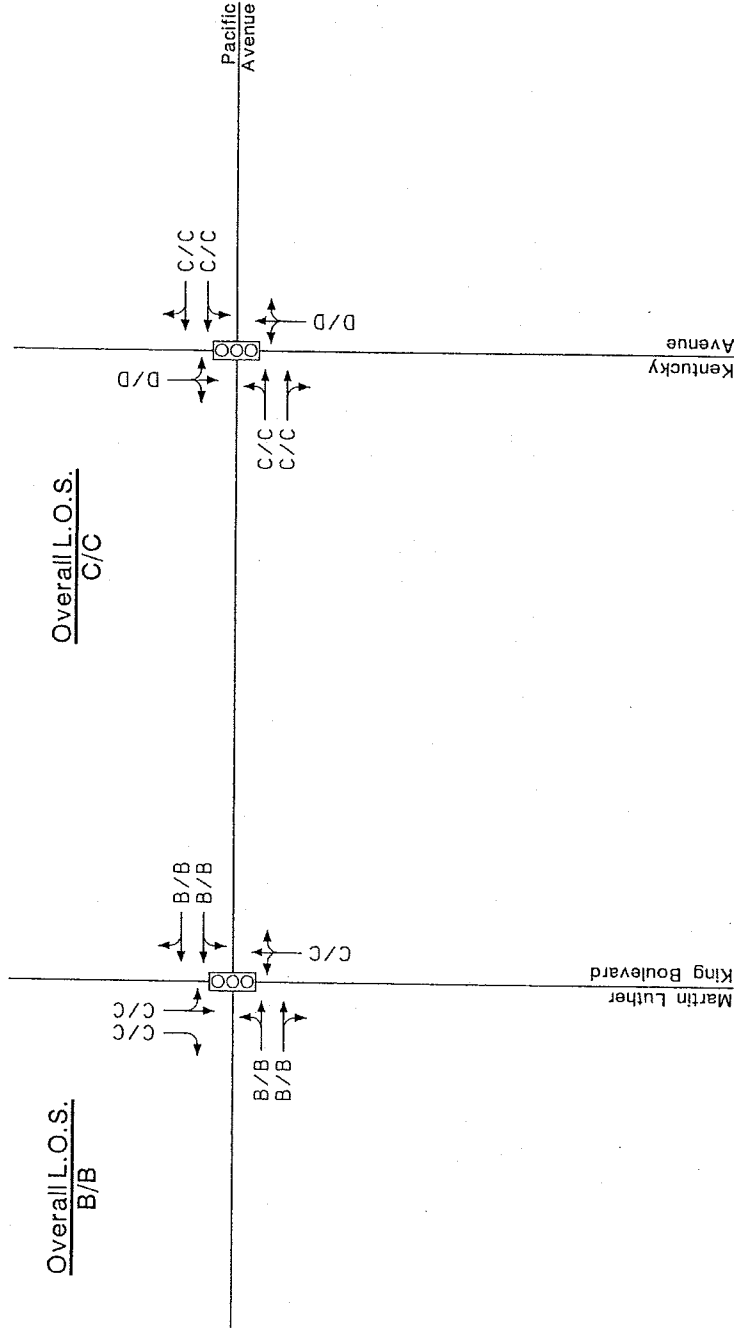
FRI/SAT PEAK HOUR

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
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FIGURE 7  
 NO-BUILD LEVELS OF SERVICE



**Polecoaster**  
 Atlantic City, Atlantic County, New Jersey  
 December 2015

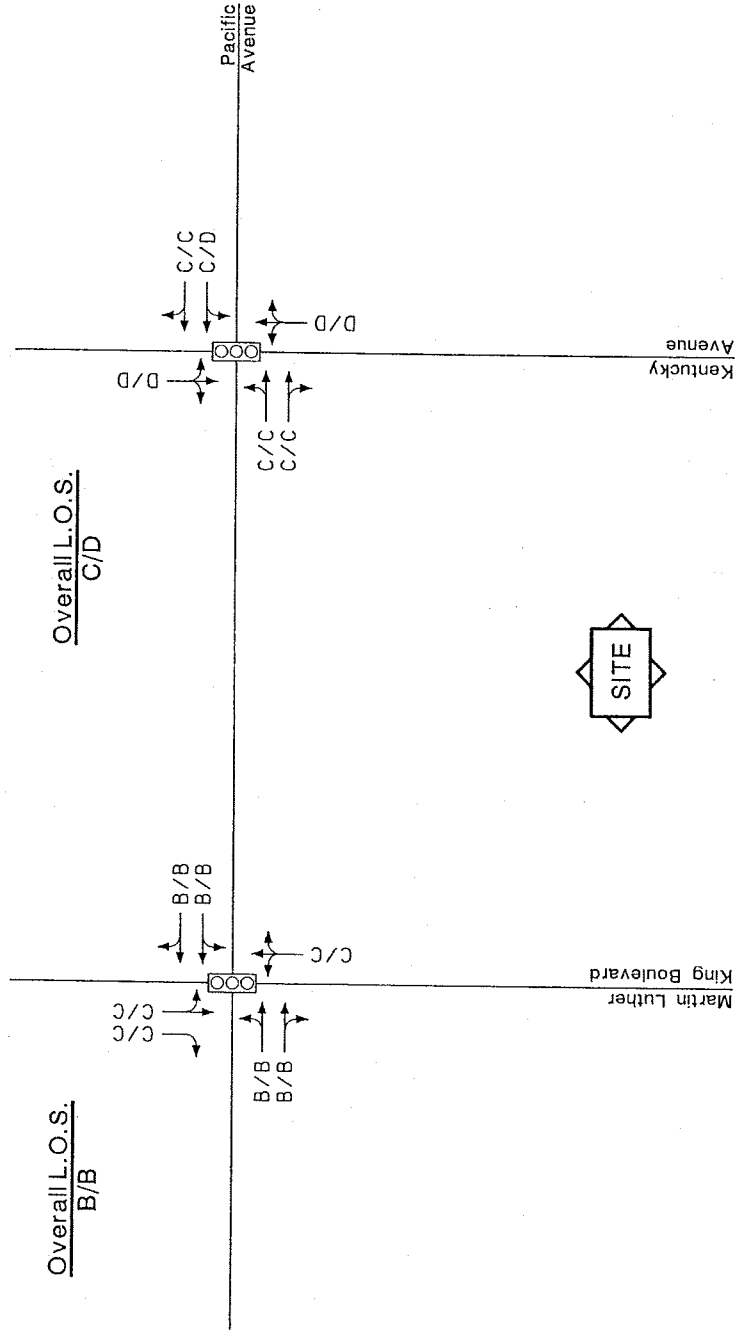
 TRAFFIC SIGNAL  
 FRI/SAT PEAK HOUR  
 SA Project No. 15180

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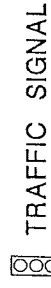
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FIGURE 8  
 BUILD LEVELS OF SERVICE



## Polecoaster

Atlantic City, Atlantic County, New Jersey  
 December 2015



TRAFFIC SIGNAL

FRI/SAT PEAK HOUR

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N/S Route: Martin Luther King Boulevard  
E/W Route: Pacific Avenue  
Atlantic City, Atlantic County, NJ  
Fri/Clear/EM/2585

File Name : 15180001  
Site Code : 15180001  
Start Date : 12/11/2015  
Page No : 1

Groups Printed- Unshifted

Start Time	Martin Luther King Blvd Southbound					Pacific Avenue Westbound					Martin Luther King Blvd Northbound					Pacific Avenue Eastbound					Int. Total
	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	
04:00 PM	13	4	6	4	27	6	116	0	2	124	1	5	1	1	8	3	67	14	0	84	243
04:15 PM	17	1	7	3	28	2	78	2	0	82	3	4	2	1	10	3	66	5	1	75	195
04:30 PM	25	3	8	1	37	6	95	0	0	101	1	3	2	0	6	1	64	5	0	70	214
04:45 PM	16	2	10	0	28	7	75	1	2	85	0	4	0	0	4	3	64	8	0	75	192
Total	71	10	31	8	120	21	364	3	4	392	5	16	5	2	28	10	261	32	1	304	844
05:00 PM	16	1	5	0	22	3	116	3	0	122	2	3	2	0	7	1	70	2	0	73	224
05:15 PM	17	0	10	2	29	7	86	1	0	94	2	3	4	0	9	3	74	9	0	86	218
05:30 PM	13	4	9	7	33	5	95	2	1	103	1	3	1	1	6	2	55	6	0	63	205
05:45 PM	15	3	6	0	24	2	61	0	0	63	0	1	3	0	4	2	61	8	1	72	163
Total	61	8	30	9	108	17	358	6	1	382	5	10	10	1	26	8	260	25	1	294	810
06:00 PM	12	1	10	1	24	1	78	2	0	81	0	4	0	0	4	0	58	7	0	65	174
06:15 PM	14	1	10	3	28	1	64	1	0	66	1	3	1	0	5	0	59	6	0	65	164
06:30 PM	10	2	14	3	29	5	78	1	0	84	0	3	2	0	5	0	56	8	0	64	182
06:45 PM	15	5	5	0	25	2	74	2	0	78	1	2	0	0	3	0	68	5	1	74	180
Total	51	9	39	7	106	9	294	6	0	309	2	12	3	0	17	0	241	26	1	268	700
07:00 PM	8	1	6	0	15	11	59	0	0	70	2	4	0	1	7	3	65	6	0	74	166
07:15 PM	18	2	14	2	36	3	67	0	1	71	1	0	3	1	5	2	80	6	0	88	200
07:30 PM	24	4	6	0	34	4	49	0	1	54	0	0	0	0	0	0	63	4	0	67	155
07:45 PM	22	4	5	1	32	1	63	3	0	67	0	4	1	0	5	1	68	8	1	78	182
Total	72	11	31	3	117	19	238	3	2	262	3	8	4	2	17	6	276	24	1	307	703
08:00 PM	21	0	0	0	21	0	71	3	0	74	0	6	4	3	13	0	55	6	0	61	169
08:15 PM	9	2	10	0	21	2	62	2	2	68	2	2	2	0	6	2	51	6	0	59	154
08:30 PM	17	2	8	0	27	2	81	2	0	85	1	2	0	0	3	3	57	3	0	63	178
08:45 PM	19	1	7	0	27	4	57	0	0	61	0	3	3	0	6	0	80	6	0	86	180
Total	66	5	25	0	96	8	271	7	2	288	3	13	9	3	28	5	243	21	0	269	681
Grand Total	321	43	156	27	547	74	1525	25	9	1633	18	59	31	8	116	29	1281	128	4	1442	3738
Apprch %	58.7	7.9	28.5	4.9		4.5	93.4	1.5	0.6		15.5	50.9	26.7	6.9		2	88.8	8.9	0.3		
Total %	8.6	1.2	4.2	0.7	14.6	2	40.8	0.7	0.2	43.7	0.5	1.6	0.8	0.2	3.1	0.8	34.3	3.4	0.1	38.6	



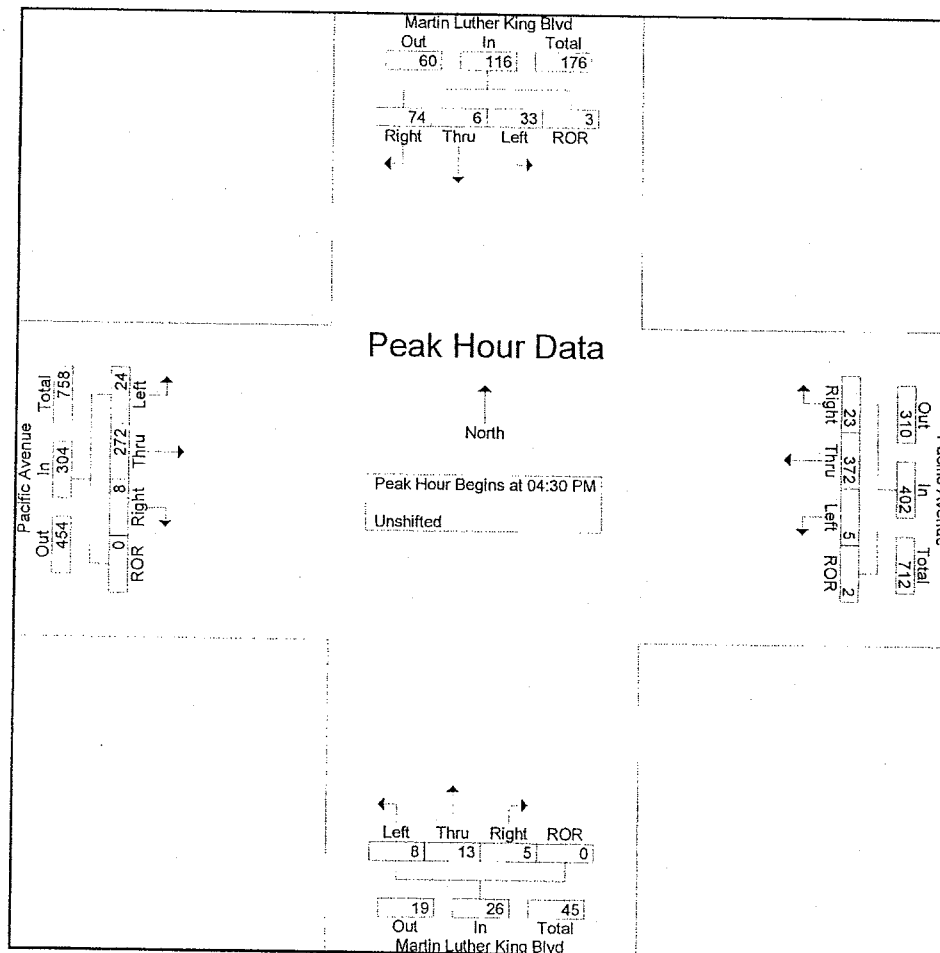
# Shropshire Associates, LLC

277 White Horse Pike, Suite 203  
Atco, New Jersey 08004

N/S Route: Martin Luther King Boulevard  
E/W Route: Pacific Avenue  
Atlantic City, Atlantic County, NJ  
Fri/Clear/EM/2585

File Name : 15180001  
Site Code : 15180001  
Start Date : 12/11/2015  
Page No : 2

Start Time	Martin Luther King Blvd Southbound					Pacific Avenue Westbound					Martin Luther King Blvd Northbound					Pacific Avenue Eastbound					Int. Total
	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	
Peak Hour Analysis From 04:00 PM to 08:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	25	3	8	1	37	6	95	0	0	101	1	3	2	0	6	1	64	5	0	70	214
04:45 PM	16	2	10	0	28	7	75	1	2	85	0	4	0	0	4	3	64	8	0	75	192
05:00 PM	16	1	5	0	22	3	116	3	0	122	2	3	2	0	7	1	70	2	0	73	224
05:15 PM	17	0	10	2	29	7	86	1	0	94	2	3	4	0	9	3	74	9	0	86	218
Total Volume	74	6	33	3	116	23	372	5	2	402	5	13	8	0	26	8	272	24	0	304	848
% App. Total	63.8	5.2	28.4	2.6		5.7	92.5	1.2	0.5		19.2	50	30.8	0		2.6	89.5	7.9	0		
PHF	.740	.500	.825	.375	.784	.821	.802	.417	.250	.824	.625	.813	.500	.000	.722	.667	.919	.667	.000	.884	.946



# Shropshire Associates, LLC

277 White Horse Pike, Suite 203  
Atco, New Jersey 08004

N/S Route: Martin Luther King Boulevard  
E/W Route: Pacific Avenue  
Atlantic City, Atlantic County, NJ  
Sat/Clear/EM/2585

File Name : 15180002  
Site Code : 15180002  
Start Date : 12/12/2015  
Page No : 1

Groups Printed- Unshifted

Start Time	Martin Luther King Boulevard Southbound					Pacific Avenue Westbound					Martin Luther King Boulevard Northbound					Pacific Avenue Eastbound					Int. Total
	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	
11:00 AM	12	4	9	3	28	3	66	2	2	73	1	3	1	0	5	4	49	6	0	59	165
11:15 AM	16	6	12	0	34	5	58	0	3	66	1	6	0	0	7	1	50	7	0	58	165
11:30 AM	19	3	9	1	32	2	68	5	1	76	4	3	1	0	8	1	95	6	1	103	219
11:45 AM	14	6	13	0	33	9	61	1	2	73	0	4	5	0	9	1	62	8	0	71	186
Total	61	19	43	4	127	19	253	8	8	288	6	16	7	0	29	7	256	27	1	291	735
12:00 PM	15	4	8	0	27	5	84	3	0	92	2	3	2	0	7	3	55	12	0	70	196
12:15 PM	13	1	2	1	17	7	77	2	1	87	1	3	1	0	5	2	49	8	1	60	169
12:30 PM	15	3	8	0	26	4	70	4	0	78	1	0	1	1	3	3	48	9	0	60	167
12:45 PM	24	3	14	0	41	3	74	1	0	78	1	10	2	0	13	8	67	3	0	78	210
Total	67	11	32	1	111	19	305	10	1	335	5	16	6	1	28	16	219	32	1	268	742
01:00 PM	9	0	6	0	15	7	83	2	2	94	3	11	0	0	14	0	25	1	0	26	149
01:15 PM	17	5	13	3	38	3	65	1	0	69	1	1	1	0	3	4	81	10	0	95	205
01:30 PM	16	2	4	2	24	5	75	4	2	86	4	2	0	0	6	2	63	0	0	65	181
01:45 PM	25	14	3	0	42	2	74	2	0	78	1	2	7	2	12	3	75	11	0	89	221
Total	67	21	26	5	119	17	297	9	4	327	9	16	8	2	35	9	244	22	0	275	756
*** BREAK ***																					
Grand Total	195	51	101	10	357	55	855	27	13	950	20	48	21	3	92	32	719	81	2	834	2233
Apprch %	54.6	14.3	28.3	2.8		5.8	90	2.8	1.4		21.7	52.2	22.8	3.3		3.8	86.2	9.7	0.2		
Total %	8.7	2.3	4.5	0.4	16	2.5	38.3	1.2	0.6	42.5	0.9	2.1	0.9	0.1	4.1	1.4	32.2	3.6	0.1	37.3	

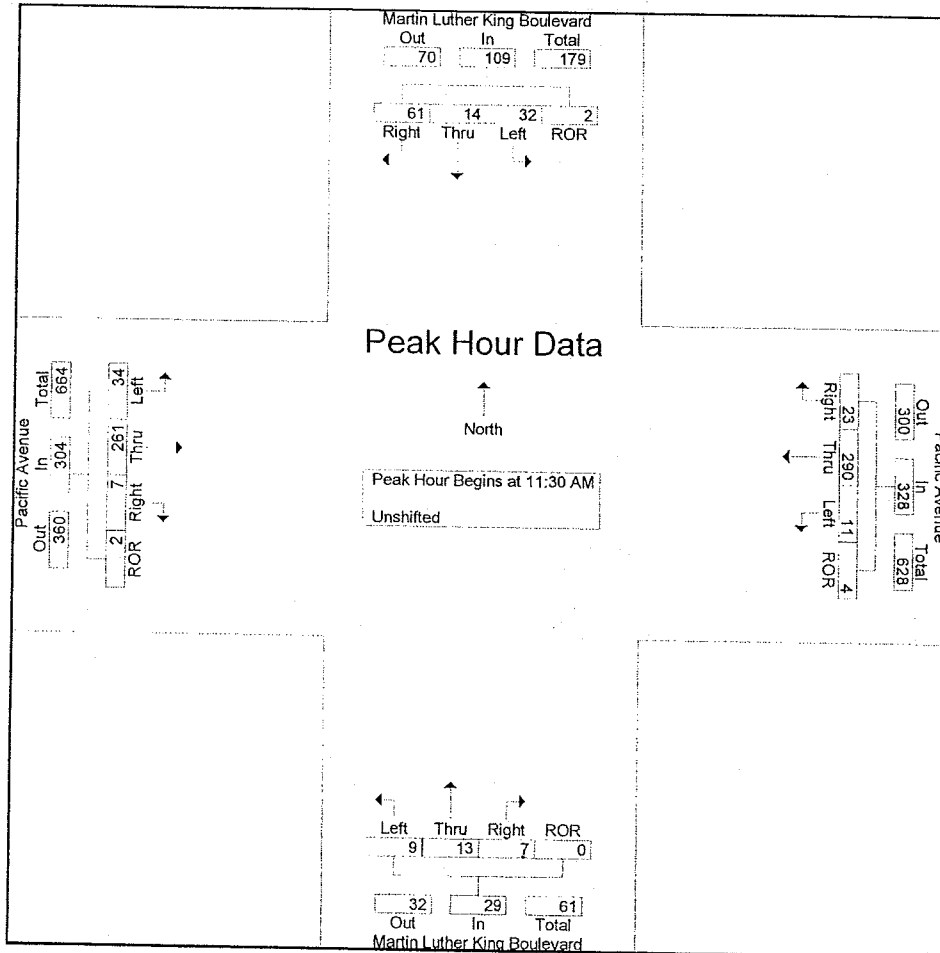
# Shropshire Associates, LLC

277 White Horse Pike, Suite 203  
Atco, New Jersey 08004

N/S Route: Martin Luther King Boulevard  
E/W Route: Pacific Avenue  
Atlantic City, Atlantic County, NJ  
Sat/Clear/EM/2585

File Name : 15180002  
Site Code : 15180002  
Start Date : 12/12/2015  
Page No : 2

Start Time	Martin Luther King Boulevard Southbound					Pacific Avenue Westbound					Martin Luther King Boulevard Northbound					Pacific Avenue Eastbound					Int. Total
	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	
Peak Hour Analysis From 11:00 AM to 02:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	19	3	9	1	32	2	68	5	1	76	4	3	1	0	8	1	95	6	1	103	219
11:45 AM	14	6	13	0	33	9	61	1	2	73	0	4	5	0	9	1	62	8	0	71	186
12:00 PM	15	4	8	0	27	5	84	3	0	92	2	3	2	0	7	3	55	12	0	70	196
12:15 PM	13	1	2	1	17	7	77	2	1	87	1	3	1	0	5	2	49	8	1	60	169
Total Volume	61	14	32	2	109	23	290	11	4	328	7	13	9	0	29	7	261	34	2	304	770
% App. Total	56	12.8	29.4	1.8		7	88.4	3.4	1.2		24.1	44.8	31	0		2.3	85.9	11.2	0.7		
PHF	.803	.583	.615	.500	.826	.639	.863	.550	.500	.891	.438	.813	.450	.000	.806	.583	.667	.708	.500	.738	.879



# Shropshire Associates, LLC

277 White Horse Pike, Suite 203  
Atco, New Jersey 08004

N/S Route: Kentucky Avenue  
E/W Route: Pacific Avenue  
Atlantic City, Atlantic County, NJ  
Fri/Clear/PA/4607

File Name : 15180003  
Site Code : 15180003  
Start Date : 12/11/2015  
Page No : 1

Groups Printed- Unshifted

Start Time	Kentucky Avenue Southbound					Pacific Avenue Westbound					Kentucky Avenue Northbound					Pacific Avenue Eastbound					Int. Total
	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	
04:00 PM	7	4	2	1	14	4	107	1	1	113	2	4	7	0	13	1	75	3	0	79	219
04:15 PM	1	0	9	0	10	6	78	0	1	85	2	3	3	0	8	2	76	1	0	79	182
04:30 PM	1	0	5	1	7	2	96	0	1	99	0	0	6	1	7	2	67	6	0	75	188
04:45 PM	7	6	6	4	23	0	69	2	1	72	3	1	5	0	9	0	73	1	0	74	178
Total	16	10	22	6	54	12	350	3	4	369	7	8	21	1	37	5	291	11	0	307	767
05:00 PM	11	4	2	0	17	4	107	0	2	113	1	5	8	0	14	0	73	3	0	76	220
05:15 PM	4	4	6	2	16	3	90	0	1	94	2	1	4	0	7	1	78	2	0	81	198
05:30 PM	6	1	6	0	13	3	100	0	0	103	3	0	3	0	6	1	70	1	0	72	194
05:45 PM	2	2	5	0	9	4	61	0	2	67	1	4	1	0	6	0	69	1	1	71	153
Total	23	11	19	2	55	14	358	0	5	377	7	10	16	0	33	2	290	7	1	300	765
06:00 PM	4	3	4	0	11	2	73	4	0	79	2	2	2	0	6	0	67	3	1	71	167
06:15 PM	4	1	8	1	14	3	58	0	1	62	1	1	1	1	4	3	64	1	0	68	148
06:30 PM	4	3	1	0	8	3	77	1	0	81	2	1	1	2	6	1	73	2	0	76	171
06:45 PM	6	4	2	3	15	3	61	2	1	67	1	4	2	0	7	1	69	2	0	72	161
Total	18	11	15	4	48	11	269	7	2	289	6	8	6	3	23	5	273	8	1	287	647
07:00 PM	3	1	8	1	13	7	68	1	0	76	1	2	3	0	6	1	77	1	0	79	174
07:15 PM	3	4	6	0	13	2	63	2	1	68	3	4	2	0	9	4	86	6	0	96	186
07:30 PM	3	3	4	0	10	4	59	4	1	68	3	1	0	0	4	0	72	1	0	73	155
07:45 PM	5	3	4	1	13	3	60	4	0	67	1	0	2	0	3	0	82	2	1	85	168
Total	14	11	22	2	49	16	250	11	2	279	8	7	7	0	22	5	317	10	1	333	683
08:00 PM	4	2	3	0	9	2	64	0	0	66	1	0	3	0	4	2	56	4	0	62	141
08:15 PM	0	1	4	2	7	5	66	4	0	75	2	1	0	0	3	1	59	4	0	64	149
08:30 PM	3	0	5	3	11	1	74	0	0	75	2	3	3	0	8	1	59	2	0	62	156
08:45 PM	3	2	2	1	8	3	53	0	0	56	0	2	1	0	3	2	61	3	0	66	133
Total	10	5	14	6	35	11	257	4	0	272	5	6	7	0	18	6	235	13	0	254	579
Grand Total	81	48	92	20	241	64	1484	25	13	1586	33	39	57	4	133	23	1406	49	3	1481	3441
Apprch %	33.6	19.9	38.2	8.3		4	93.6	1.6	0.8		24.8	29.3	42.9	3		1.6	94.9	3.3	0.2		
Total %	2.4	1.4	2.7	0.6	7	1.9	43.1	0.7	0.4	46.1	1	1.1	1.7	0.1	3.9	0.7	40.9	1.4	0.1	43	

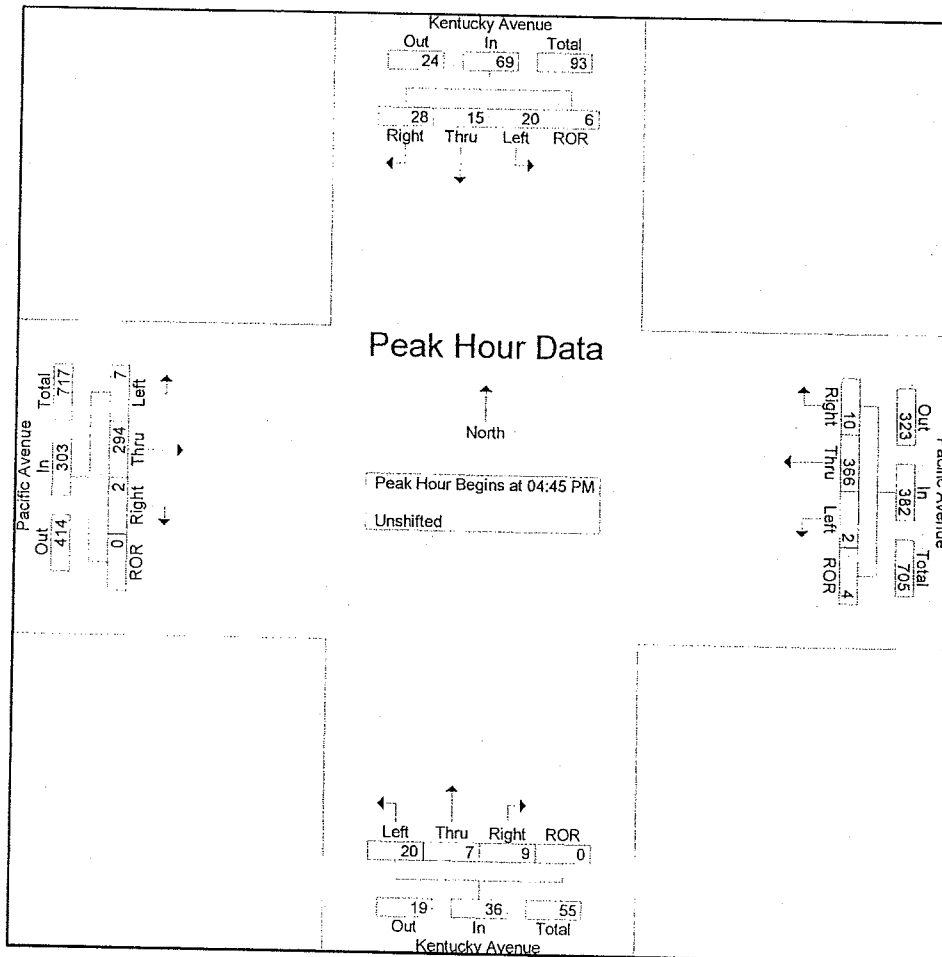
# Shropshire Associates, LLC

277 White Horse Pike, Suite 203  
Atco, New Jersey 08004

N/S Route: Kentucky Avenue  
E/W Route: Pacific Avenue  
Atlantic City, Atlantic County, NJ  
Fri/Clear/PA/4607

File Name : 15180003  
Site Code : 15180003  
Start Date : 12/11/2015  
Page No : 2

Start Time	Kentucky Avenue Southbound					Pacific Avenue Westbound					Kentucky Avenue Northbound					Pacific Avenue Eastbound					Int. Total
	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	
Peak Hour Analysis From 04:00 PM to 08:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	7	6	6	4	23	0	69	2	1	72	3	1	5	0	9	0	73	1	0	74	178
05:00 PM	11	4	2	0	17	4	107	0	2	113	1	5	8	0	14	0	73	3	0	76	220
05:15 PM	4	4	6	2	16	3	90	0	1	94	2	1	4	0	7	1	78	2	0	81	198
05:30 PM	6	1	6	0	13	3	100	0	0	103	3	0	3	0	6	1	70	1	0	72	194
Total Volume	28	15	20	6	69	10	366	2	4	382	9	7	20	0	36	2	294	7	0	303	790
% App. Total	40.6	21.7	29	8.7	2.6	95.8	0.5	1		25	19.4	55.6	0		0.7	97	2.3	0			
PHF	.636	.625	.833	.375	.750	.625	.855	.250	.500	.845	.750	.350	.625	.000	.643	.500	.942	.583	.000	.935	.898



# Shropshire Associates, LLC

277 White Horse Pike, Suite 203  
Atco, New Jersey 08004

N/S Route: Kentucky Avenue  
E/W Route: Pacific Avenue  
Atlantic City, Atlantic County, NJ  
Sat/Clear/GH/4608

File Name : 15180004  
Site Code : 15180004  
Start Date : 12/12/2015  
Page No : 1

Groups Printed- Unshifted

Start Time	Kentucky Avenue Southbound					Pacific Avenue Westbound					Kentucky Avenue Northbound					Pacific Avenue Eastbound					Int. Total
	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	
11:00 AM	2	2	5	4	13	2	69	2	0	73	2	3	1	1	7	0	54	3	0	57	150
11:15 AM	4	1	8	1	14	0	62	2	1	65	0	1	1	1	3	3	59	2	1	65	147
11:30 AM	4	1	5	1	11	1	68	4	0	73	2	0	2	0	4	5	101	5	1	112	200
11:45 AM	2	2	12	0	16	7	69	1	0	77	0	2	1	1	4	3	75	3	0	81	178
Total	12	6	30	6	54	10	268	9	1	288	4	6	5	3	18	11	289	13	2	315	675
12:00 PM	4	1	5	1	11	6	90	2	0	98	0	1	5	1	7	4	60	1	1	66	182
12:15 PM	3	1	3	3	10	2	79	0	0	81	0	2	3	1	6	2	55	1	0	58	155
12:30 PM	9	3	3	0	15	2	66	4	0	72	1	6	1	0	8	2	49	6	0	57	152
12:45 PM	2	2	5	0	9	2	81	4	0	87	4	4	3	0	11	3	73	3	1	80	187
Total	18	7	16	4	45	12	316	10	0	338	5	13	12	2	32	11	237	11	2	261	676
01:00 PM	5	5	9	0	19	2	80	1	0	83	2	3	4	3	12	2	43	1	0	46	160
01:15 PM	3	2	4	3	12	2	67	3	0	72	1	3	0	0	4	2	83	3	1	89	177
01:30 PM	6	4	2	0	12	1	76	0	0	77	1	2	1	0	4	1	67	2	0	70	163
01:45 PM	2	1	5	1	9	7	75	2	0	84	0	1	1	0	2	4	64	4	0	72	167
Total	16	12	20	4	52	12	298	6	0	316	4	9	6	3	22	9	257	10	1	277	667
Grand Total	46	25	66	14	151	34	882	25	1	942	13	28	23	8	72	31	783	34	5	853	2018
Apprch %	30.5	16.6	43.7	9.3		3.6	93.6	2.7	0.1		18.1	38.9	31.9	11.1		3.6	91.8	4	0.6		
Total %	2.3	1.2	3.3	0.7	7.5	1.7	43.7	1.2	0	46.7	0.6	1.4	1.1	0.4	3.6	1.5	38.8	1.7	0.2	42.3	

# Shropshire Associates, LLC

277 White Horse Pike, Suite 203  
Atco, New Jersey 08004

N/S Route: Kentucky Avenue  
E/W Route: Pacific Avenue  
Atlantic City, Atlantic County, NJ  
Sat/Clear/GH/4608

File Name : 15180004  
Site Code : 15180004  
Start Date : 12/12/2015  
Page No : 2

Start Time	Kentucky Avenue Southbound					Pacific Avenue Westbound					Kentucky Avenue Northbound					Pacific Avenue Eastbound					Int. Total
	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	4	1	5	1	11	1	68	4	0	73	2	0	2	0	4	5	101	5	1	112	200
11:45 AM	2	2	12	0	16	7	69	1	0	77	0	2	1	1	4	3	75	3	0	81	178
12:00 PM	4	1	5	1	11	6	90	2	0	98	0	1	5	1	7	4	60	1	1	66	182
12:15 PM	3	1	3	3	10	2	79	0	0	81	0	2	3	1	6	2	55	1	0	58	155
Total Volume	13	5	25	5	48	16	306	7	0	329	2	5	11	3	21	14	291	10	2	317	715
% App. Total	27.1	10.4	52.1	10.4		4.9	93	2.1	0		9.5	23.8	52.4	14.3		4.4	91.8	3.2	0.6		
PHF	.813	.625	.521	.417	.750	.571	.850	.438	.000	.839	.250	.625	.550	.750	.750	.700	.720	.500	.500	.708	.894

