Traffic Impact Study

Sherrill Hill Development
Knoxville, Tennessee

CCI Project File No. 00771-0000.1

August 6, 2007
(Revised October 1, 2007)
(Revised October 26, 2007)

Prepared for:

Andrews Properties, Inc.
6151 Powers Ferry Road, Suite 690
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9724 Kingston Pike • Suite 1100
Knoxville, Tennessee 37922

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EXECUTIVE SUMMARY

This report provides a summary of a traffic impact study that was performed for a proposed mixed-use development to be located on approximately 105 acres in west Knoxville. The project site is located on the south side of Kingston Pike at the intersection with Market Place Boulevard. The development plan for this project proposes a mixed-use project containing approximately 474,000 square feet of commercial and office uses, as well as 477 residential units. Primary access to the site is proposed via a new site roadway to be located opposite the Market Place Boulevard intersection on Kingston Pike. The development plan also indicates a secondary right-in/right-out driveway access point to be located on Kingston Pike to the west of the proposed primary site roadway.

The purpose of this study was the evaluation of the traffic operational and safety impacts of the proposed development upon roadways in the vicinity of the project site. Based on the trip generation estimates from the proposed site, a Level 3 traffic impact study is required. The scope of the study included a review of the following intersections:

1. Kingston Pike at N. Seven Oaks Drive / Windsor Square
2. Kingston Pike at Essex Drive / Home Depot
3. Kingston Pike at Market Place Boulevard / Proposed Site Road (Sherrill Hill)
4. Kingston Pike at Cedar Bluff Road
5. Kingston Pike at Peters Road
6. N. Peters Road at Market Place Boulevard
7. Cedar Bluff Road at N. Peters Road
8. Cedar Bluff Road at Interstate 40 Eastbound Off-Ramp
9. Cedar Bluff Road at Interstate 40 Westbound Off-Ramp

Intersection capacity evaluations were conducted at these locations for existing and future conditions in order to determine the anticipated impacts, and to establish recommended measures to mitigate these impacts. Of particular interest was the roadway geometric needs for the project main entrance intersection, Kingston Pike at Market Place Boulevard (No. 3).

The primary conclusion of this study is that the traffic generated from the proposed development will have its most significant impact on traffic operations at the intersection of Kingston Pike and Market Place Boulevard / Proposed Site Roadway. Capacity analyses of this intersection found that it is anticipated to incur peak hour levels-of-service of "F" once the proposed development is constructed and generating traffic, unless significant improvements are constructed. These recommended geometric and traffic control improvements will successfully mitigate the traffic impact of the proposed development,

resulting in levels-of-service in the "D" range. The following listing is a summary of the improvements that resulted from this study for the intersection of Kingston Pike and Market Place Boulevard / Proposed Site Roadway:

1. Provide an additional eastbound through traffic lane (for a total of three eastbound through lanes) on Kingston Pike, as well as an eastbound right-turn lane with a minimum of 275 feet of storage. The additional through lane should be developed across a significant portion of the proposed project site.
2. Provide a westbound left-turn lane, with a minimum of 320 feet of storage on Kingston Pike.
3. Provide an additional southbound left-turn lane, with approximately 150 feet of storage, on Market Place Boulevard approaching Kingston Pike. In addition, modify the existing southbound right-turn lane on Market Place Boulevard to become a shared through/right-turn lane.
4. For the proposed northbound site roadway at Kingston Pike, provide two exclusive left-turn lanes with a minimum of 200 feet of storage, one exclusive through lane, and one exclusive right-turn lane with a minimum of 310 feet of storage. In addition, provide a secondary site driveway onto Kingston Pike configured as a right-in/right-out driveway as shown in FIGURE 8.
5. Modify the current traffic signal at the intersection of Kingston Pike and Market Place Boulevard to accommodate the additional / modified lanes and phasing.

It is recommended that the proposed improvements be constructed and operating at such time that a significant portion of the development is constructed and generating traffic.

INTRODUCTION AND PURPOSE OF STUDY

This report provides a summary of a traffic impact study that was performed for a proposed mixed-use development to be located on approximately 105 acres in west Knoxville. The project site is located on the south side of Kingston Pike at the intersection with Market Place Boulevard. FIGURE 1 is a project location map identifying the project site in relation to the major roadways in the vicinity of the proposed development.

The development plan for this project proposes a mixed-use project containing approximately 474,000 square feet of commercial and office uses, as well as 477 residential units. Primary access to the site is proposed via a new site roadway to be located opposite the Market Place Boulevard intersection on Kingston Pike. The development plan also indicates a secondary right-in/right-out driveway access point to be located on Kingston Pike to the west of the proposed primary site roadway. FIGURE 2 is a Site Development Plan which details the proposed site configuration.

The purpose of this study was the evaluation of the traffic operational and safety impacts of the proposed development upon roadways in the vicinity of the project site. Based on the trip generation estimates from the proposed site, a Level 3 traffic impact study is required. The scope of the study included a review of the following intersections:

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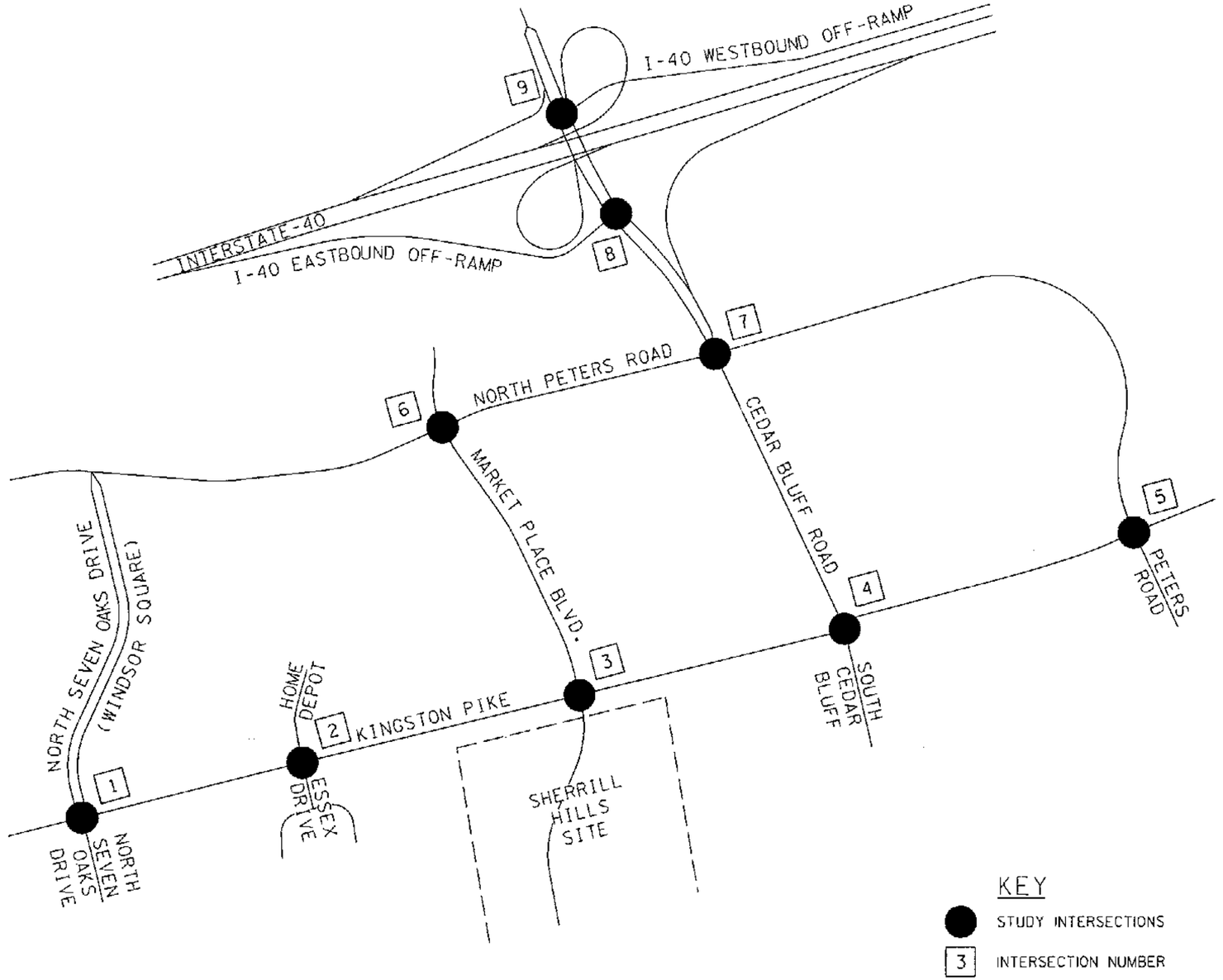
SCALE: 1" = 600'



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TRAFFIC IMPACT STUDY

FIGURE 1
SITE LOCATION MAP

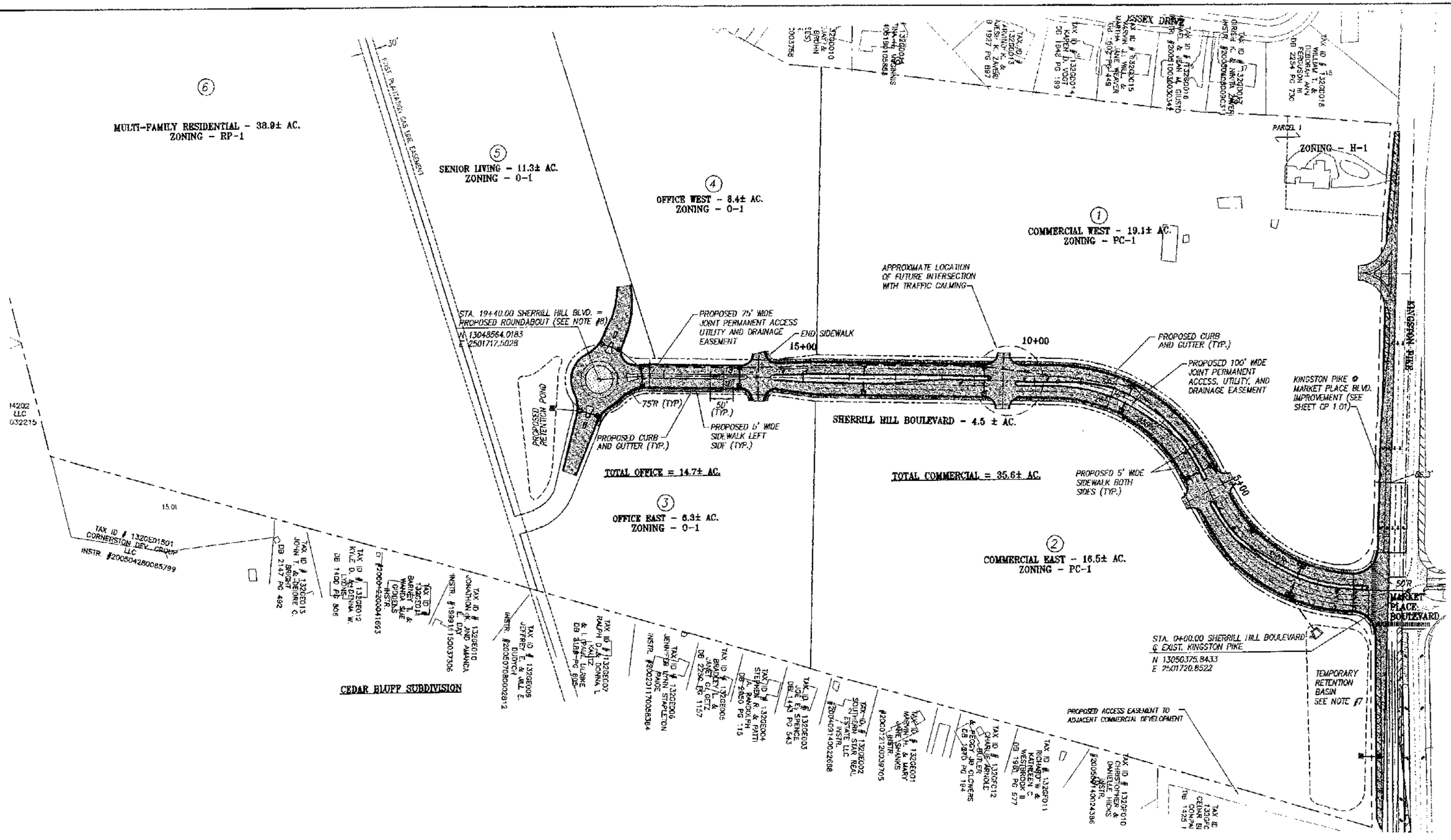

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FIGURE 2
SITE DEVELOPMENT PLAN

Existing Roadway Conditions

Kingston Pike (U.S. 11 / S.R. 1) in the vicinity of the development is a multi-lane Major Arterial maintained by the Tennessee Department of Transportation (TDOT). The roadway primarily consists of a five-lane section with two travel lanes in each direction and a center two-way left turn lane. The exception is a six-lane divided section located between Market Place Boulevard and Peters Road. Within this section the roadway consists of three travel lanes in each direction with a concrete / grassed median separating the flows of traffic. Left-turn storage lanes are provided at appropriate locations along this section. The speed limit on Kingston Pike is posted as 45 mph.

Cedar Bluff Road in the project area is a multi-lane Major Arterial maintained by the City of Knoxville. Cedar Bluff Road provides a north-south link between Interstate 40/75 and Kingston Pike. The roadway consists of three travel lanes in each direction, separated by a median, with auxiliary turn lanes provided at the study intersections. The speed limit on Cedar Bluff Road is posted as 40 mph.

North Peters Road is a four-lane divided Minor Arterial maintained by the City of Knoxville. The roadway consists of two travel lanes in each direction, separated by a median, with auxiliary turn lanes provided at major intersections and commercial entrances. The speed limit on N. Peters Road is posted as 40 mph.

Market Place Boulevard and North Seven Oaks Drive are multi-lane minor collectors maintained by the City of Knoxville. To the north of Kingston Pike these roadways are four-lane median divided streets with two travel lanes in each direction providing a connection through commercial development between Kingston Pike and N. Peters Road. To the south of Kingston Pike the roadways are two lane streets providing access to residential subdivisions.

Existing Traffic Data.

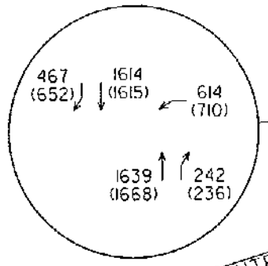
Existing traffic data was gathered for this study. The Tennessee Department of Transportation (TDOT) collects average daily traffic data (ADT) annually on roadways in the study area. Two count stations, one on Kingston Pike and one on Cedar Bluff Road, were found near the project site that were felt to have particular relevance for this study. The most currently available data from these count stations is contained in TABLE 1.

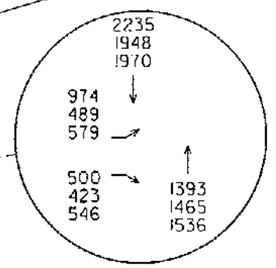
TABLE 1 AVERAGE DAILY TRAFFIC DATA		
Count Year	Count Station/Location	
	Station T 128 Kingston Pike west of Market Place Blvd	Station T 350 Cedar Bluff Road north of Kingston Pike
2003	28,953	16,187
2004	30,734	17,321
2005	27,340	15,655
2006	27,738	16,443
2007	27,777	17,328

In addition to the available ADT data, intersection turning movement traffic counts were performed specifically for this project at the nine study intersections. These counts were conducted for the A.M., Mid-Day, and P.M. peak traffic hours. The Mid-Day peak was chosen as an analysis period due to the predominately commercial nature of the development with the potential for numerous restaurants and retail businesses. These existing traffic counts are summarized on FIGURE 3, and the raw data traffic count summary sheets are contained in the APPENDIX.

N

SCALE: 1" = 600'





I-40 WESTBOUND OFF-RAMP

INTERSTATE-40

I-40 EASTBOUND OFF-RAMP

9

8

7

NORTH PETERS ROAD

6

MARKET PLACE BLVD.

CEDAR BLUFF ROAD

5

PETERS ROAD

4

3

2

1

NORTH SEVEN OAKS DRIVE (WINDSOR SQUARE)

HOME DEPOT

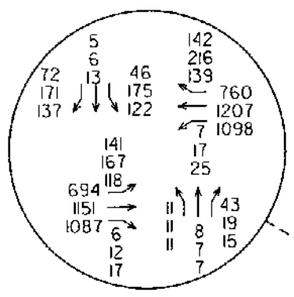
KINGSTON PIKE

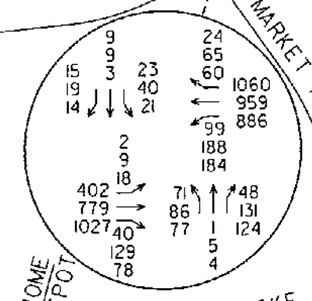
ESSEX DRIVE

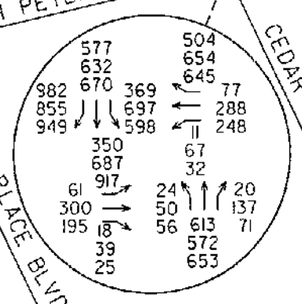
NORTH SEVEN OAKS DRIVE

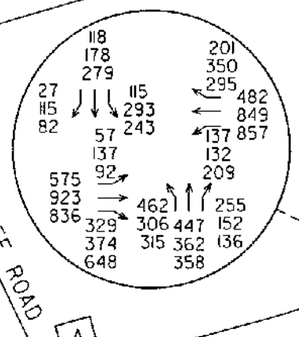
SOUTH CEDAR BLUFF

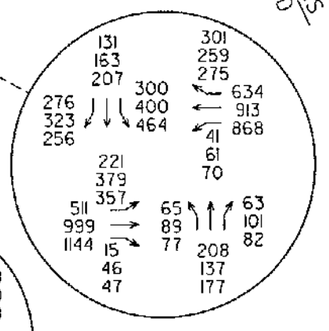
SHERRILL HILLS SITE

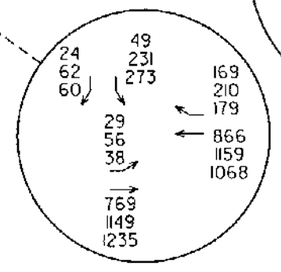


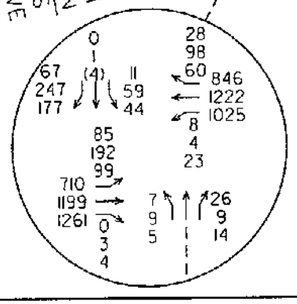












TOP NO. - AM PEAK
MIDDLE NO. - MID-DAY PEAK
BOTTOM NO. - PM PEAK

THE DATA SHOWN ARE THE RAW TRAFFIC COUNT DATA TIMES A FACTOR TO ADJUST TO AN AVERAGE FRIDAY VOLUME FROM COUNTS TAKEN IN JULY. SEE APPENDIX FOR RAW COUNT DATA AND FACTOR TABLE. (FACTORS DEVELOPED BY THE UNIVERSITY OF TENNESSEE TRANSPORTATION RESEARCH CENTER).

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FIGURE 3
2007 EXISTING TRAFFIC DATA

Existing Capacity Analyses / Levels-of-Service

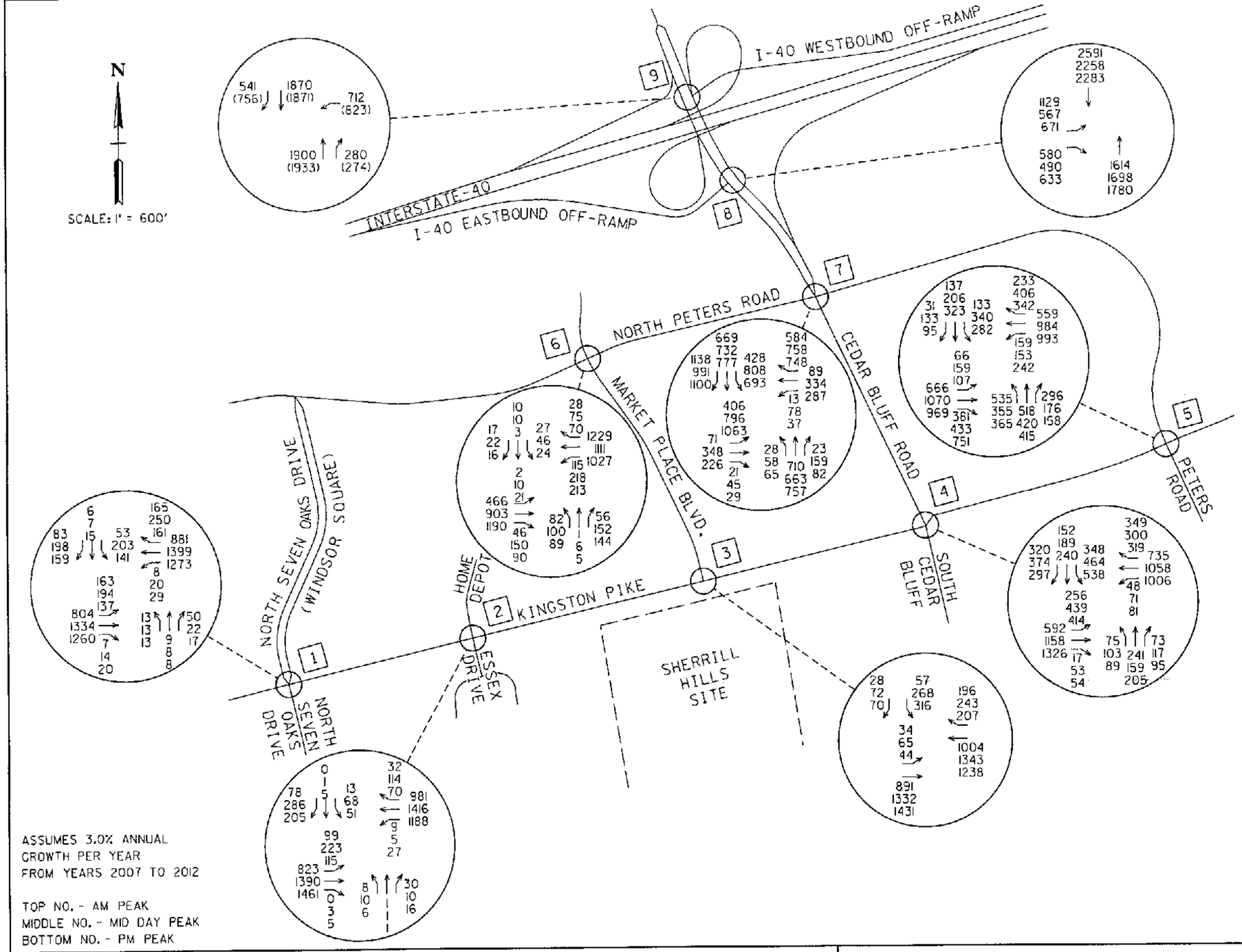
Capacity analyses employing the methods of the Highway Capacity Manual were conducted for the nine study intersections. The Synchro traffic anaylsis software was utilized in this effort, which was performed with the 2007 existing traffic volumes and existing intersection traffic control and lane configurations. The EVALUATIONS section of this report may be referenced for tabular summaries of these analyses, while more detailed summaries are presented on the computer printouts contained in the APPENDIX. Also contained in the APPENDIX is a section entitled "Intersection Capacity and Level of Service Concepts", which provides a description of the utilized procedures.

Background Traffic Growth

The proposed development will be constructed in one general phase with completion anticipated no later than 2012. Therefore, year 2012 was established as the appropriate design/analysis year for this study. In order to determine traffic volumes resulting solely from background traffic growth to year 2012, it was necessary to establish an annual growth rate for existing traffic. The TDOT ADT values previously discussed, as well as knowledge of the area were used to determine an approximate annual growth rate. Based on the available data, a background annual growth rate of 3 percent was assumed. FIGURE 4 contains the background traffic volumes that would result from a 3 percent annual growth from year 2007, when the counts were conducted, to year 2012.

Background Capacity Analyses / Levels-of-Service

Capacity analyses as described in the Existing Conditions section of this report were conducted utilizing the FIGURE 4 background traffic volumes and existing intersection traffic control and lane configurations. The EVALUATIONS section of this report may be referenced for tabular summaries of these analyses, while more detailed summaries are presented on the computer printouts contained in the APPENDIX.



ASSUMES 3.0% ANNUAL
GROWTH PER YEAR
FROM YEARS 2007 TO 2012

TOP NO. - AM PEAK
MIDDLE NO. - MID DAY PEAK
BOTTOM NO. - PM PEAK

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FIGURE 4
2012 BACKGROUND TRAFFIC DATA

Trip Generation

In order to estimate the expected traffic volumes to be generated by the proposed development, the data and procedures of *Trip Generation, Seventh Edition* (Institute of Transportation Engineers, 2003) were utilized. Local Knoxville-specific apartment trip generation data was used for the apartment portion of the site. The generated traffic volumes were determined based on the data for the peak hours of adjacent street. See TABLE 2 for a summary of the traffic generated for this project. More detailed information is contained on the spreadsheets in the APPENDIX.

TABLE 2
Trip Generation Summary

Land Use	ITE Code	Size	Weekday (trips/day)	AM Peak (trips/hour)	Midday Peak (trips/hour)	PM Peak (trips/hour)
Apartments	KNOX	347 units	2,920	169	169	242
Entering Trips			1,460	37	37	133
Exiting Trips			1,460	132	132	109
Sr Adult Housing – Att.	252	130 units	452	11	11	14
Entering Trips			226	5	5	9
Exiting Trips			226	6	6	5
General Office	710	140,000 sf	1,730	246	246	236
Entering Trips			865	216	216	40
Exiting Trips			865	30	30	196
Shopping Center	820	334,235 sf	14,878	323	1,388	1,388
Entering Trips			7,439	197	666	666
Exiting Trips			7,439	126	722	722
TOTALS			19,979	749	1,814	1,880
Entering Trips			9,990	455	924	848
Exiting Trips			9,990	294	890	1,032

The ITE land use selected for the commercial development portion of the project was the Shopping Center use (ITE Code 820). The shopping center use was selected for this study as it was deemed most appropriate for the types of commercial uses being proposed at this concept stage in the development. The shopping center land use encompasses the various types of commercial uses mostly likely to make up a retail center such as the one being proposed and, by the nature of the way the data were collected for this use, already accounts for internal trips between the commercial uses.

To account for anticipated internal trips between the other proposed site uses the Trip Generation Handbook (ITE) was consulted. Tables 7.1 and 7.2 of the Handbook provide estimated internal capture rates for trip origins and destinations within a multi-use development. The mid-day and P.M. trips for the

proposed development were reduced, as appropriate, to account for likely internal trips occurring within the site. The resulting peak hour generated trips are summarized in TABLE 2A. ITE tables and worksheets are provided in the APPENDIX.

TABLE 2A
Trip Generation Summary
w/ Internal Trip Reductions

	AM Peak (trips/hour)	Mid-day Peak (trips/hour)	PM Peak (trips/hour)
Entering Trips	455	848	716
Exiting Trips	294	813	900
TOTAL TRIPS	749	1,661	1,616

Trip Distribution and Assignment

FIGURE 5 provides a summary of the trip distribution patterns assumed for the study intersections. These patterns were based on the existing traffic patterns derived from the traffic counts, as well as knowledge of the area. The assumed distribution pattern for the study was 35% of the traffic would be destined to and from the west, 50% of the traffic to and from the east, and 15% of the traffic to and from the north. FIGURE 6 shows the generated trips as assigned to the study intersections in accordance with these distribution patterns. Kingston Pike through volumes at the intersection of Kingston Pike and the site roadway have been reduced by 25% of the assigned site traffic in order to account for anticipated pass-by trips, or trips already on the adjacent roadway that will be attracted into the development. FIGURE 7 shows the combined year 2012 build-out volumes reflecting the existing traffic, the background traffic growth, and the newly generated traffic from the proposed development. These are the combined volumes used in the analysis of the full build-out conditions.

Future Capacity Analyses / Levels-of-Service

Capacity analyses as described in the Existing Conditions section of this report were conducted utilizing the FIGURE 7 combined traffic volumes and existing intersection traffic control and lane configurations. In addition, appropriate improved traffic control and lane configuration analyses were also conducted to address capacity issues. The EVALUATIONS section of this report may be referenced for tabular summaries of these analyses, while more detailed summaries are presented on the computer printouts contained in the APPENDIX.

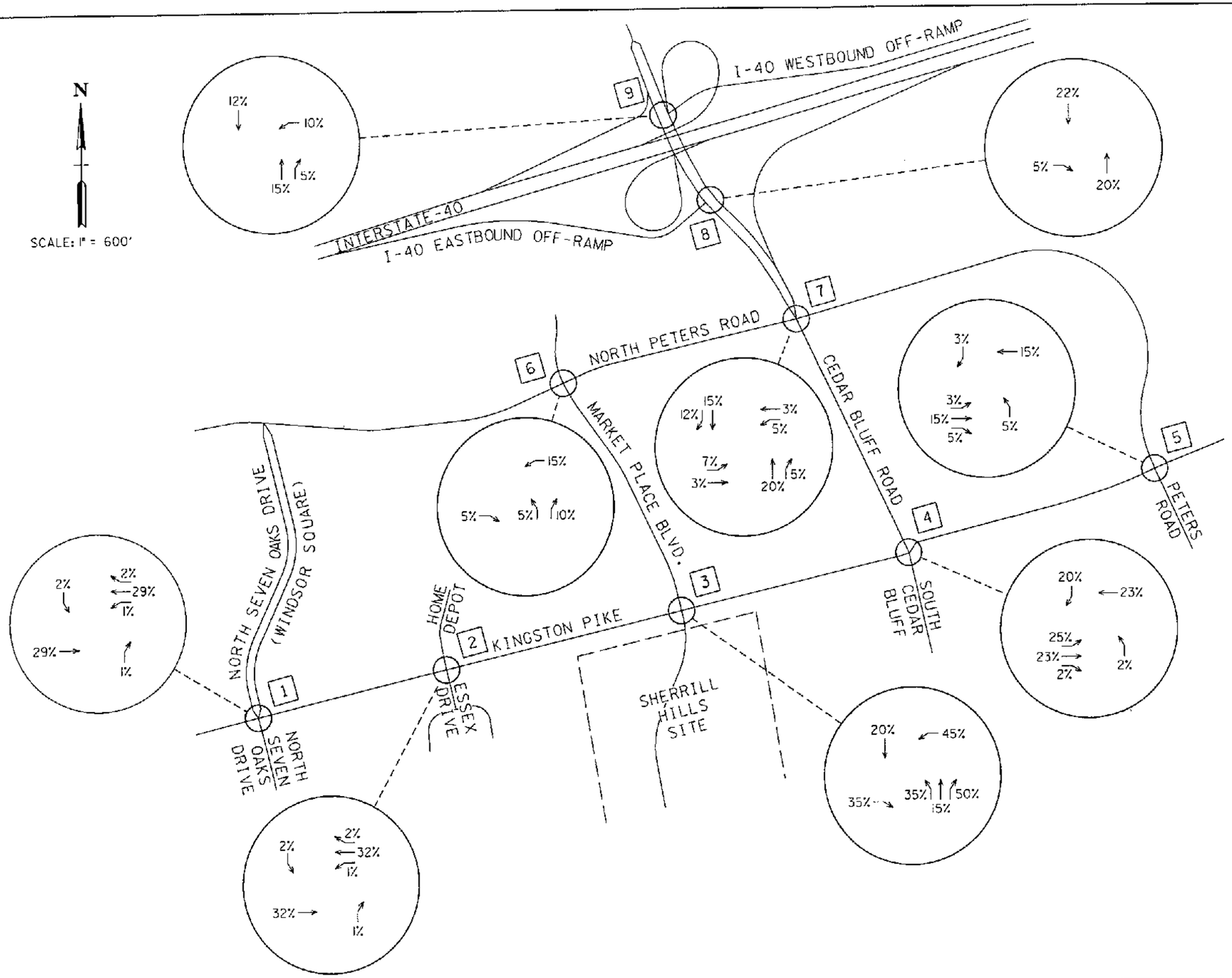

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FIGURE 5
TRIP DISTRIBUTION

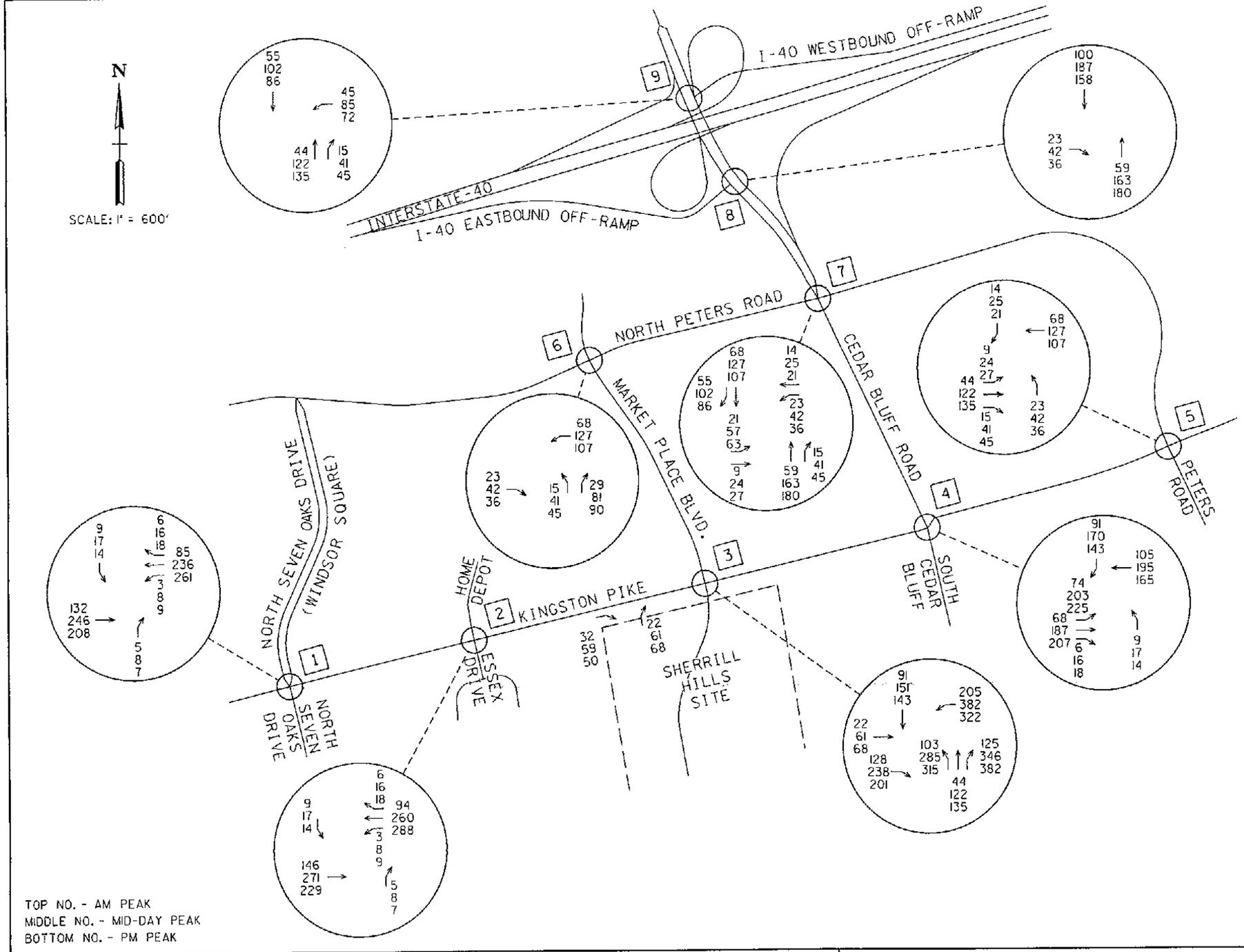

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FIGURE 6
TRIP ASSIGNMENTS

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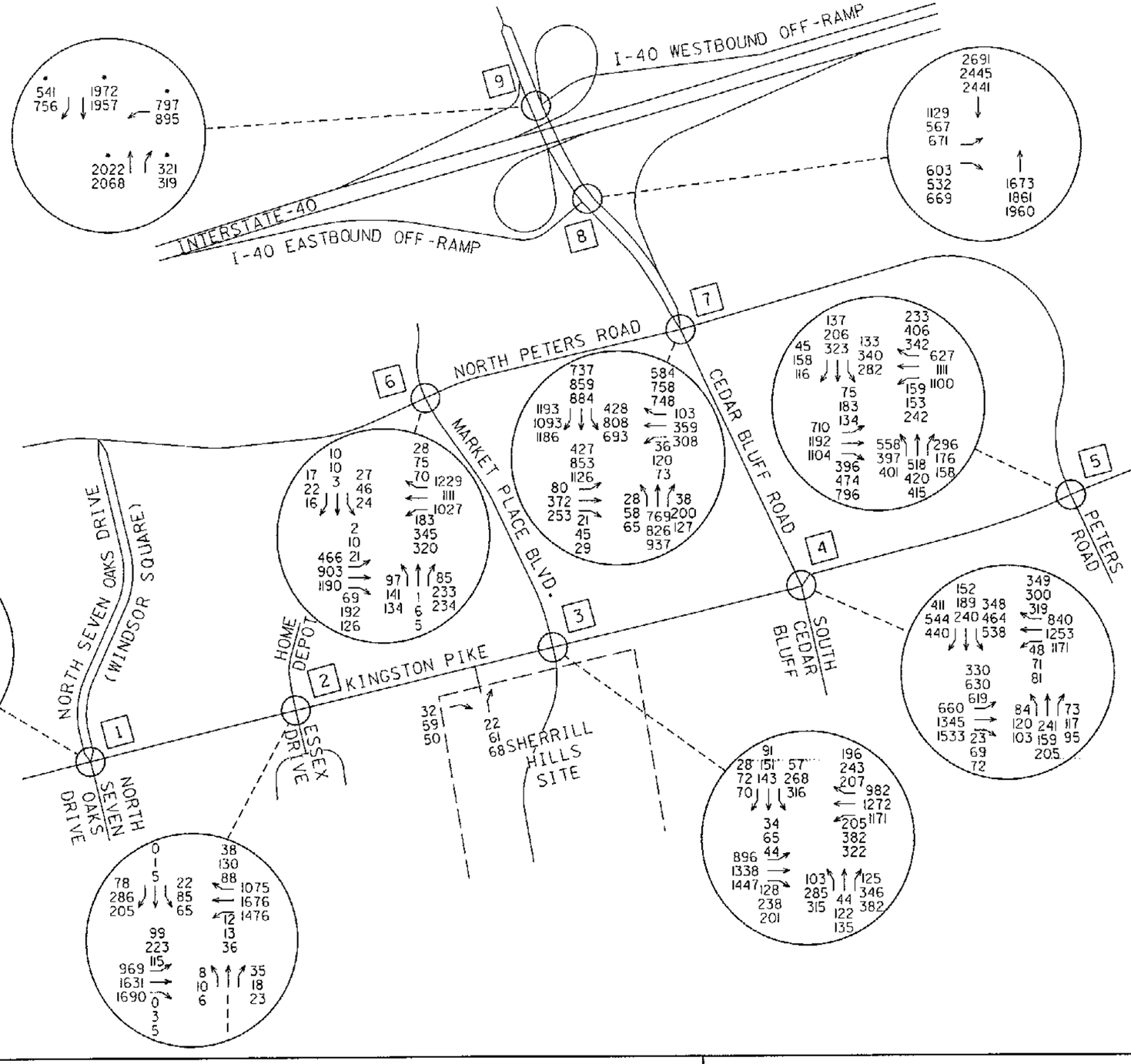
SCALE: 1" = 600'



INCLUDES ADJUSTMENT
FOR PASS-BY TRIPS
OF 25% AT THE SITE
ENTRANCE INTERSECTION

TOP NO. - AM PEAK
MIDDLE NO. - MID-DAY PEAK
BOTTOM NO. - PM PEAK

PASS-BY TRIPS
KINGSTON PIKE AT MARKET PLACE BLVD
-22 ← -71 -67
-17 -55 → -52

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FIGURE 7
2012 COMBINED TRAFFIC DATA

Signalized intersection capacity analyses were conducted for the nine study intersections employing the methods of the Highway Capacity Manual. These analyses evaluated each intersection in consideration of existing intersection geometry and traffic control, as well as any recommended improvements necessary to accommodate the proposed development. It should also be noted that each analyses condition (Existing, Background, Combined) was optimized individually using the network cycle length optimization feature of the Synchro software, which resulted in different intersection cycle lengths between each analysis period, and in some cases fluctuating results. The remainder of this section consists of summaries of the intersection average results from these analyses along with discussion of any recommended improvements. The APPENDIX may be referenced for more detailed computer printout summaries of the analyses results, as well as a section entitiled "Intersection Capacity and Level-of-Service Concepts".

Kingston Pike at N. Seven Oaks Drive (Intersection No. 1)

The intersection of Kingston Pike and N. Seven Oaks Drive is anticipated to operate in an acceptable fashion during all three peak hours under existing, background, and proposed conditions. The results indicate that the intersection will operate at levels-of-service no worse than "C" during the peak hours under all study periods. TABLE 3A summarizes the capacity analyses for this intersection.

TABLE 3A
Capacity Analysis Summary
Kingston Pike at N. Seven Oaks Drive

	AM Peak			Mid-Day Peak			PM Peak		
	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU
Kingston Pike at N. Seven Oaks Dr.									
2007 Existing Conditions	A	7.1	51.5%	B	12.5	68.9%	B	11.8	62.2%
2012 Background Conditions	A	8.0	56.3%	B	16.1	76.5%	B	13.7	68.3%
2012 Combined Conditions	B	14.5	58.9%	C	21.9	83.5%	C	23.5	75.9%

Conclusion: The proposed development will not have a major impact on the operation of the intersection of Kingston Pike and N. Seven Oaks Drive.

Recommendation: No geometric or traffic control improvements are recommended for this intersection.

Kingston Pike at Essex Drive (Intersection No. 2)

The intersection of Kingston Pike and Essex Drive is anticipated to operate in an acceptable fashion during all three peak hours under existing, background, and proposed conditions. The results indicate that the intersection will operate at levels-of-service no worse than "C" during the peak hours under all study periods. TABLE 3A summarizes the capacity analyses for this intersection.

TABLE 3B
Capacity Analysis Summary
Kingston Pike at Essex Drive

	AM Peak			Mid-Day Peak			PM Peak		
	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU
Kingston Pike at Essex Dr/ Home Depot									
2007 Existing Conditions	A	8.2	51.3%	A	9.1	70.3%	A	4.9	64.2%
2012 Background Conditions	A	6.5	55.2%	B	14.7	78.1%	B	14.6	70.0%
2012 Combined Conditions	A	5.5	58.2%	C	23.1	85.3%	B	18.3	76.7%

Conclusion: The proposed development will not have a major impact on the operation of the intersection of Kingston Pike and Essex Drive.

Recommendation: No geometric or traffic control improvements are recommended for this intersection.

Kingston Pike at Market Place Boulevard / Proposed Site Roadway (Intersection No. 3)

The intersection of Kingston Pike and Market Place Boulevard / Proposed Site Roadway is anticipated to operate in an acceptable fashion during all three peak hours under existing and background conditions. However, with the addition of the generated traffic from the proposed development, conditions will change. Specifically, results indicate that the intersection will operate at levels-of-service no worse than "B" during the peak hours under the existing and 2012 background conditions without the proposed development. For the 2012 projected conditions with the addition of the generated traffic and the minimal intersection improvements absolutely necessary to serve the proposed site (FIGURE A-1 located in the APPENDIX) the results indicate the intersection will operate at a LOS "F" during the P.M. peak hour. In order to mitigate the impact of the proposed development on this intersection, various improvement scenarios were studied with the above mentioned minimal improvement arrangement considered as Scenario 1. TABLE 3C summarizes the capacity analyses for this intersection under the different scenario conditions, including the existing and 2012 background conditions.

TABLE 3C

Capacity Analysis Summary

Kingston Pike at Market Place Boulevard / Proposed Site Roadway

	AM Peak			Mid-Day Peak			PM Peak		
	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU
Kingston Pike at Market Place Blvd									
2007 Existing Conditions	A	4.0	40.8%	B	12.7	66.1%	B	15.3	59.3%
2012 Background Conditions	A	6.7	44.9%	B	13.4	73.2%	B	17.4	67.1%
2012 Combined Conditions									
Scenario 1: Min. Improvements	B	19.6	61.4%	E	66.1	103.7%	F	88.4	107.2%
Scenario 2: 3 EB Thru	C	21.2	59.1%	D	50.1	92.5%	E	56.2	95.2%
Scenario 3 : 3 EB Thru, 2 SB LT	C	23.9	59.1%	D	42.4	90.0%	D	42.8	89.4%
Scenario 4: 3 EB Thru, 2 WB LT	C	28.6	59.1%	D	48.0	87.4%	E	63.7	88.4%
Scenario 5: 3 EB, 2 SB LT, 2 NB LT	C	23.9	58.0%	D	37.8	87.1%	D	44.1	86.2%

FIGURES A-1 through A-5 illustrate the various improvement scenarios.

Conclusion: The proposed development will have a significant impact on the operation of the intersection of Kingston Pike and Market Place Boulevard. The analysis reviewed five separate improvement scenarios as follows:

- Scenario 1: This scenario is considered the minimal improvements required to serve the site. Provide an eastbound right-turn lane and a westbound left-turn lane on Kingston Pike. Modify the southbound right-turn lane on Market Place Boulevard to become a shared thru/right-turn lane. Provide three northbound lanes exiting the proposed site (one left, one shared thru/left, and one right-turn lane). In addition, provide right-in/right-out site driveways onto Kingston Pike to the east and west of the proposed site roadway.
- Scenario 2: In addition to the improvements listed in Scenario 1, provide an additional eastbound through lane on Kingston Pike approaching Market Place Boulevard. Three eastbound departure travel lanes currently exist on Kingston Pike at this intersection.
- Scenario 3: In addition to the improvements listed in Scenarios 1 and 2, provide a second southbound left-turn lane.
- Scenario 4: In addition to the improvements listed in Scenarios 1 and 2, provide a second westbound left-turn lane from Kingston Pike into the proposed development.
- Scenario 5: In addition to the improvements listed in Scenarios 1, 2, and 3, provide a second northbound left-turn lane from the proposed development onto westbound Kingston Pike.

Based on the analysis, Scenario 5 was chosen as the preferred improvement scenario. The results indicate that all intersection movements will operate at levels-of-service no worse than "D", with the exception of the southbound through lane and the northbound left-turn lane (LOS "E") during the peak hours under the 2012 combined conditions with the proposed development.

Recommendation: Provide the recommended improvements depicted in Scenario 5 and as shown in FIGURE A-5.

Kingston Pike at Cedar Bluff Road (Intersection No. 4)

The intersection of Kingston Pike and Cedar Bluff Road is anticipated to operate in an acceptable fashion during all peak hours under existing, background, and proposed conditions. The results indicate that the intersection will operate at levels-of-service no worse than "C" during the peak hours under all study periods. TABLE 3D summarizes the capacity analyses for this intersection.

TABLE 3D

Capacity Analysis Summary

Kingston Pike at Cedar Bluff Road

	AM Peak			Mid-Day Peak			PM Peak		
	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU
Kingston Pike at Cedar Bluff Rd									
2007 Existing Conditions	C	21.2	54.8%	C	24.5	66.5%	C	27.4	70.2%
2012 Background Conditions	C	23.2	60.0%	C	29.2	73.9%	C	30.8	77.1%
2012 Combined Conditions	C	22.2	64.1%	C	30.8	83.2%	C	34.9	83.9%

Conclusion: The proposed development will not have a major impact on the operation of the intersection of Kingston Pike and Cedar Bluff Road.

Recommendation: No geometric or traffic control improvements are recommended for this intersection.

Kingston Pike at Peters Road (Intersection No. 5)

The intersection of Kingston Pike and Peters Road is anticipated to operate in a generally acceptable fashion during all peak hours under existing, background, and proposed conditions. The results indicate that the intersection will operate at levels-of-service no worse than "D" during the peak hours, with the exception of the P.M. peak 2012 combined conditions where a marginal level-of-service "E" is anticipated. This is not considered critical since the analyses were based on "Average Friday" traffic conditions. TABLE 3E summarizes the capacity analyses for this intersection.

TABLE 3E
Capacity Analysis Summary
Kingston Pike at Peters Road

	AM Peak			Mid-Day Peak			PM Peak		
	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU
Kingston Pike at Peters Rd									
2007 Existing Conditions	C	26.5	66.5%	C	34.7	76.0%	D	38.2	78.6%
2012 Background Conditions	C	30.2	73.4%	D	41.6	85.5%	D	47.1	87.9%
2012 Combined Conditions	C	31.1	75.0%	D	47.1	90.2%	E	59.3	92.8%

Conclusion: The proposed development will have a significant, but non-critical impact on the operation of the intersection of Kingston Pike and Peters Road.

Recommendation: No geometric or traffic control improvements are recommended for this intersection.

N. Peters Road at Market Place Blvd (Intersection No. 6)

The intersection of N. Peters Road and Market Place Boulevard is anticipated to operate in an acceptable fashion during all peak hours under existing, background, and proposed conditions. The results indicate that the intersection will operate at levels-of-service no worse than "C" during the peak hours under all study periods. TABLE 3F summarizes the capacity analyses for this intersection.

TABLE 3F
Capacity Analysis Summary
N. Peters Road at Market Place Blvd.

	AM Peak			Mid-Day Peak			PM Peak		
	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU
N. Peters Rd at Market Place Blvd									
2007 Existing Conditions	B	12.1	66.8%	B	16.6	80.0%	B	16.2	81.6%
2012 Background Conditions	B	14.0	74.0%	C	29.2	89.5%	C	21.2	91.1%
2012 Combined Conditions	B	15.5	74.7%	C	26.6	91.6%	C	26.5	95.2%

Conclusion: The proposed development will have a significant, but non-critical, impact on the operation of the intersection of N. Peters Road and Market Place Boulevard. Westbound left-turn queue lengths are anticipated to exceed the available storage lengths during both the 2012 Background (without proposed development) and 2012 Combined (with proposed development) conditions. Implementation of dual westbound left-turn lanes will mitigate this deficiency. The results listed above include a dual westbound left-turn lane.

Recommendation: The addition of a second westbound left-turn lane should be considered. However, it is important to note that this is an existing concern that is worsened by the proposed development.

Cedar Bluff Road at N. Peters Road (Intersection No. 7)

The intersection of Cedar Bluff Road and N. Peters Road currently operates at marginal levels-of-service during the peak hours, and this is expected to worsen under background and 2012 combined conditions (unimproved). The results indicate that the intersection will operate at levels-of-service of "E" and "F" during the Mid-day and P.M. study periods. TABLE 3G summarizes the capacity analyses for this intersection.

TABLE 3G
Capacity Analysis Summary
Cedar Bluff Road at N. Peters Road

	AM Peak			Mid-Day Peak			PM Peak		
	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU
Cedar Bluff Rd at N. Peters Road									
2007 Existing Conditions	C	21.9	90.4%	E	61.0	89.1%	E	56.1	93.8%
2012 Background Conditions	D	38.2	100.5%	F	96.3	99.9%	F	103.6	105.3%
2012 Combined Conditions									
No Improvements	D	43.5	104.2%	F	116.8	106.2%	F	107.6	111.2%
With Improvements	B	17.0	69.7%	D	51.3	91.2%	D	51.7	90.2%

Conclusion: In order to address deficiencies at this intersection the following improvements were explored, which were previously proposed in a conceptual design by Cannon & Cannon, Inc.:

- Southbound Cedar Bluff Road: Convert one southbound through lane to a second southbound right-turn lane.
- Eastbound N. Peters Road: Add an eastbound shared through/right-turn lane to provide for a total of one shared thorugh/right-turn lane, one shared through/left-turn lane, and two exclusive left-turn lanes.
- Westbound N. Peters Road: Add an additional westbound right-turn lane to provide for a total of two exclusive right-turn lanes, two through lanes, and one exclusive left-turn lane.

The results of the capacity analyses indicate that if the proposed improvements were implemented, the intersection levels-of-service would be improved to operate at no worse than a LOS "D" under proposed development conditions.

Recommendation: The proposed improvements should be pursued. However, it is important to note that these are existing concerns and are only minimally worsened by the proposed development. It is our understanding that the City of Knoxville has attempted to fund the proposed improvements as a capital improvement project in the past, but to date has been unsuccessful.

Cedar Bluff Road at Interstate 40/75 Eastbound Off-Ramp (Intersection No. 8)

The intersection of Cedar Bluff Road and the Interstate 40/75 Eastbound Off-Ramp is anticipated to operate in a generally acceptable fashion during all peak hours under existing, background, and proposed conditions. The results indicate that the intersection will operate at levels-of-service no worse than "D" during the peak hours under all study periods, with the exception of the A.M. peak under 2012 combined conditions where a marginal level-of-service "E" is anticipated. This is not considered critical since the analyses were based on "Average Friday" traffic conditions. TABLE 3H summarizes the capacity analyses for this intersection.

TABLE 3H

Capacity Analysis Summary

Cedar Bluff Road at I-40 Eastbound Off-Ramp

	AM Peak			Mid-Day Peak			PM Peak		
	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU
Cedar Bluff Rd at I-40 EB Off-Ramp									
2007 Existing Conditions	C	26.2	86.2%	B	13.5	66.0%	B	16.5	70.6%
2012 Background Conditions	E	61.3	98.3%	B	17.1	74.9%	C	24.7	82.7%
2012 Combined Conditions	E	59.8	100.5%	C	25.0	79.2%	D	40.7	84.8%

Conclusion: The proposed development will have a significant, but non-critical impact on the operation of the intersection of Cedar Bluff Road and the Interstate 40/75 Eastbound Off-Ramp.

Recommendation: No geometric or traffic control improvements are recommended for this intersection.

Cedar Bluff Road at Interstate 40/75 Westbound Off-Ramp (Intersection No. 9)

The intersection of Cedar Bluff Road and Interstate 40/75 Off-Ramp is anticipated to operate in an acceptable fashion during all peak hours under existing, background, and proposed conditions. The results indicate that the intersection will operate at levels-of-service no worse than "C" during the peak hours under all study periods. TABLE 3I summarizes the capacity analyses for this intersection.

TABLE 3I
Capacity Analysis Summary
Cedar Bluff Road at I-40 Westbound Off-Ramp

	AM Peak			Mid-Day Peak			PM Peak		
	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU	LOS	Delay (sec)	ICU
Cedar Bluff Rd at I-40 WB Off-Ramp									
2007 Existing Conditions	Data Not Available			B	10.5	57.5%	B	11.4	60.8%
2012 Background Conditions				B	12.7	65.4%	B	13.8	69.2%
2012 Combined Conditions				C	24.0	85.6%	C	30.2	88.0%

Conclusion: The proposed development will not have a major impact on the operation of the intersection of Cedar Bluff Road and the Interstate 40/75 Off-Ramp.

Recommendation: No geometric or traffic control improvements are recommended for this intersection.

Intersection Sight Distance

The proposed intersection improvements at the site development entrances on Kingston Pike at Market Place Boulevard will be designed to provide required sight distances.

Intersection Turn Storage

TABLE 4 provides a summary of existing turn lane storage lengths, as well as estimated associated queue requirements as determined from the Synchro capacity runs for 2012 Combined traffic conditions.

TABLE 4

Turn Lane Storage Summary

2012 Combined Conditions

Intersection Name/Turn Lane	Turn Volume (vph) *	Existing Storage (ft)	Synchro 50% Queue (ft) *	Synchro 95% Queue (ft) *
Kingston Pike at Market Place Blvd				
Eastbound Left Turn	65	250	22	60
Eastbound Right Turn	238	275	28	276
Westbound Left Turn	382	320	204	318
Northbound Left Turn	285	200	109	186
Northbound Right Turn	382	310	199	309
Southbound Left Turn	316	150	101	147
Kingston Pike at Cedar Bluff Rd				
Eastbound Left Turn	619	400	235	310
Northbound Left Turn	120	150	64	112
Kingston Pike at Peters Rd				
Eastbound Left Turn	183	225	70	205
Northbound Left Turn	558	425	217	398
N. Peters Rd at Market Place Blvd				
Westbound Left Turn	345	100	99	118
Cedar Bluff Rd at N. Peters Road				
Eastbound Left Turn	1126	275	405	547
Westbound Left Turn	120	120	92	157

* Turn volumes and queues in this table were taken for the worst-case peak hour for each turn movement.

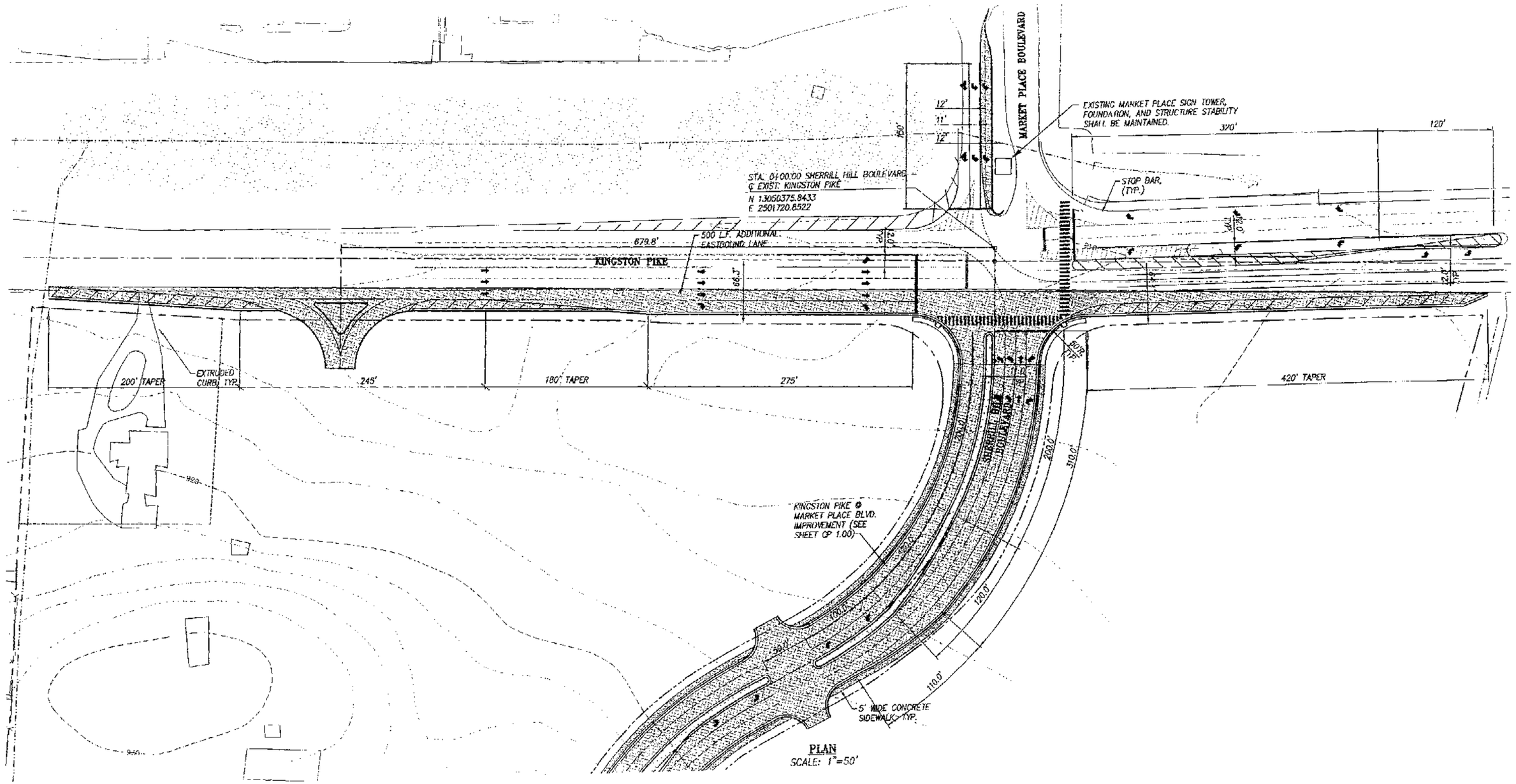
CONCLUSIONS AND RECOMMENDATIONS

The primary conclusion of this study is that the traffic generated from the proposed development will have its most significant impact on traffic operations at the intersection of Kingston Pike and Market Place Boulevard / Proposed Site Roadway. Capacity analyses of this intersection found that it is anticipated to incur peak hour levels-of-service of "F" once the proposed development is constructed and generating traffic, unless significant improvements are constructed. These recommended geometric and traffic control improvements will successfully mitigate the traffic impact of the proposed development, resulting in levels-of-service in the "D" range. The following listing is a summary of the improvements that resulted from this study for the intersection of Kingston Pike and Market Place Boulevard / Proposed Site Roadway:

1. Provide an additional eastbound through traffic lane (for a total of three eastbound through lanes) on Kingston Pike, as well as an eastbound right-turn lane with a minimum of 275 feet of storage. The additional through lane should be developed across a significant portion of the proposed project site.
2. Provide a westbound left-turn lane, with a minimum of 320 feet of storage on Kingston Pike.
3. Provide an additional southbound left-turn lane, with approximately 150 feet of storage, on Market Place Boulevard approaching Kingston Pike. In addition, modify the existing southbound right-turn lane on Market Place Boulevard to become a shared through/right-turn lane.
4. For the proposed northbound site roadway at Kingston Pike, provide two exclusive left-turn lanes with a minimum of 200 feet of storage, one exclusive through lane, and one exclusive right-turn lane with a minimum of 310 feet of storage. In addition, provide a secondary site driveway onto Kingston Pike configured as a right-in/right-out driveway as shown in FIGURE 8.
5. Modify the current traffic signal at the intersection of Kingston Pike and Market Place Boulevard to accommodate the additional / modified lanes and phasing.

The above improvements are illustrated in FIGURE 8.

It is recommended that the proposed improvements be constructed and operating at such time that a significant portion of the development is constructed and generating traffic.



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SHERRILL HILLS DEVELOPMENT
TRAFFIC IMPACT STUDY

FIGURE 8
RECOMMENDED IMPROVEMENTS

APPENDIX

TRAFFIC VOLUME ADJUSTMENT FACTORS TO BE USED WITH "TRAFFIC SIGNAL WARRANT ANALYSIS – VOLUME WARRANTS" [1]

Prepared and Distributed by the *Tennessee Transportation Assistance Program*

TABLE A

Month/Day of Week Urban Area Adjustment Factors [2] -- Average Day

(Multiply actual count by given factor to obtain estimated average day volumes for a similar time period [3])

	January	February	March	April	May	June	July	August	September	October	November	December
Sunday	1.60	1.49	1.40	1.37	1.34	1.25	1.30	1.32	1.35	1.35	1.37	1.48
Monday	1.04	1.00	0.97	0.94	0.93	0.91	0.92	0.93	0.94	0.98	0.98	1.03
Tuesday	1.00	0.99	0.95	0.94	0.93	0.91	0.91	0.92	0.93	0.94	0.96	0.97
Wednesday	1.01	0.99	0.95	0.92	0.92	0.90	0.91	0.92	0.93	0.94	0.95	0.94
Thursday	0.99	0.97	0.93	0.90	0.89	0.88	0.89	0.90	0.90	0.92	0.93	0.93
Friday	0.91	0.89	0.87	0.85	0.83	0.81	0.84	0.83	0.83	0.86	0.92	0.86
Saturday	1.22	1.15	1.09	1.11	1.10	1.04	1.08	1.07	1.11	1.11	1.16	1.15

TABLE B

Month/Day of Week Urban Area Adjustment Factors [2] – Average Weekday

(Multiply actual count by given factor to obtain estimated average weekday volumes for a similar time period [3])

	January	February	March	April	May	June	July	August	September	October	November	December
Monday	1.13	1.08	1.05	1.02	1.01	0.99	1.00	1.01	1.02	1.06	1.06	1.12
Tuesday	1.08	1.07	1.03	1.02	1.01	0.99	0.99	1.00	1.01	1.02	1.04	1.05
Wednesday	1.09	1.07	1.03	1.00	1.00	0.98	0.99	1.00	1.01	1.02	1.03	1.02
Thursday	1.07	1.05	1.01	0.98	0.96	0.95	0.96	0.98	0.98	1.00	1.01	1.01
Friday	0.99	0.96	0.94	0.92	0.90	0.88	0.91	0.90	0.90	0.93	1.00	0.93

TABLE C

Month/Day of Week Urban Area Adjustment Factors [2] – Average Friday

(Multiply actual count by given factor to obtain estimated average Friday volumes for a similar time period [3])

	January	February	March	April	May	June	July	August	September	October	November	December
Monday	1.21	1.17	1.13	1.10	1.09	1.06	1.07	1.09	1.10	1.14	1.14	1.20
Tuesday	1.17	1.16	1.11	1.10	1.09	1.06	1.06	1.07	1.09	1.10	1.12	1.13
Wednesday	1.18	1.16	1.11	1.07	1.07	1.05	1.06	1.07	1.09	1.10	1.11	1.10
Thursday	1.16	1.13	1.09	1.05	1.04	1.03	1.04	1.05	1.05	1.07	1.09	1.09
Friday	1.06	1.04	1.02	0.99	0.97	0.95	0.98	0.97	0.97	1.00	1.07	1.00

Notes: 1. "Traffic Signal Warrant Analysis – Volume Warrants" is a Lotus® 1–2–3® template distributed by the *Tennessee Transportation Assistance Program (TTAP)*.
2. Factors should be applied to State highway and major street volumes only. They should not be applied to volumes on driveways (shopping centers, etc.) or minor streets.
3. Counts made on holidays should not be used as a basis for estimating average day, average weekday or average Friday volumes.

Source: TABLE A – Tennessee Department of Transportation (based on 1988 through 1992 data)
TABLEs B & C – Developed by T. Darcy Sullivan, P.E. based on TABLE A data

(1)

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Knoxville,TN. 37922

Intersection: Kingston Pk @ Seven Oaks
Date: 7/12/07
ted By: Michael Gary
Weather: Clear

File Name : 00771-0000-Kingston Pike_Seven Oaks
Site Code : 00000000
Start Date : 07/12/2007
Page No : 1

Groups Printed- Unshifted

	SEVEN OAKS From North					KINGSTON PIKE From East					SEVEN OAKS From South					KINGSTON PIKE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	35	2	28	0	65	31	237	2	0	270	0	0	0	0	0	3	229	25	0	257	592
11:15 AM	39	1	17	0	57	28	235	5	0	268	4	2	3	0	9	2	226	27	0	255	589
11:30 AM	41	5	33	0	79	45	236	2	0	283	5	4	5	0	14	2	252	44	0	298	674
11:45 AM	36	2	35	0	73	98	228	3	7	336	2	1	2	0	5	3	283	44	0	330	744
Total	151	10	113	0	274	202	936	12	7	1157	11	7	10	0	28	10	990	140	0	1140	2599
12:00 PM	54	1	35	1	91	50	281	5	0	336	8	0	1	0	9	5	267	38	1	311	747
12:15 PM	27	1	40	0	68	64	269	3	0	336	6	4	4	0	14	3	298	47	1	349	767
12:30 PM	38	2	52	0	92	47	305	3	0	355	2	1	2	0	5	4	272	50	0	326	778
12:45 PM	45	2	41	0	88	46	306	6	0	358	3	2	4	0	9	0	269	25	0	294	749
Total	164	6	168	1	339	207	1161	17	0	1385	19	7	11	0	37	12	1106	160	2	1280	3041
04:00 PM	45	3	30	0	78	34	282	5	0	321	7	0	1	0	8	1	270	29	0	300	707
04:15 PM	20	5	24	0	49	38	250	5	0	291	1	2	4	0	7	5	269	33	0	307	654
04:30 PM	34	5	32	0	71	32	254	8	0	294	4	1	4	0	9	9	235	22	0	266	640
04:45 PM	33	0	32	0	65	33	270	7	0	310	3	4	2	0	9	2	271	30	0	303	687
Total	132	13	118	0	263	135	1056	25	0	1216	15	7	11	0	33	17	1045	114	0	1176	2688
05:00 PM	41	4	61	0	106	40	205	8	0	253	9	0	2	0	11	3	237	15	0	255	625
05:15 PM	42	6	50	0	98	19	253	3	0	275	3	1	0	0	4	5	291	29	0	325	702
:30 PM	26	5	29	0	60	25	223	9	0	257	3	1	6	0	10	4	263	23	0	290	617
:45 PM	40	2	39	1	82	28	253	2	0	283	6	0	3	0	9	5	216	31	0	252	626
Total	149	17	179	1	346	112	934	22	0	1068	21	2	11	0	34	17	1007	98	0	1122	2570
Grand Total	596	46	578	2	1222	656	4087	76	7	4826	66	23	43	0	132	56	4148	512	2	4718	10898
Apprch %	48.8	3.8	47.3	0.2		13.6	84.7	1.6	0.1		50.0	17.4	32.6	0.0		1.2	87.9	10.9	0.0		
Total %	5.5	0.4	5.3	0.0	11.2	6.0	37.5	0.7	0.1	44.3	0.6	0.2	0.4	0.0	1.2	0.5	38.1	4.7	0.0	43.3	

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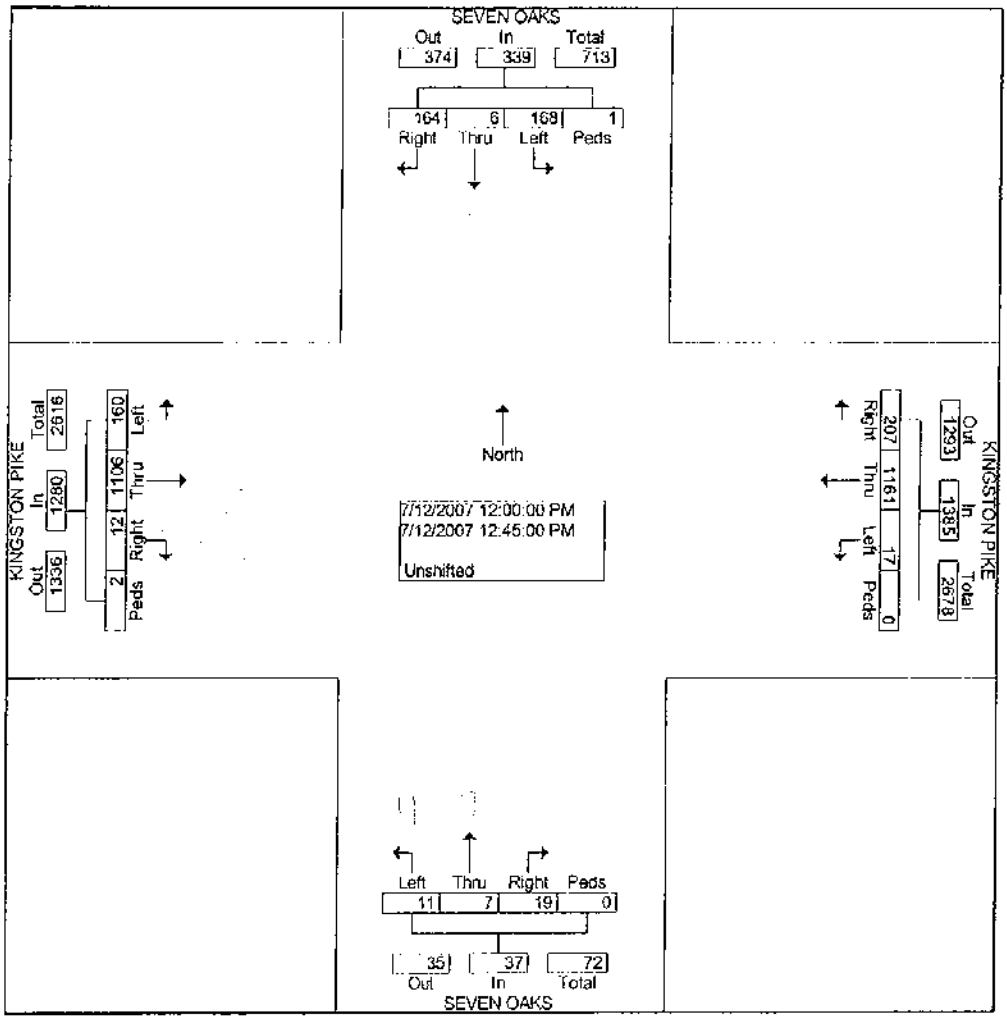
Intersection: Kingston Pk @ Seven Oaks
Date: 7/12/07
ted By: Michael Gary
Weather: Clear

File Name : 00771-0000-Kingston Pike_Seven Oaks
Site Code : 00000000
Start Date : 07/12/2007
Page No : 2

	SEVEN OAKS From North					KINGSTON PIKE From East					SEVEN OAKS From South					KINGSTON PIKE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 11:00 AM to 02:30 PM - Peak 1 of 1																					
Intersection	12:00 PM																				
Volume	164	6	168	1	339	207	1161	17	0	1385	19	7	11	0	37	12	1106	160	2	1280	3041
Percent	48.4	1.8	49.6	0.3		14.9	83.8	1.2	0.0		51.4	18.9	29.7	0.0		0.9	86.4	12.5	0.2		
12:30 Volume	38	2	52	0	92	47	305	3	0	355	2	1	2	0	5	4	272	50	0	326	778
Peak Factor																					0.977
High Int.	12:30 PM					12:45 PM					12:15 PM					12:15 PM					
Volume	38	2	52	0	92	46	306	6	0	358	6	4	4	0	14	3	298	47	1	349	
Peak Factor					0.921					0.967					0.661					0.917	



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Intersection: Kingston Pk @ Seven Oaks
Date: 7/12/07
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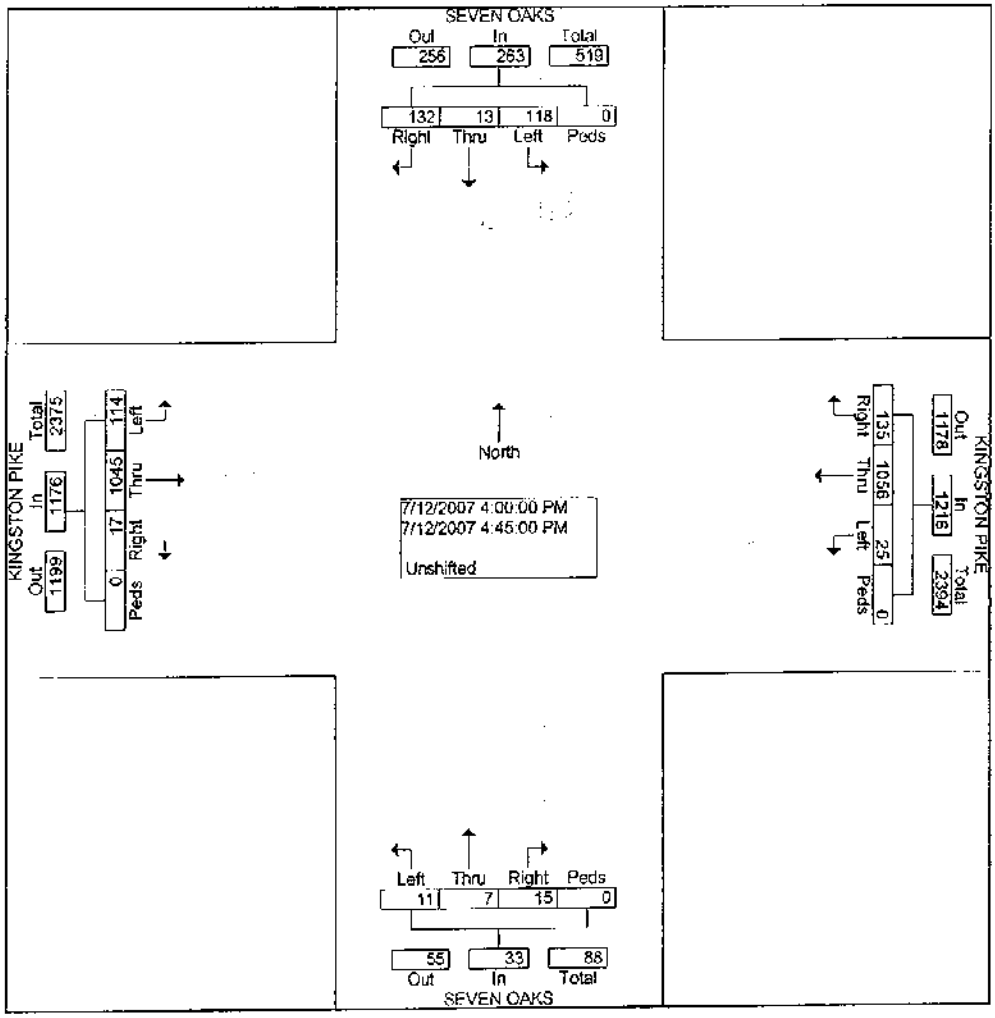
File Name : 00771-0000-Kingston Pike_Seven Oaks
Site Code : 00000000
Start Date : 07/12/2007
Page No : 3

	SEVEN OAKS From North					KINGSTON PIKE From East					SEVEN OAKS From South					KINGSTON PIKE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 02:45 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:00 PM																				
Volume	132	13	118	0	263	135	1056	25	0	1216	15	7	11	0	33	17	1045	114	0	1176	2688
Percent	50.2	4.9	44.9	0.0		11.1	86.8	2.1	0.0		45.5	21.2	33.3	0.0		1.4	88.9	9.7	0.0		
04:00 Volume	45	3	30	0	78	34	282	5	0	321	7	0	1	0	8	1	270	29	0	300	707
Peak Factor																					0.950
High Int.	04:00 PM					04:00 PM					04:30 PM					04:15 PM					
Volume	45	3	30	0	78	34	282	5	0	321	4	1	4	0	9	5	269	33	0	307	
Peak Factor					0.843					0.947					0.917					0.958	



(2)

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Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Kingston Pk. @ Essex
Date: 7/12/07
ted By: Lauren Cannon
Weather: Clear

File Name : 00771-0000-Kingston Pike_Essex
Site Code : 00000000
Start Date : 07/12/2007
Page No : 1

Groups Printed- Unshifted

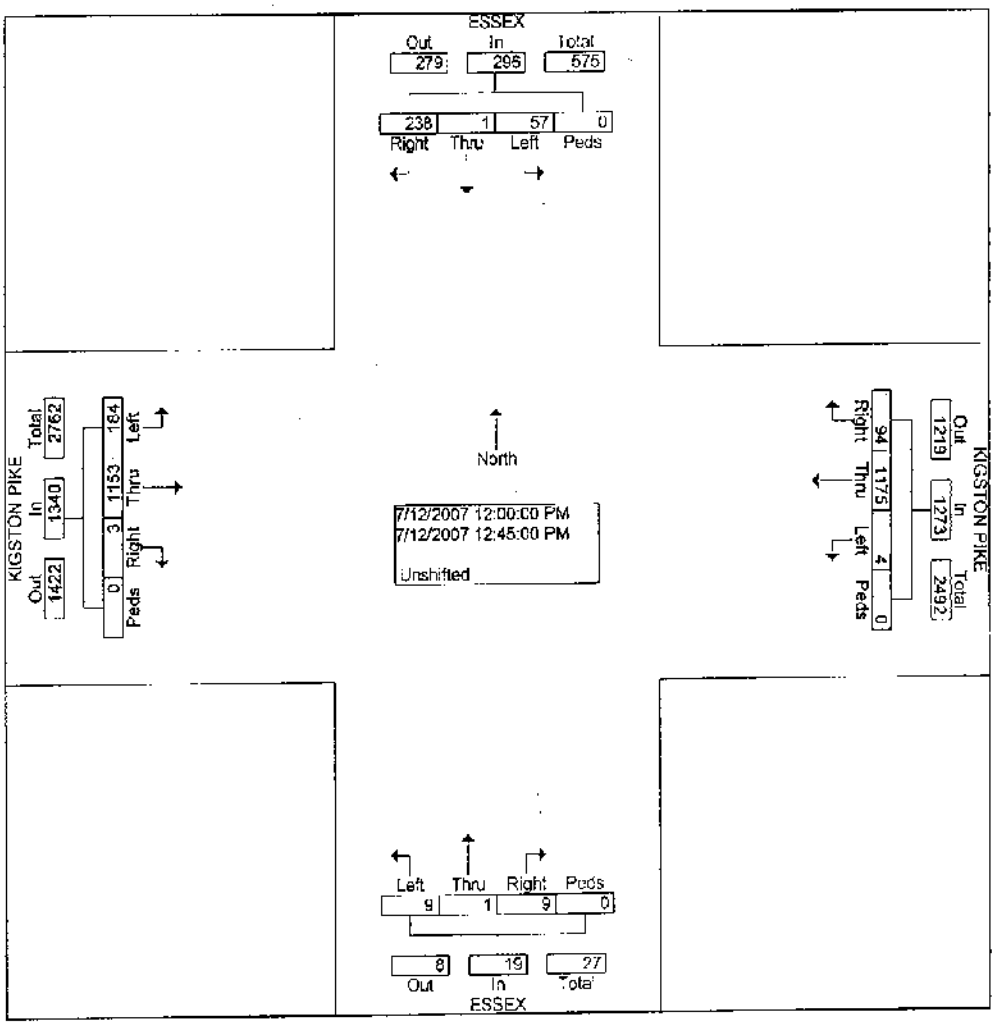
	ESSEX From North					KIGSTON PIKE From East					ESSEX From South					KIGSTON PIKE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	55	1	4	0	60	12	220	2	1	235	5	0	0	0	5	1	236	39	0	276	576
11:15 AM	52	1	14	0	67	27	208	5	0	240	4	1	1	0	6	0	246	39	0	285	598
11:30 AM	48	0	14	0	62	27	269	4	0	300	2	0	0	0	2	1	213	42	0	256	620
11:45 AM	45	0	15	0	60	22	256	7	0	285	4	0	2	0	6	5	297	52	0	354	705
Total	200	2	47	0	249	88	953	18	1	1060	15	1	3	0	19	7	992	172	0	1171	2499
12:00 PM	44	0	13	0	57	21	308	1	0	330	1	1	5	0	7	0	273	43	0	316	710
12:15 PM	60	0	21	0	81	24	293	1	0	318	1	0	0	0	1	1	283	42	0	326	726
12:30 PM	60	1	11	0	72	28	284	0	0	312	4	0	2	0	6	1	290	40	0	331	721
12:45 PM	74	0	12	0	86	21	290	2	0	313	3	0	2	0	5	1	307	59	0	367	771
Total	238	1	57	0	296	94	1175	4	0	1273	9	1	9	0	19	3	1153	184	0	1340	2928
04:00 PM	54	0	14	0	68	12	265	1	1	279	0	1	5	0	6	1	276	41	0	318	671
04:15 PM	53	1	12	1	67	26	215	5	0	246	3	0	1	0	4	2	248	36	0	286	603
04:30 PM	61	1	15	0	77	8	240	6	0	254	0	0	3	0	3	1	242	45	0	288	622
04:45 PM	39	1	11	0	51	20	263	2	0	285	1	0	1	0	2	1	282	24	0	307	645
Total	207	3	52	1	263	66	983	14	1	1064	4	1	10	0	15	5	1048	146	0	1199	2541
05:00 PM	31	1	7	0	39	10	241	7	0	258	2	0	1	0	3	1	323	24	0	348	648
05:15 PM	46	0	12	0	58	16	252	6	0	274	9	0	2	0	11	1	309	30	0	340	683
05:30 PM	54	2	13	0	69	12	229	8	0	249	2	0	1	0	3	1	299	17	0	317	638
05:45 PM	46	0	10	0	56	11	253	6	0	270	5	0	3	0	8	1	248	25	0	274	608
Total	177	3	42	0	222	49	975	27	0	1051	18	0	7	0	25	4	1179	96	0	1279	2577
Grand Total	822	9	198	1	1030	297	4086	63	2	4448	46	3	29	0	78	19	4372	598	0	4989	10545
Apprch %	79.8	0.9	19.2	0.1		6.7	91.9	1.4	0.0		59.0	3.8	37.2	0.0		0.4	87.6	12.0	0.0		
Total %	7.8	0.1	1.9	0.0	9.8	2.8	38.7	0.6	0.0	42.2	0.4	0.0	0.3	0.0	0.7	0.2	41.5	5.7	0.0	47.3	

Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Kingston Pk. @ Essex
Date: 7/12/07
ted By: Lauren Cannon
Weather: Clear

File Name : 00771-0000-Kingston Pike_Essex
Site Code : 00000000
Start Date : 07/12/2007
Page No : 2

	ESSEX From North					KIGSTON PIKE From East					ESSEX From South					KIGSTON PIKE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 11:00 AM to 02:30 PM - Peak 1 of 1																					
Intersection	12:00 PM																				
Volume	238	1	57	0	296	94	1175	4	0	1273	9	1	9	0	19	3	1153	184	0	1340	2928
Percent	80.4	0.3	19.3	0.0		7.4	92.3	0.3	0.0		47.4	5.3	47.4	0.0		0.2	86.0	13.7	0.0		
12:45 Volume	74	0	12	0	86	21	290	2	0	313	3	0	2	0	5	1	307	59	0	367	771
Peak Factor																					0.949
High Int.	12:45 PM					12:00 PM					12:00 PM					12:45 PM					
Volume	74	0	12	0	86	21	308	1	0	330	1	1	5	0	7	1	307	59	0	367	
Peak Factor					0.860					0.964					0.679					0.913	

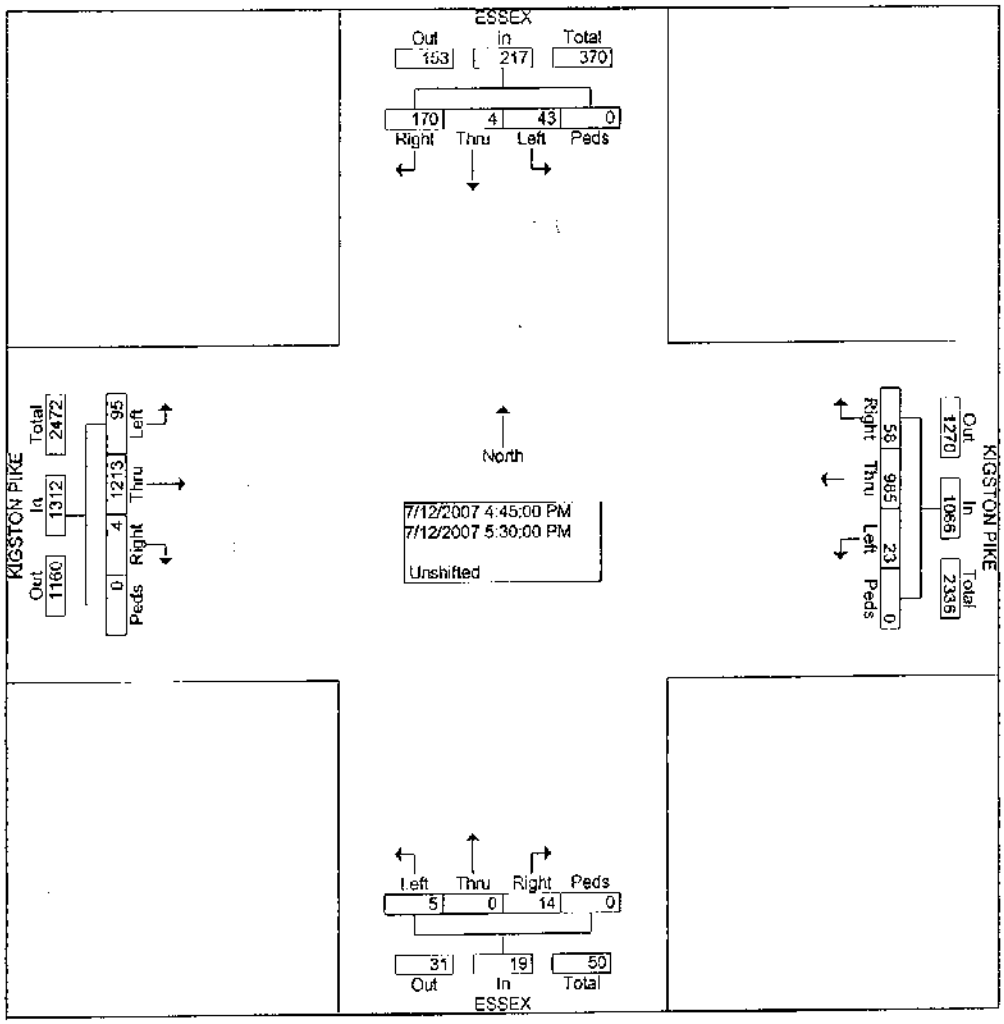


Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Kingston Pk. @ Essex
Date: 7/12/07
[illegible]ed By: Lauren Cannon
Weather: Clear

File Name : 00771-0000-Kingston Pike_Essex
Site Code : 00000000
Start Date : 07/12/2007
Page No : 3

	ESSEX From North					KIGSTON PIKE From East					ESSEX From South					KIGSTON PIKE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 02:45 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	170	4	43	0	217	58	985	23	0	1066	14	0	5	0	19	4	1213	95	0	1312	2614
Percent	78.3	1.8	19.8	0.0		5.4	92.4	2.2	0.0		73.7	0.0	26.3	0.0		0.3	92.5	7.2	0.0		
05:15 Volume	46	0	12	0	58	16	252	6	0	274	9	0	2	0	11	1	309	30	0	340	683
Peak Factor																					0.957
High Int.	05:30 PM					04:45 PM					05:15 PM					05:00 PM					
Volume	54	2	13	0	69	20	263	2	0	285	9	0	2	0	11	1	323	24	0	348	
Peak Factor					0.786					0.935					0.432					0.943	



#3

Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Kingston Pk. @ Market Plac
Date: 7/10/07
ted By: MD & LC
Weather: Clear

File Name : 00771-0000-Kingston Pike_Market Place_1
Site Code : 00000000
Start Date : 07/10/2007
Page No : 1

Groups Printed- Unshifted

	MARKET PLACE From North					KINGSTON PIKE From East					MARKET PLACE From South					KINGSTON PIKE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	7	0	38	0	45	46	242	0	0	288	0	0	0	0	0	0	209	15	0	224	557
11:15 AM	8	0	50	0	58	53	237	0	0	290	0	0	0	0	0	0	236	10	0	246	594
11:30 AM	11	0	49	0	60	38	258	0	0	296	0	0	0	0	0	0	263	8	0	271	627
11:45 AM	7	0	58	0	65	56	292	0	0	348	0	0	0	0	0	2	258	8	0	268	681
Total	33	0	195	0	228	193	1029	0	0	1222	0	0	0	0	0	2	966	41	0	1009	2459
12:00 PM	11	0	59	0	70	45	236	0	0	281	0	0	0	0	0	0	260	11	0	271	622
12:15 PM	17	0	55	0	72	44	283	0	0	327	0	0	0	0	0	0	269	18	0	287	686
12:30 PM	14	0	67	0	81	57	263	0	0	320	0	0	0	0	0	0	273	13	0	286	687
12:45 PM	16	0	37	0	53	52	311	0	0	363	0	0	0	0	0	0	282	10	0	292	708
Total	58	0	218	0	276	198	1093	0	0	1291	0	0	0	0	0	0	1084	52	0	1136	2703
04:00 PM	7	0	64	0	71	50	226	0	1	277	0	0	0	0	0	0	261	21	0	282	630
04:15 PM	14	0	60	0	74	50	236	0	0	286	0	0	0	0	0	0	223	10	0	233	593
04:30 PM	16	0	57	0	73	37	210	0	0	247	0	0	0	0	0	0	233	7	0	240	560
04:45 PM	19	0	41	0	60	46	262	0	0	308	0	0	0	0	0	1	271	17	0	289	657
Total	56	0	222	0	278	183	934	0	1	1118	0	0	0	0	0	1	988	55	0	1044	2440
05:00 PM	12	0	91	0	103	44	237	0	0	281	0	0	0	0	0	0	301	5	0	306	690
05:15 PM	12	0	60	0	72	40	263	0	0	303	2	0	13	0	15	2	332	8	0	342	732
05:30 PM	13	0	66	0	79	39	245	0	0	284	0	0	0	0	0	0	261	7	0	268	631
05:45 PM	13	0	59	0	72	36	233	0	0	269	0	0	0	0	0	0	262	9	0	271	612
Total	50	0	276	0	326	159	978	0	0	1137	2	0	13	0	15	2	1156	29	0	1187	2665
Grand Total	197	0	911	0	1108	733	4034	0	1	4768	2	0	13	0	15	5	4194	177	0	4376	10267
Apprch %	17.8	0.0	82.2	0.0		15.4	84.6	0.0	0.0		13.3	0.0	86.7	0.0		0.1	95.8	4.0	0.0		
Total %	1.9	0.0	8.9	0.0	10.8	7.1	39.3	0.0	0.0	46.4	0.0	0.0	0.1	0.0	0.1	0.0	40.8	1.7	0.0	42.6	

Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Kingston Pk. @ Market Plac
Date: 7/10/07
ıted By: MD & LC
Weather: Clear

File Name : 00771-0000-Kingston Pike_Market Place_1
Site Code : 00000000
Start Date : 07/10/2007
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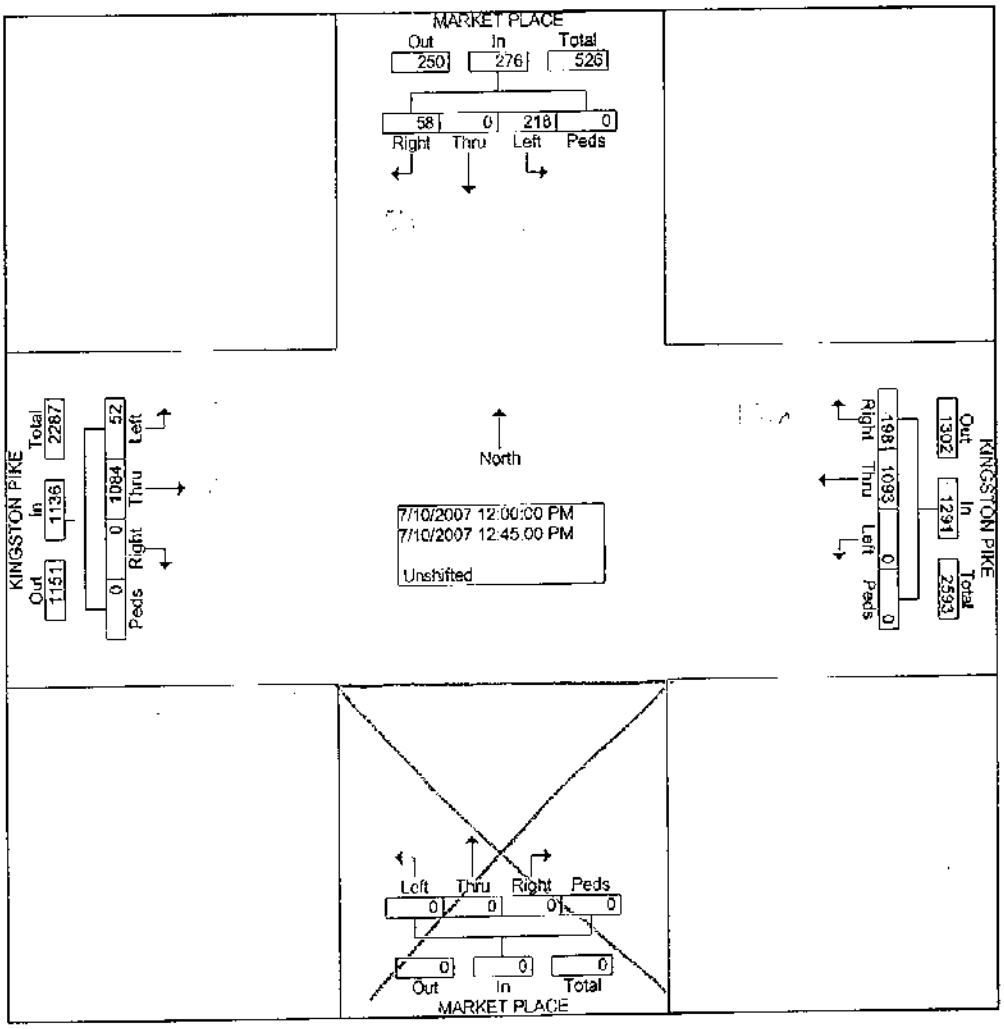
	MARKET PLACE From North					KINGSTON PIKE From East					MARKET PLACE From South					KINGSTON PIKE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 11:00 AM to 02:30 PM - Peak 1 of 1																					
Intersection	12:00 PM																				
Volume	58	0	218	0	276	198	1093	0	0	1291	0	0	0	0	0	0	1084	52	0	1136	2703
Percent	21.0	0.0	79.0	0.0		15.3	84.7	0.0	0.0		0.0	0.0	0.0	0.0		0.0	95.4	4.6	0.0		
12:45 Volume	16	0	37	0	53	52	311	0	0	363	0	0	0	0	0	0	282	10	0	292	708
Peak Factor																					0.954
High Int.	12:30 PM					12:45 PM					10:45:00 AM					12:45 PM					
Volume	14	0	67	0	81	52	311	0	0	363	0	0	0	0	0	0	282	10	0	292	
Peak Factor					0.852					0.889										0.973	

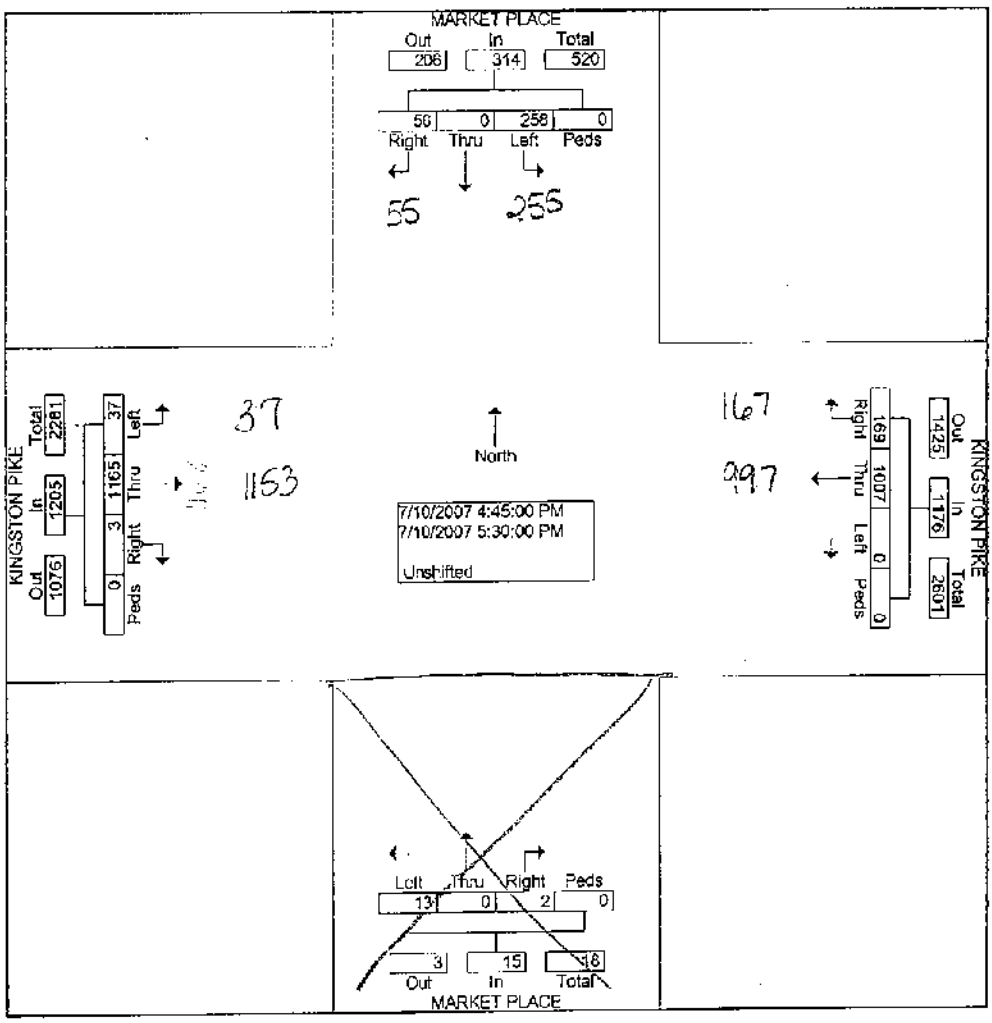


Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Kingston Pk. @ Market Plac
Date: 7/10/07
Counted By: MD & LC
Weather: Clear

File Name : 00771-0000-Kingston Pike_Market Place_1
Site Code : 00000000
Start Date : 07/10/2007
Page No : 3

	MARKET PLACE From North					KINGSTON PIKE From East					MARKET PLACE From South					KINGSTON PIKE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 02:45 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	56	0	258	0	314	169	1007	0	0	1176	2	0	13	0	15	3	1165	37	0	1205	2710
Percent	17.8	0.0	82.2	0.0		14.4	85.6	0.0	0.0		13.3	0.0	86.7	0.0		0.2	96.7	3.1	0.0		
05:15 Volume	12	0	60	0	72	40	263	0	0	303	2	0	13	0	15	2	332	8	0	342	732
Peak Factor																					0.926
High Int.	05:00 PM					04:45 PM					05:15 PM					05:15 PM					
Volume	12	0	91	0	103	46	262	0	0	308	2	0	13	0	15	2	332	8	0	342	
Peak Factor					0.762					0.955					0.250					0.881	



#4

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston Pk. @ Cedar Bluff
Date: 7/10/07
ted By: Pam Drummer
Weather: Clear

File Name : 00771-0000-Kingston Pike_Cedar Bluff_Combined
Site Code : 00000000
Start Date : 7/10/2007
Page No : 1

Groups Printed- 1 - Unshifted

	CEDAR BLUFA Southbound					KINGSTON Westbound					CEDAR BLUFA Northbound					KINGSTON Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	76	18	0	0	94	29	206	33	0	268	7	28	8	0	43	56	160	13	0	229	634
11:15 AM	90	35	54	0	179	13	203	43	1	260	13	33	11	0	57	55	202	10	0	267	763
11:30 AM	74	27	81	0	182	19	216	38	0	273	20	30	16	0	66	82	218	6	0	306	827
11:45 AM	88	36	84	0	208	18	220	45	1	284	24	31	27	0	82	67	247	15	0	329	903
Total	328	116	219	0	663	79	845	159	2	1085	64	122	62	0	248	260	827	44	0	1131	3127
12:00 PM	89	28	65	0	182	14	211	54	0	279	18	47	34	0	99	94	226	10	0	330	890
12:15 PM	110	41	86	0	237	12	206	48	0	266	23	23	25	0	71	91	235	9	0	335	909
12:30 PM	83	47	77	0	207	20	199	76	0	295	20	36	20	0	76	93	247	8	0	348	926
12:45 PM	95	38	76	0	209	11	245	66	0	322	24	24	17	0	65	79	234	16	0	329	925
Total	377	154	304	0	835	57	861	244	0	1162	85	130	96	0	311	357	942	43	0	1342	3650
04:00 PM	82	21	67	0	170	12	217	52	3	284	12	28	25	0	65	78	194	11	0	283	802
04:15 PM	100	32	50	0	182	16	188	45	0	249	21	37	24	0	82	70	249	16	0	335	848
04:30 PM	84	37	46	0	167	12	202	55	0	269	12	21	26	0	59	66	206	5	0	277	772
04:45 PM	104	50	59	0	213	14	189	65	0	268	13	32	18	0	63	80	208	8	0	296	840
Total	370	140	222	0	732	54	796	217	3	1070	58	118	93	0	269	294	857	40	0	1191	3262
05:00 PM	93	47	54	0	194	32	198	85	0	315	24	42	21	0	87	92	257	6	0	355	951
05:15 PM	127	55	65	0	247	12	197	47	3	259	19	45	15	0	79	92	332	13	0	437	1022
05:30 PM	107	46	70	0	223	11	230	70	0	311	20	40	25	0	85	77	229	13	0	319	938
05:45 PM	110	47	53	0	210	10	193	58	0	261	10	40	17	0	67	75	261	12	0	348	886
Total	437	195	242	0	874	65	818	260	3	1146	73	167	78	0	318	336	1079	44	0	1459	3797
Grand Total	1512	605	987	0	3104	255	3320	880	8	4463	280	537	329	0	1146	1247	3705	171	0	5123	13836
Apprch %	48.7	19.5	31.8	0.0		5.7	74.4	19.7	0.2		24.4	46.9	28.7	0.0		24.3	72.3	3.3	0.0		
Total %	10.9	4.4	7.1	0.0	22.4	1.8	24.0	6.4	0.1	32.3	2.0	3.9	2.4	0.0	8.3	9.0	26.8	1.2	0.0	37.0	

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
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Knoxville, TN 37922

Intersection: Kingston Pk. @ Cedar Bluff
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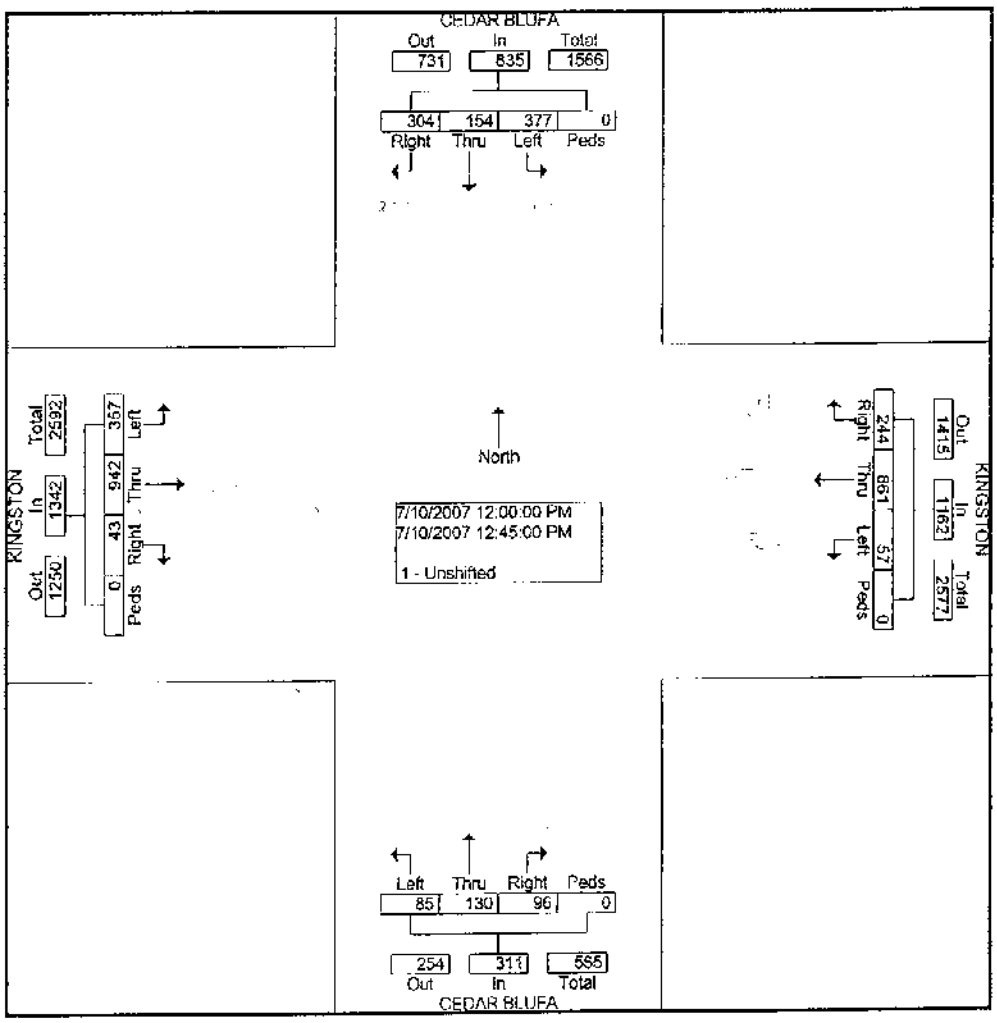
Weather: Clear

File Name : 00771-0000-Kingston Pike_Cedar Bluff_Combined
Site Code : 00000000
Start Date : 7/10/2007
Page No : 2

	CEDAR BLUFA Southbound					KINGSTON Westbound					CEDAR BLUFA Northbound					KINGSTON Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 11:00 AM to 02:30 PM - Peak 1 of 1																					
Intersection	12:00 PM																				
Volume	377	154	304	0	835	57	861	244	0	1162	85	130	96	0	311	357	942	43	0	1342	3650
Percent	45.1	18.4	36.4	0.0		4.9	74.1	21.0	0.0		27.3	41.8	30.9	0.0		26.6	70.2	3.2	0.0		
12:30 Volume	83	47	77	0	207	20	199	76	0	295	20	36	20	0	76	93	247	8	0	348	926
Peak Factor																					0.985
High Int.	12:15 PM					12:45 PM					12:00 PM					12:30 PM					
Volume	110	41	86	0	237	11	245	66	0	322	18	47	34	0	99	93	247	8	0	348	
Peak Factor					0.881					0.902					0.785					0.964	



Tues/July
Avg wk day
factor = 0.99

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston Pk. @ Cedar Bluff
Date: 7/10/07
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File Name : 00771-0000-Kingston Pike_Cedar Bluff_Combined
Site Code : 00000000
Start Date : 7/10/2007
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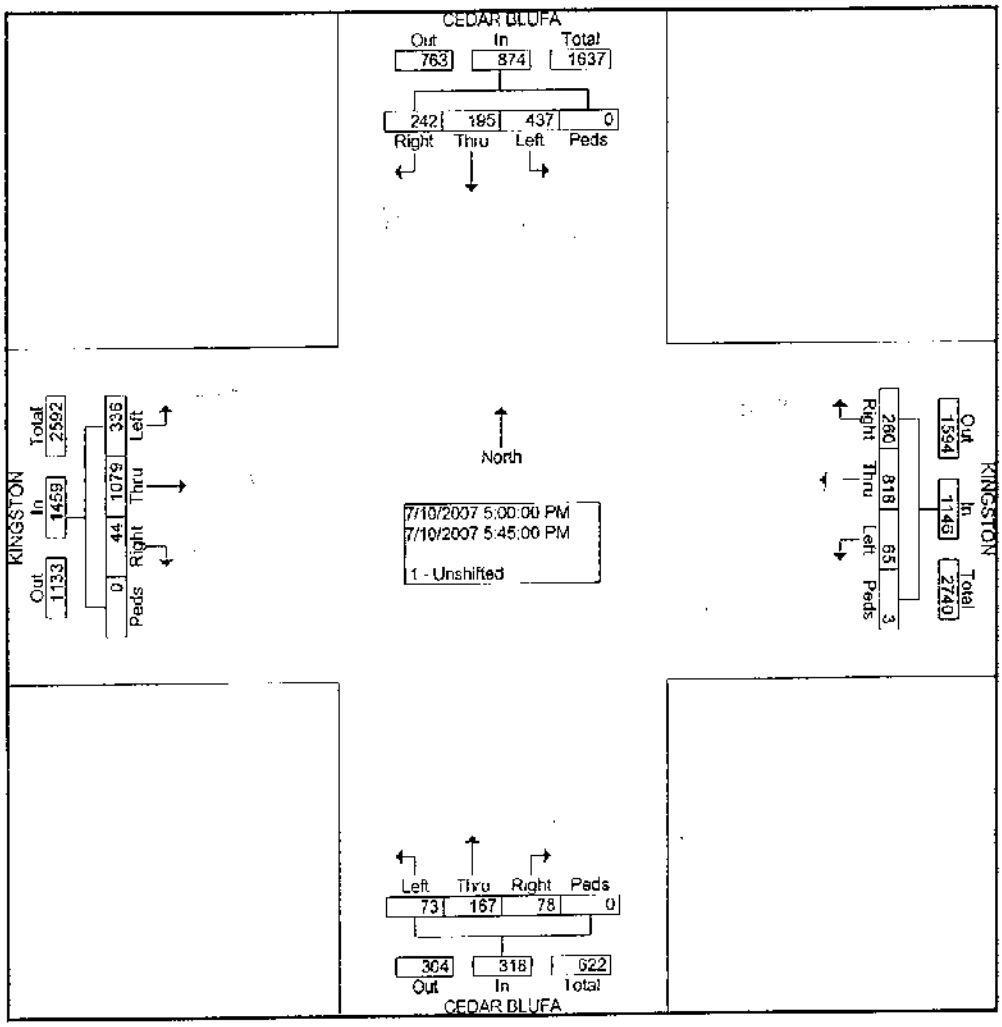
	CEDAR BLUFA Southbound					KINGSTON Westbound					CEDAR BLUFA Northbound					KINGSTON Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 02:45 PM to 05:45 PM - Peak 1 of 1																					
Intersection	05:00 PM																				
Volume	437	195	242	0	874	65	818	260	3	1146	73	167	78	0	318	336	1079	44	0	1459	3797
Percent	50.0	22.3	27.7	0.0		5.7	71.4	22.7	0.3		23.0	52.5	24.5	0.0		23.0	74.0	3.0	0.0		
05:15 Volume	127	55	65	0	247	12	197	47	3	259	19	45	15	0	79	92	332	13	0	437	1022
Peak Factor																					0.929
High Int.	05:15 PM					05:00 PM					05:00 PM					05:15 PM					
Volume	127	55	65	0	247	32	198	85	0	315	24	42	21	0	87	92	332	13	0	437	
Peak Factor					0.885					0.910					0.914					0.835	



Tues/July
Avg wk day
factor = 0.99

#5

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston Pk. @ Peters Rd.
Date: 7/11/07
(ted By: PD & LC
W..ther: Cloudy

File Name : 00771-0000-Kingston Pike_Peters Rd_Combined
Site Code : 00000000
Start Date : 7/11/2007
Page No : 1

Groups Printed- Unshifted

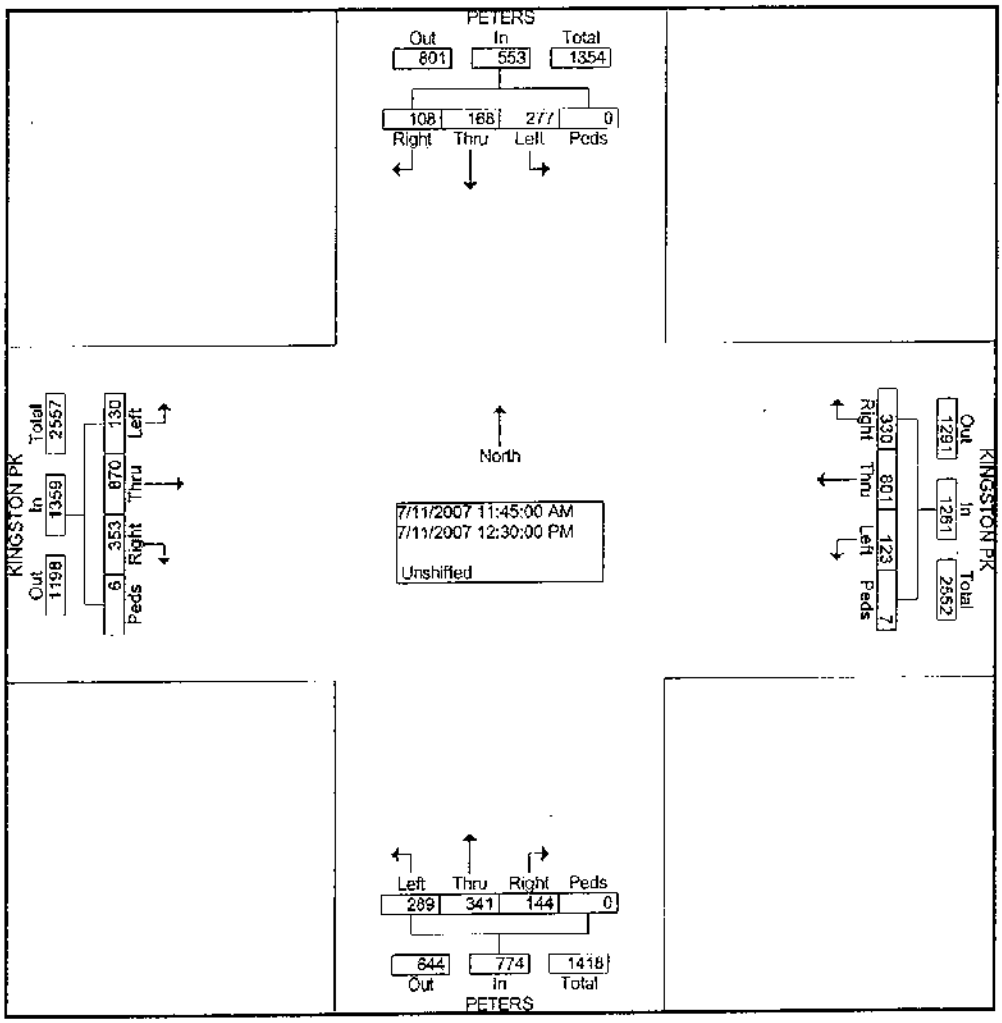
	PETERS Southbound					KINGSTON PK Westbound					PETERS Northbound					KINGSTON PK Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	54	31	14	0	99	18	150	65	0	233	53	72	28	0	153	28	180	72	0	280	765
11:15 AM	46	41	17	0	104	26	155	63	0	244	51	71	27	0	149	19	189	71	0	279	776
11:30 AM	63	32	33	0	128	27	170	72	0	269	64	75	32	0	171	33	192	73	0	298	866
11:45 AM	73	33	30	0	136	26	191	96	7	320	76	100	35	0	211	40	228	77	0	345	1012
Total	236	137	94	0	467	97	666	296	7	1066	244	318	122	0	684	120	789	293	0	1202	3419
12:00 PM	64	41	18	0	123	28	193	82	0	303	58	92	38	0	188	30	229	89	0	348	962
12:15 PM	72	52	27	0	151	42	197	80	0	319	85	87	41	0	213	41	202	103	1	347	1030
12:30 PM	68	42	33	0	143	27	220	72	0	319	70	62	30	0	162	19	211	84	5	319	943
12:45 PM	80	60	38	0	178	34	188	78	0	300	75	66	32	0	173	17	173	63	1	254	905
Total	284	195	116	0	595	131	798	312	0	1241	288	307	141	0	736	107	815	339	7	1268	3840
03:45 PM	75	59	20	0	154	29	170	57	0	256	7	0	0	0	7	0	0	0	0	0	417
Total	75	59	20	0	154	29	170	57	0	256	7	0	0	0	7	0	0	0	0	0	417
04:00 PM	62	57	16	0	135	42	162	76	0	280	54	71	36	0	161	14	195	100	0	309	885
04:15 PM	70	58	20	0	148	40	212	81	0	333	59	69	27	0	155	22	177	100	0	299	935
04:30 PM	53	64	28	0	145	51	155	87	0	293	47	73	25	0	145	18	198	122	0	338	921
04:45 PM	58	55	23	0	136	54	223	94	0	371	51	65	43	0	159	23	178	111	0	312	978
Total	243	234	87	0	564	187	752	338	0	1277	211	278	131	0	620	77	748	433	0	1258	3719
5:00 PM	58	66	18	0	142	52	208	73	0	333	72	71	35	0	178	20	203	151	0	374	1027
:15 PM	63	62	14	0	139	46	225	57	0	328	81	76	30	0	187	17	200	153	0	370	1024
05:30 PM	58	80	14	0	152	65	187	87	0	339	77	100	35	0	212	23	189	162	0	374	1077
05:45 PM	51	55	31	0	137	34	190	62	0	286	67	91	28	0	186	27	197	145	0	369	978
Total	230	263	77	0	570	197	810	279	0	1286	297	338	128	0	763	87	789	611	0	1487	4106
Grand Total	1068	888	394	0	2350	641	3196	1282	7	5126	1047	1241	522	0	2810	391	3141	1676	7	5215	15501
Apprch %	45.4	37.8	16.8	0.0		12.5	62.3	25.0	0.1		37.3	44.2	18.6	0.0		7.5	60.2	32.1	0.1		
Total %	6.9	5.7	2.5	0.0	15.2	4.1	20.6	8.3	0.0	33.1	6.8	8.0	3.4	0.0	18.1	2.5	20.3	10.8	0.0	33.6	

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston Pk. @ Peters Rd.
Date: 7/11/07
Counted By: PD & LC
Weather: Cloudy

File Name : 00771-0000-Kingston Pike_Peters Rd_Combined
Site Code : 00000000
Start Date : 7/11/2007
Page No : 2

	PETERS Southbound					KINGSTON PK Westbound					PETERS Northbound					KINGSTON PK Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 11:00 AM to 02:30 PM - Peak 1 of 1																					
Intersection	11:45 AM																				
Volume	277	168	108	0	553	123	801	330	7	1261	289	341	144	0	774	130	870	353	6	1359	3947
Percent	50.1	30.4	19.5	0.0		9.8	63.5	26.2	0.6		37.3	44.1	18.6	0.0		9.6	64.0	26.0	0.4		
12:15 Volume	72	52	27	0	151	42	197	80	0	319	85	87	41	0	213	41	202	103	1	347	1030
Peak Factor																					0.958
High Int.	12:15 PM					11:45 AM					12:15 PM					12:00 PM					
Volume	72	52	27	0	151	26	191	96	7	320	85	87	41	0	213	30	229	89	0	348	
Peak Factor					0.916					0.985					0.908					0.976	



Cannon & Cannon, Inc.
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9724 Kingston Pike, Suite 1100
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Intersection: Kingston Pk. @ Peters Rd.
Date: 7/11/07
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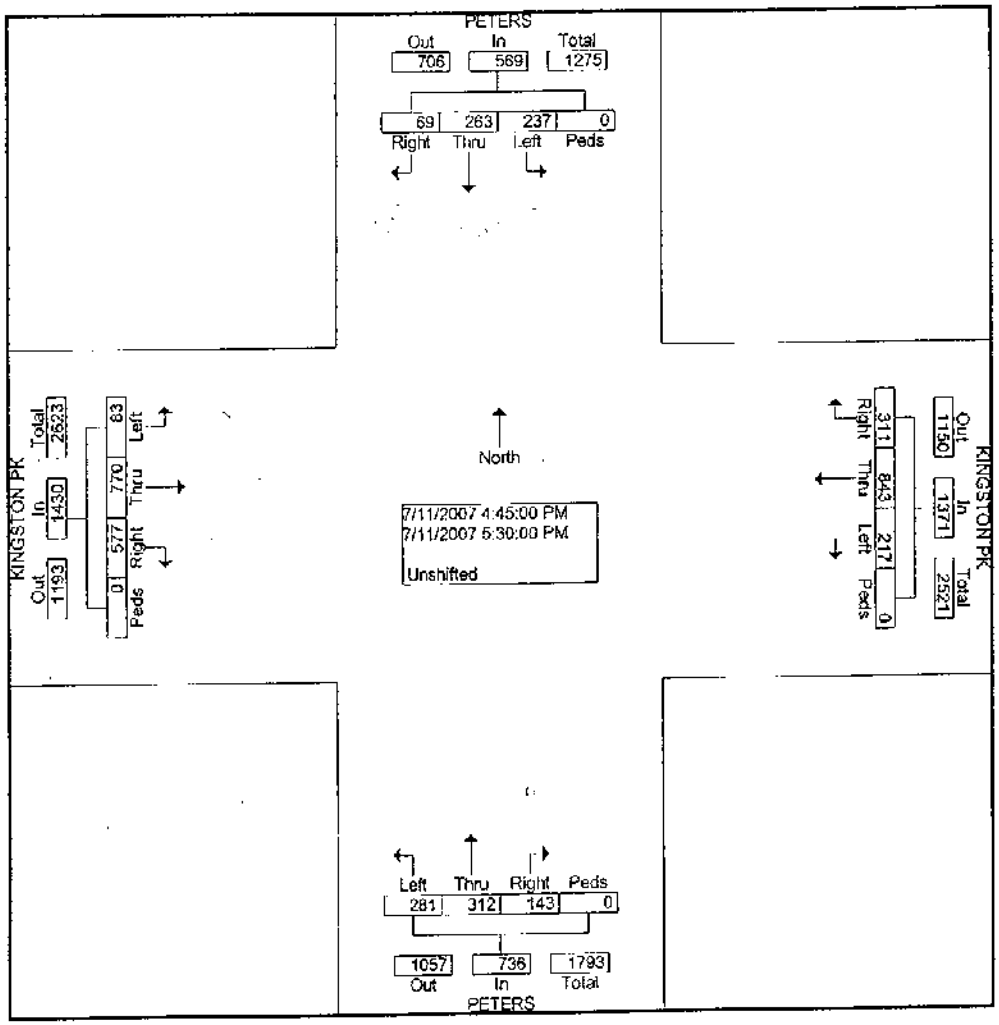
File Name : 00771-0000-Kingston Pike_Peters Rd_Combined
Site Code : 00000000
Start Date : 7/11/2007
Page No : 3

	PETERS Southbound					KINGSTON PK Westbound					PETERS Northbound					KINGSTON PK Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 02:45 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	237	263	69	0	569	217	843	311	0	1371	281	312	143	0	736	83	770	577	0	1430	4106
Percent	41.7	46.2	12.1	0.0		15.8	61.5	22.7	0.0		38.2	42.4	19.4	0.0		5.8	53.8	40.3	0.0		
05:30 Volume	58	80	14	0	152	65	187	87	0	339	77	100	35	0	212	23	189	162	0	374	1077
Peak Factor																					0.953
High Int.	05:30 PM					04:45 PM					05:30 PM					05:00 PM					
Volume	58	80	14	0	152	54	223	94	0	371	77	100	35	0	212	20	203	151	0	374	
Peak Factor					0.936					0.924					0.868					0.956	



(6)

Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Peters Rd. @ Market Place
Date: 7/12/07
ted By: Don Burnett
Weather: Clear

File Name : 00771-0000-Peters Rd_Market Place
Site Code : 00000000
Start Date : 07/12/2007
Page No : 1

Groups Printed- Unshifted

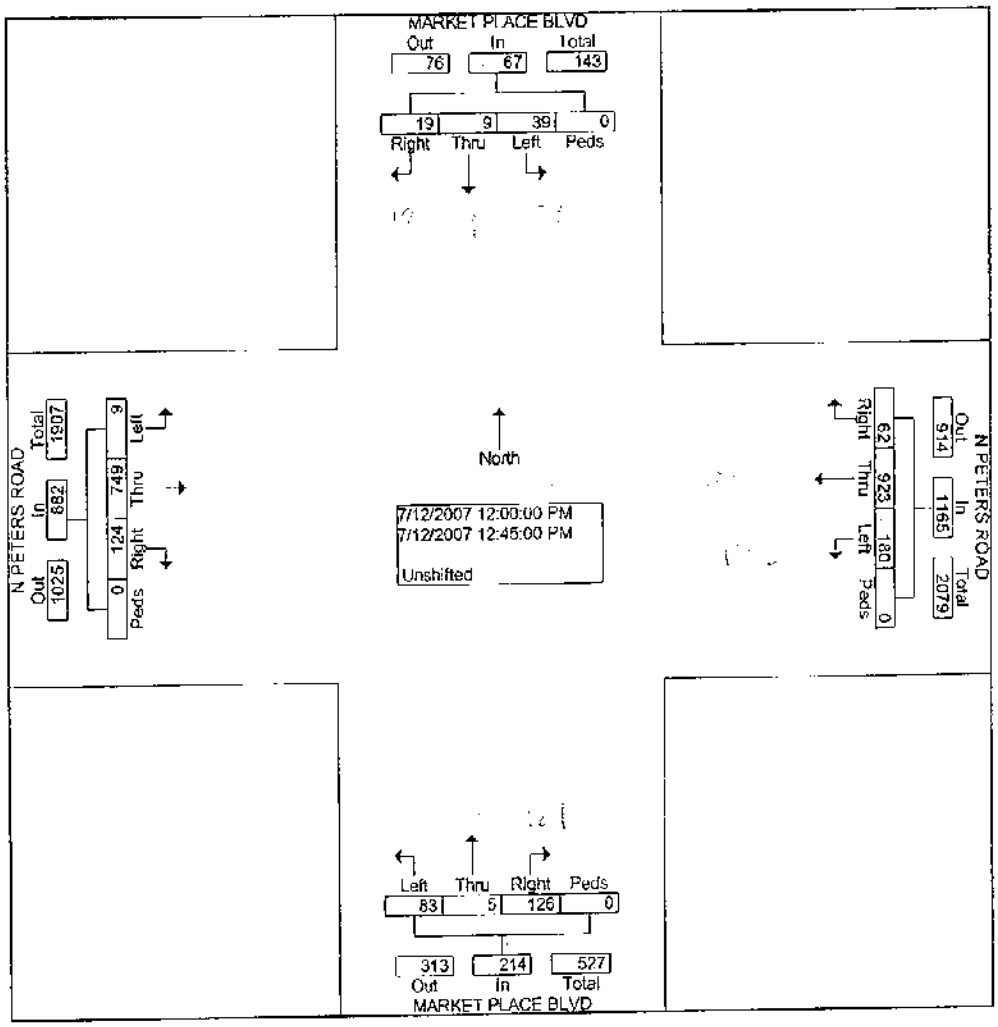
	MARKET PLACE BLVD From North					N PETERS ROAD From East					MARKET PLACE BLVD From South					N PETERS ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	2	0	8	0	10	6	211	35	0	252	33	1	18	0	52	21	140	0	0	161	475
11:15 AM	4	0	11	0	15	7	209	40	0	256	32	0	7	0	39	24	144	3	0	171	481
11:30 AM	4	1	7	0	12	3	216	43	0	262	40	4	22	0	66	24	177	0	0	201	541
11:45 AM	7	3	9	0	19	6	229	40	0	275	36	1	23	0	60	28	178	1	0	207	561
Total	17	4	35	0	56	22	865	158	0	1045	141	6	70	0	217	97	639	4	0	740	2058
12:00 PM	7	7	27	0	41	7	234	48	0	289	30	1	24	0	55	46	181	1	0	228	613
12:15 PM	6	1	4	0	11	24	244	44	0	312	41	3	11	0	55	32	177	3	0	212	590
12:30 PM	6	0	2	0	8	13	212	41	0	266	22	1	23	0	46	16	193	3	0	212	532
12:45 PM	0	1	6	0	7	18	233	47	0	298	33	0	25	0	58	30	198	2	0	230	593
Total	19	9	39	0	67	62	923	180	0	1165	126	5	83	0	214	124	749	9	0	882	2328
04:00 PM	3	1	4	0	8	7	215	32	0	254	29	3	18	0	50	21	217	2	0	240	552
04:15 PM	3	0	11	0	14	14	201	38	0	253	39	0	15	0	54	13	220	4	0	237	558
04:30 PM	2	0	4	0	6	15	215	49	0	279	20	2	15	0	37	20	240	3	0	263	585
04:45 PM	6	2	1	0	9	17	237	47	0	301	32	2	16	0	50	14	243	4	0	261	621
Total	14	3	20	0	37	53	868	166	0	1087	120	7	64	0	191	68	920	13	0	1001	2316
05:00 PM	3	1	5	0	9	11	199	42	0	252	28	0	27	0	55	27	284	7	0	318	634
05:15 PM	4	0	4	0	8	26	189	35	0	250	21	3	21	0	45	12	184	8	0	204	507
05:30 PM	8	1	7	0	16	13	187	49	0	249	17	1	9	0	27	37	153	14	0	204	496
05:45 PM	3	9	13	0	25	27	199	42	0	268	34	1	13	0	48	20	124	15	0	159	500
Total	18	11	29	0	58	77	774	168	0	1019	100	5	70	0	175	96	745	44	0	885	2137
Grand Total	68	27	123	0	218	214	3430	672	0	4316	487	23	287	0	797	385	3053	70	0	3508	8839
Apprch %	31.2	12.4	56.4	0.0		5.0	79.5	15.6	0.0		61.1	2.9	36.0	0.0		11.0	87.0	2.0	0.0		
Total %	0.8	0.3	1.4	0.0	2.5	2.4	38.8	7.6	0.0	48.8	5.5	0.3	3.2	0.0	9.0	4.4	34.5	0.8	0.0	39.7	

Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Peters Rd. @ Market Place
Date: 7/12/07
ted By: Don Burnett
Weather: Clear

File Name : 00771-0000-Peters Rd Market Place
Site Code : 00000000
Start Date : 07/12/2007
Page No : 2

	MARKET PLACE BLVD From North					N PETERS ROAD From East					MARKET PLACE BLVD From South					N PETERS ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 11:00 AM to 02:30 PM - Peak 1 of 1																					
Intersection	12:00 PM																				
Volume	19	9	39	0	67	62	923	180	0	1165	126	5	83	0	214	124	749	9	0	882	2328
Percent	28.4	13.4	58.2	0.0		5.3	79.2	15.5	0.0		58.9	2.3	38.8	0.0		14.1	84.9	1.0	0.0		
12:00 Volume	7	7	27	0	41	7	234	48	0	289	30	1	24	0	55	46	181	1	0	228	613
Peak Factor																					0.949
High Int.	12:00 PM					12:15 PM					12:45 PM					12:45 PM					
Volume	7	7	27	0	41	24	244	44	0	312	33	0	25	0	58	30	198	2	0	230	
Peak Factor					0.409					0.933					0.922					0.959	

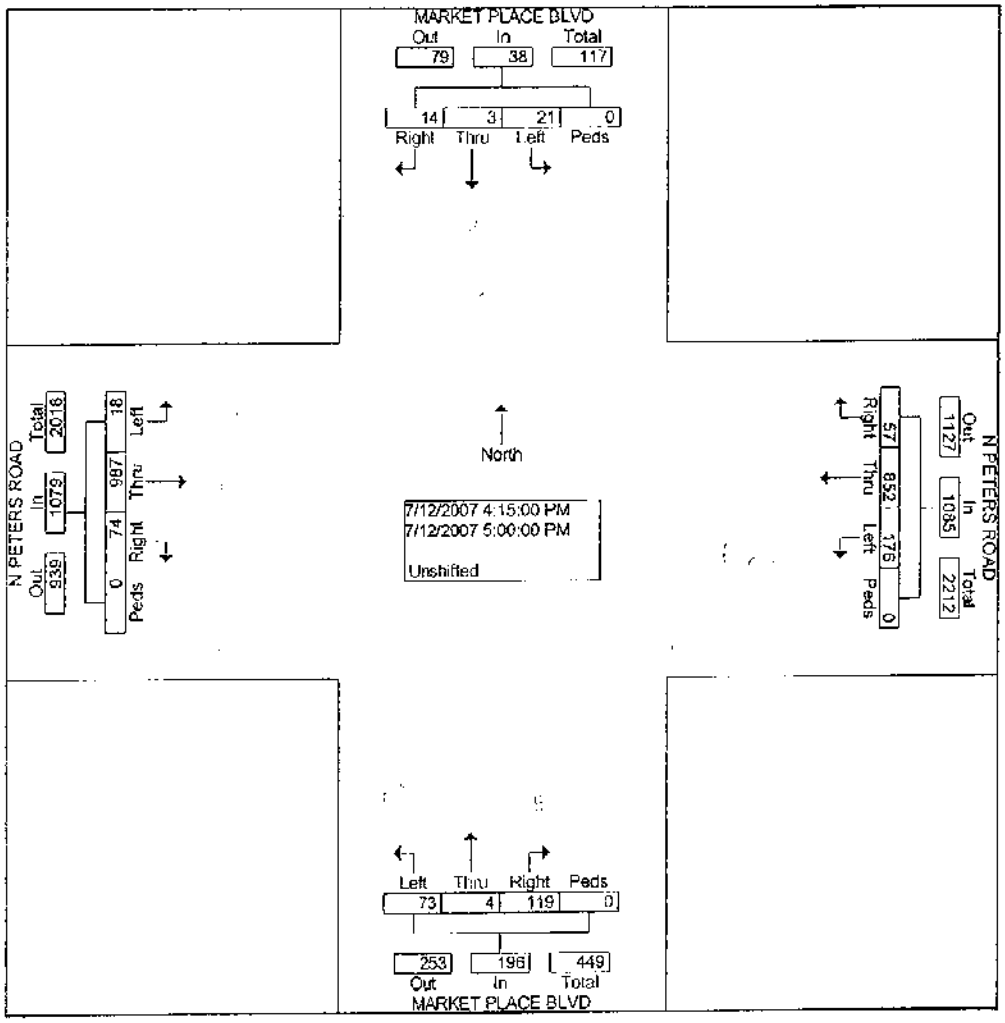


Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Peters Rd. @ Market Place
Date: 7/12/07
ted By: Don Burnett
Weather: Clear

File Name : 00771-0000-Peters Rd_Market Place
Site Code : 00000000
Start Date : 07/12/2007
Page No : 3

	MARKET PLACE BLVD From North					N PETERS ROAD From East					MARKET PLACE BLVD From South					N PETERS ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 02:45 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:15 PM																				
Volume	14	3	21	0	38	57	852	176	0	1085	119	4	73	0	196	74	987	18	0	1079	2398
Percent	36.8	7.9	55.3	0.0		5.3	78.5	16.2	0.0		60.7	2.0	37.2	0.0		6.9	91.5	1.7	0.0		
05:00 Volume	3	1	5	0	9	11	199	42	0	252	28	0	27	0	55	27	284	7	0	318	634
Peak Factor																					0.946
High Int.	04:15 PM					04:45 PM					05:00 PM					05:00 PM					
Volume	3	0	11	0	14	17	237	47	0	301	28	0	27	0	55	27	284	7	0	318	
Peak Factor					0.679					0.901					0.891					0.848	



#7

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Cedar Bluff @ Peters Rd
D[illegible]: 7/18/07
[illegible]ted By: Debbie Sexton
Weather: Clear

File Name : 7_00771-0000-Cedar Bluff_Peters Rd_Combined
Site Code : 00000000
Start Date : 7/18/2007
Page No : 1

Groups Printed- Unshifted

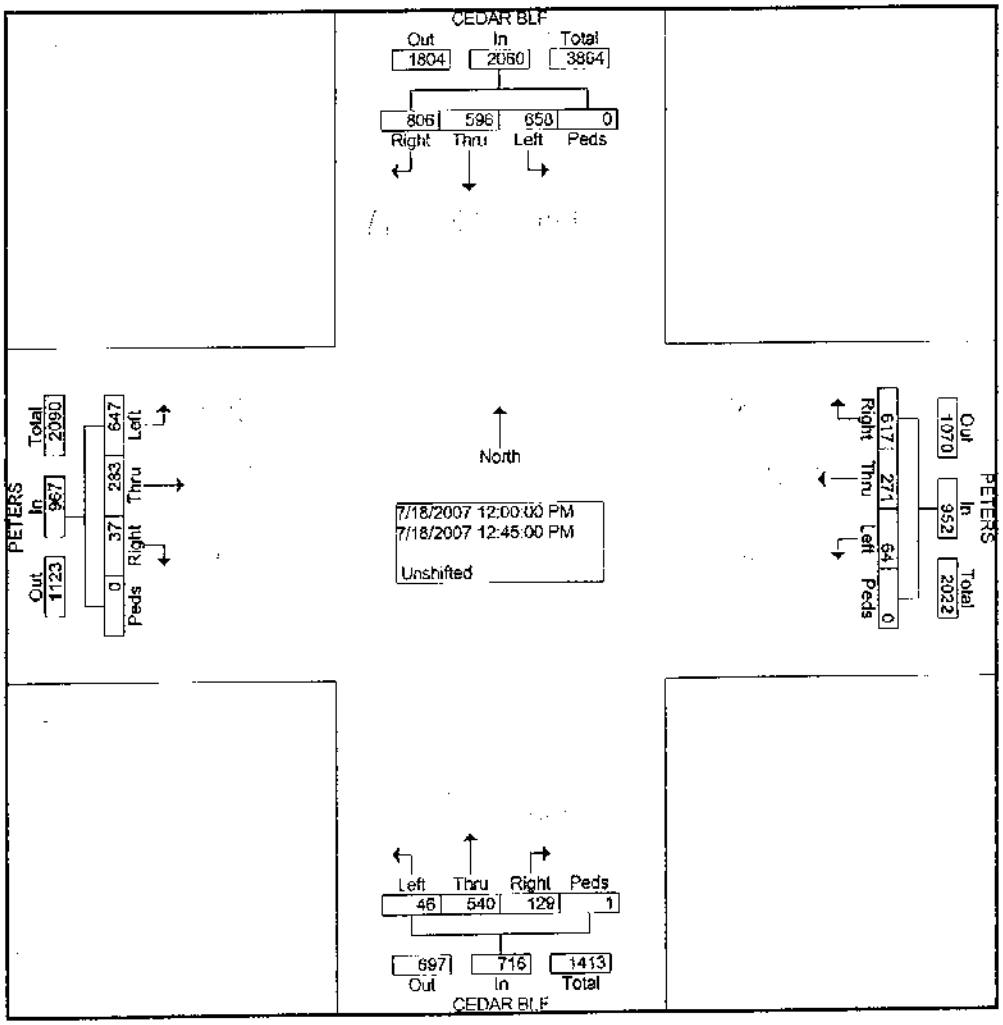
	CEDAR BLF Southbound					PETERS Westbound					CEDAR BLF Northbound					PETERS Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	123	155	148	0	426	8	49	123	0	180	4	117	12	0	133	132	52	19	1	204	943
11:15 AM	165	141	171	0	477	14	58	118	0	190	10	94	17	0	121	130	50	4	0	184	972
11:30 AM	147	148	186	0	481	10	62	137	0	209	8	141	17	0	166	158	63	5	0	226	1082
11:45 AM	162	143	220	0	525	16	67	158	0	241	14	122	27	0	163	151	60	9	0	220	1149
Total	597	587	725	0	1909	48	236	536	0	820	36	474	73	0	583	571	225	37	1	834	4146
12:00 PM	184	172	205	0	561	6	78	149	0	233	9	162	32	0	203	161	66	7	0	234	1231
12:15 PM	139	136	195	0	470	15	54	153	0	222	13	122	24	0	159	164	68	9	0	241	1092
12:30 PM	166	162	192	0	520	25	60	156	0	241	15	137	27	0	179	160	71	16	0	247	1187
12:45 PM	169	126	214	0	509	18	79	159	0	256	9	119	46	1	175	162	78	5	0	245	1185
Total	658	596	806	0	2060	64	271	617	0	952	46	540	129	1	716	647	283	37	0	967	4695
04:00 PM	138	150	171	0	459	11	58	148	0	217	14	145	26	0	185	205	47	7	0	259	1120
04:15 PM	128	127	200	0	455	13	51	145	6	215	11	131	11	0	153	155	68	5	0	228	1051
04:30 PM	148	146	178	0	472	13	60	170	0	243	18	145	10	0	173	185	50	7	0	242	1130
04:45 PM	157	109	219	0	485	11	47	151	0	209	9	116	14	0	139	205	56	9	0	270	1103
Total	571	532	768	0	1871	48	216	614	6	884	52	537	61	0	650	750	221	28	0	999	4404
05:00 PM	136	120	213	0	469	4	61	158	24	247	8	172	14	0	194	265	35	3	0	303	1213
05:15 PM	128	170	247	22	567	7	49	134	0	190	14	176	20	0	210	269	44	9	0	322	1289
05:30 PM	124	155	238	0	517	7	61	154	0	222	13	129	16	0	158	167	51	7	0	225	1122
:45 PM	176	188	197	0	561	13	62	163	0	238	18	139	17	0	174	164	54	5	0	223	1196
Total	564	633	895	22	2114	31	233	609	24	897	53	616	67	0	736	865	184	24	0	1073	4820
Grand Total	239	234	319	22	7954	191	956	2376	30	3553	187	2167	330	1	2685	2833	913	126	1	3873	18065
Apprch %	30.0	29.5	40.2	0.3		5.4	26.9	66.9	0.8		7.0	80.7	12.3	0.0		73.1	23.6	3.3	0.0		
Total %	13.2	13.0	17.7	0.1	44.0	1.1	5.3	13.2	0.2	19.7	1.0	12.0	1.8	0.0	14.9	15.7	5.1	0.7	0.0	21.4	

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Cedar Bluff @ Peters Rd
Date: 7/18/07
ted By: Debbie Sexton
Weather: Clear

File Name : 7_00771-0000-Cedar Bluff_Peters Rd_Combined
Site Code : 00000000
Start Date : 7/18/2007
Page No : 2

	CEDAR BLF Southbound					PETERS Westbound					CEDAR BLF Northbound					PETERS Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 11:00 AM to 02:30 PM - Peak 1 of 1																					
Intersection	12:00 PM																				
Volume	658	596	806	0	2060	64	271	617	0	952	46	540	129	1	716	647	283	37	0	967	4695
Percent	31.9	28.9	39.1	0.0		6.7	28.5	64.8	0.0		6.4	75.4	18.0	0.1		66.9	29.3	3.8	0.0		
12:00 Volume	184	172	205	0	561	6	78	149	0	233	9	162	32	0	203	161	66	7	0	234	1231
Peak Factor																					0.953
High Int.	12:00 PM					12:45 PM					12:00 PM					12:30 PM					
Volume	184	172	205	0	561	18	79	159	0	256	9	162	32	0	203	160	71	16	0	247	
Peak Factor					0.918					0.930					0.882					0.979	

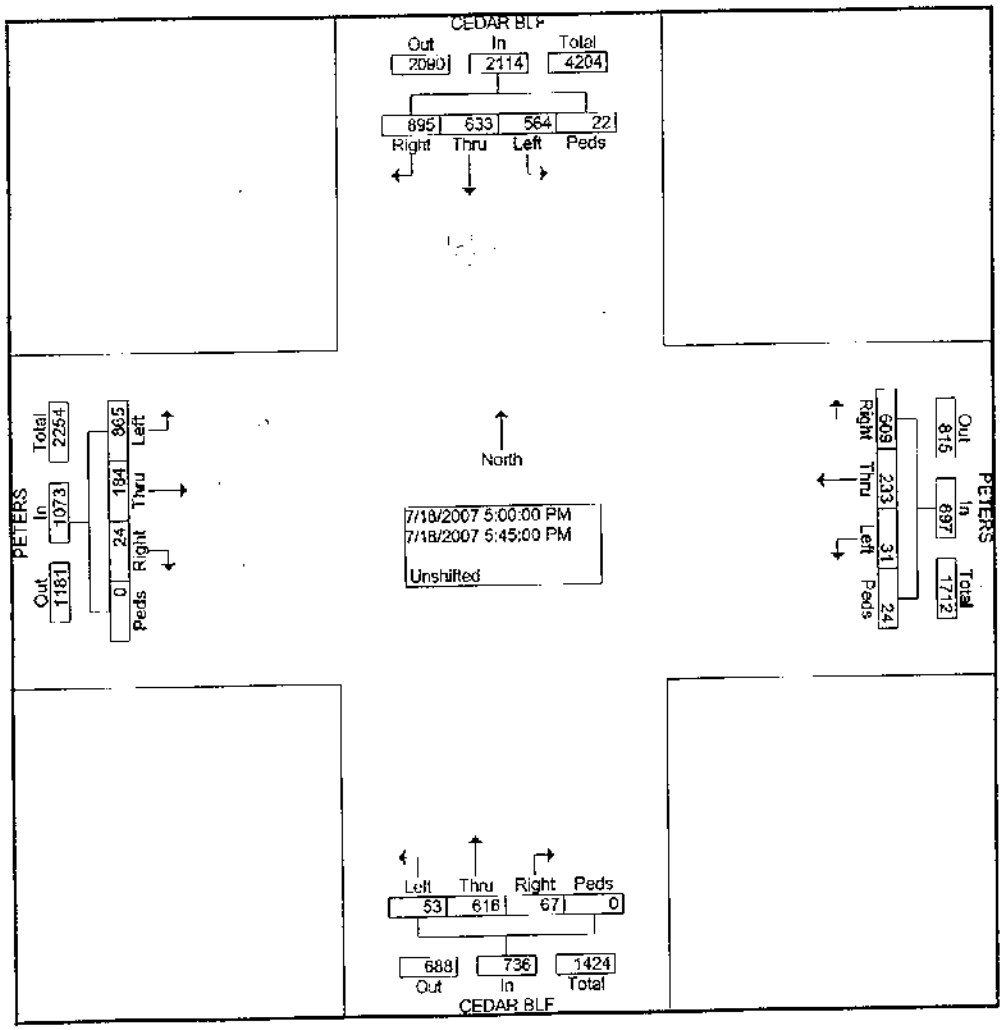


Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Cedar Bluff @ Peters Rd
Date: 7/18/07
Counted By: Debbie Sexton
Weather: Clear

File Name : 7_00771-0000-Cedar Bluff_Peters Rd_Combined
Site Code : 00000000
Start Date : 7/18/2007
Page No : 3

	CEDAR BLF Southbound					PETERS Westbound					CEDAR BLF Northbound					PETERS Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 02:45 PM to 05:45 PM - Peak 1 of 1																					
Intersection	05:00 PM																				
Volume	564	633	895	22	2114	31	233	609	24	897	53	616	67	0	736	865	184	24	0	1073	4820
Percent	26.7	29.9	42.3	1.0		3.5	26.0	67.9	2.7		7.2	83.7	9.1	0.0		80.6	17.1	2.2	0.0		
05:15 Volume	128	170	247	22	567	7	49	134	0	190	14	176	20	0	210	269	44	9	0	322	1289
Peak Factor																					0.935
High Int.	05:15 PM					05:00 PM					05:15 PM					05:15 PM					
Volume	128	170	247	22	567	4	61	158	24	247	14	176	20	0	210	269	44	9	0	322	
Peak Factor					0.932					0.908					0.876					0.833	



Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Cedar Bluff @ I-40 EB
Date: 7/17/07
Counted By: Melinda Dickson
Weather: Cloudy

File Name : 00771-0000-Cedar Bluff_I-40 Eastbound
Site Code : 00000000
Start Date : 07/17/2007
Page No : 1

Groups Printed- Unshifted

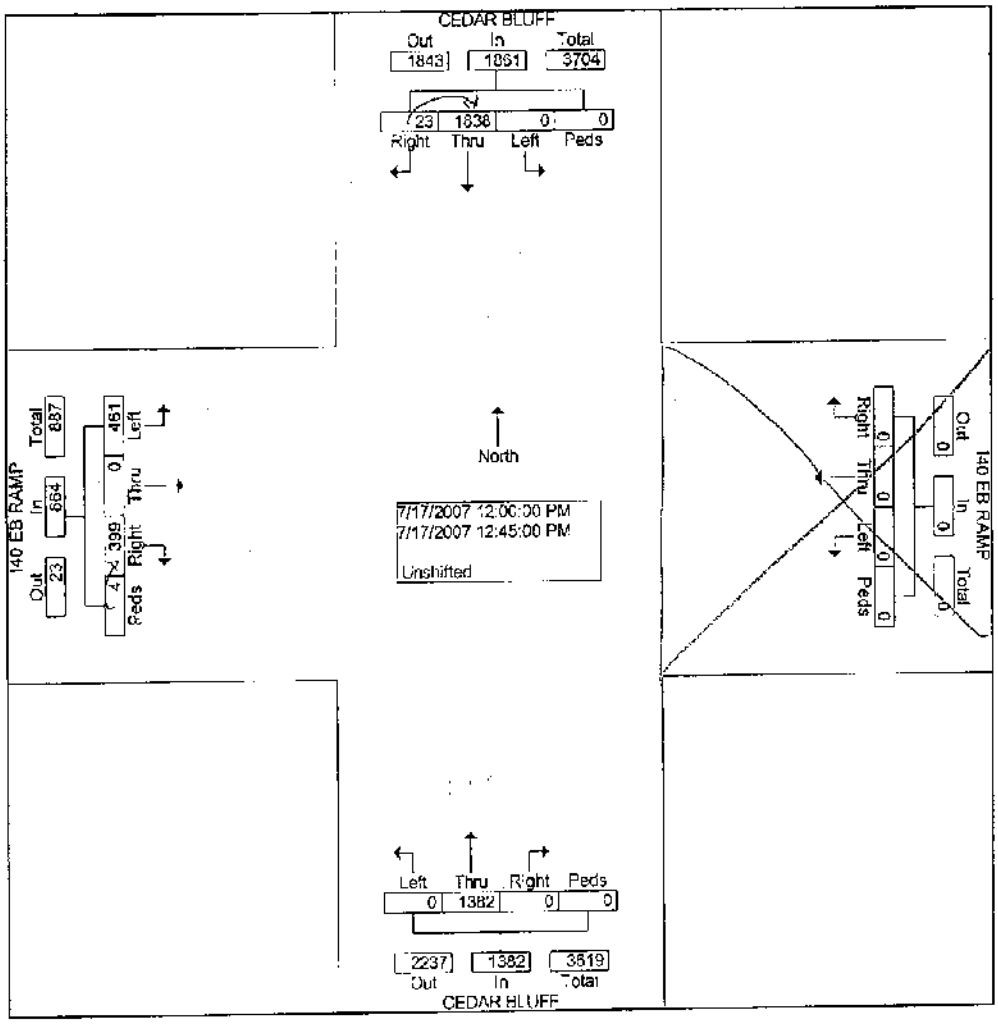
	CEDAR BLUFF From North					I40 EB RAMP From East					CEDAR BLUFF From South					I40 EB RAMP From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	0	376	0	0	376	0	0	0	0	0	0	254	0	0	254	98	0	97	8	203	833
11:15 AM	0	427	0	0	427	0	0	0	0	0	2	254	0	0	256	87	0	93	0	180	863
11:30 AM	0	447	0	0	447	0	0	0	0	0	0	296	0	0	296	108	0	101	0	209	952
11:45 AM	0	471	0	0	471	0	0	0	0	0	0	302	0	0	302	107	0	108	0	215	988
Total	0	1721	0	0	1721	0	0	0	0	0	2	1106	0	0	1108	400	0	399	8	807	3836
12:00 PM	0	460	0	0	460	0	0	0	0	0	0	322	0	0	322	99	0	97	0	196	978
12:15 PM	0	473	0	0	473	0	0	0	0	0	0	351	0	0	351	113	0	109	0	222	1046
12:30 PM	0	480	0	0	480	0	0	0	0	0	0	344	0	0	344	98	0	122	0	220	1044
12:45 PM	23	425	0	0	448	0	0	0	0	0	0	365	0	0	365	89	0	133	4	226	1039
Total	23	1838	0	0	1861	0	0	0	0	0	0	1382	0	0	1382	399	0	461	4	864	4107
04:00 PM	0	376	0	0	376	0	0	0	0	0	0	312	0	0	312	95	0	104	0	199	887
04:15 PM	0	423	0	0	423	0	0	0	0	0	0	346	0	0	346	113	0	111	1	225	994
04:30 PM	0	448	0	0	448	0	0	0	0	0	0	326	0	0	326	92	0	103	0	195	969
04:45 PM	0	478	0	0	478	0	0	0	0	0	0	350	0	0	350	123	0	141	0	264	1092
Total	0	1725	0	0	1725	0	0	0	0	0	0	1334	0	0	1334	423	0	459	1	883	3942
05:00 PM	0	443	0	0	443	0	0	0	0	0	0	419	0	0	419	128	0	134	0	262	1124
05:15 PM	0	466	0	0	466	0	0	0	0	0	0	354	0	0	354	145	0	149	0	294	1114
05:30 PM	0	471	0	0	471	0	0	0	0	0	0	326	0	0	326	119	0	123	0	242	1039
05:45 PM	0	393	0	0	393	0	0	0	0	0	0	352	0	0	352	126	0	144	1	271	1016
Total	0	1773	0	0	1773	0	0	0	0	0	0	1451	0	0	1451	518	0	550	1	1069	4293
Grand Total	23	7057	0	0	7080	0	0	0	0	0	2	5273	0	0	5275	1740	0	1869	14	3623	15978
Apprch %	0.3	99.7	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		48.0	0.0	51.6	0.4		
Total %	0.1	44.2	0.0	0.0	44.3	0.0	0.0	0.0	0.0	0.0	0.0	33.0	0.0	0.0	33.0	10.9	0.0	11.7	0.1	22.7	

Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Cedar Bluff @ I-40 EB
Date: 7/17/07
ted By: Melinda Dickson
Weather: Cloudy

File Name : 00771-0000-Cedar Bluff_I-40 Eastbound
Site Code : 00000000
Start Date : 07/17/2007
Page No : 2

	CEDAR BLUFF From North					I40 EB RAMP From East					CEDAR BLUFF From South					I40 EB RAMP From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 11:00 AM to 02:30 PM - Peak 1 of 1																					
Intersection	12:00 PM																				
Volume	23	1838	0	0	1861	0	0	0	0	0	0	1382	0	0	1382	399	0	461	4	864	4107
Percent	1.2	98.8	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		46.2	0.0	53.4	0.5		
12:15 Volume	0	473	0	0	473	0	0	0	0	0	0	351	0	0	351	113	0	109	0	222	1046
Peak Factor																					0.982
High Int.	12:30 PM					10:45:00 AM					12:45 PM					12:45 PM					
Volume	0	480	0	0	480	0	0	0	0	0	0	365	0	0	365	89	0	133	4	226	
Peak Factor					0.969										0.947					0.956	

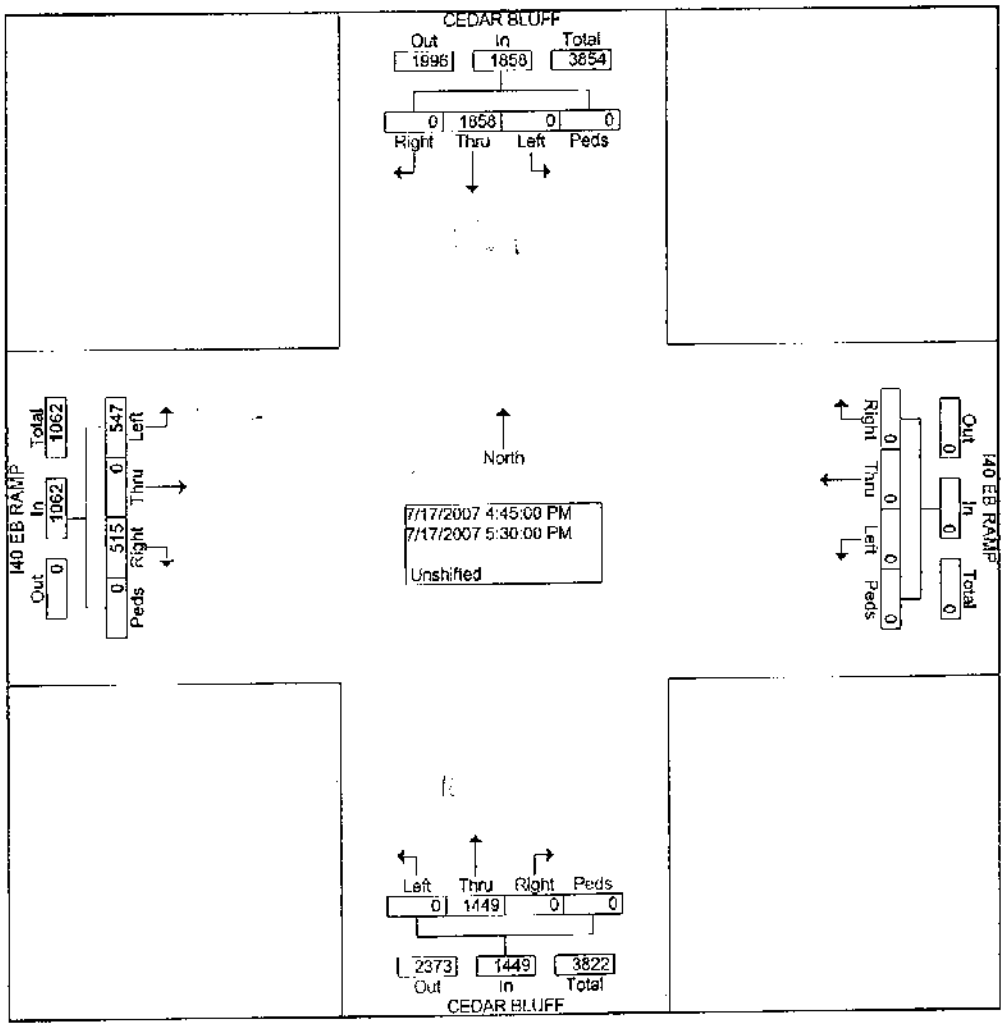


Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Cedar Bluff @ I-40 EB
Date: 7/17/07
Counted By: Melinda Dickson
Weather: Cloudy

File Name : 00771-0000-Cedar Bluff_I-40 Eastbound
Site Code : 00000000
Start Date : 07/17/2007

	CEDAR BLUFF From North					I40 EB RAMP From East					CEDAR BLUFF From South					I40 EB RAMP From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 02:45 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	0	1858	0	0	1858	0	0	0	0	0	0	1449	0	0	1449	515	0	547	0	1062	4369
Percent	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		48.5	0.0	51.5	0.0		
05:00 Volume	0	443	0	0	443	0	0	0	0	0	0	419	0	0	419	128	0	134	0	262	1124
Peak Factor																					0.972
High Int.	04:45 PM										05:00 PM					05:15 PM					
Volume	0	478	0	0	478	0	0	0	0	0	0	419	0	0	419	145	0	149	0	294	
Peak Factor					0.972										0.865					0.903	



#9

Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Cedar Bluff @ I-40 WB Ramp
Date: 7/17/07
ted By: Debbie Sexton
Weather: Clear

File Name : 00771-0000-Cedar Bluff_I-40 Westbound
Site Code : 00000000
Start Date : 07/17/2007
Page No : 1

Groups Printed- Unshifted

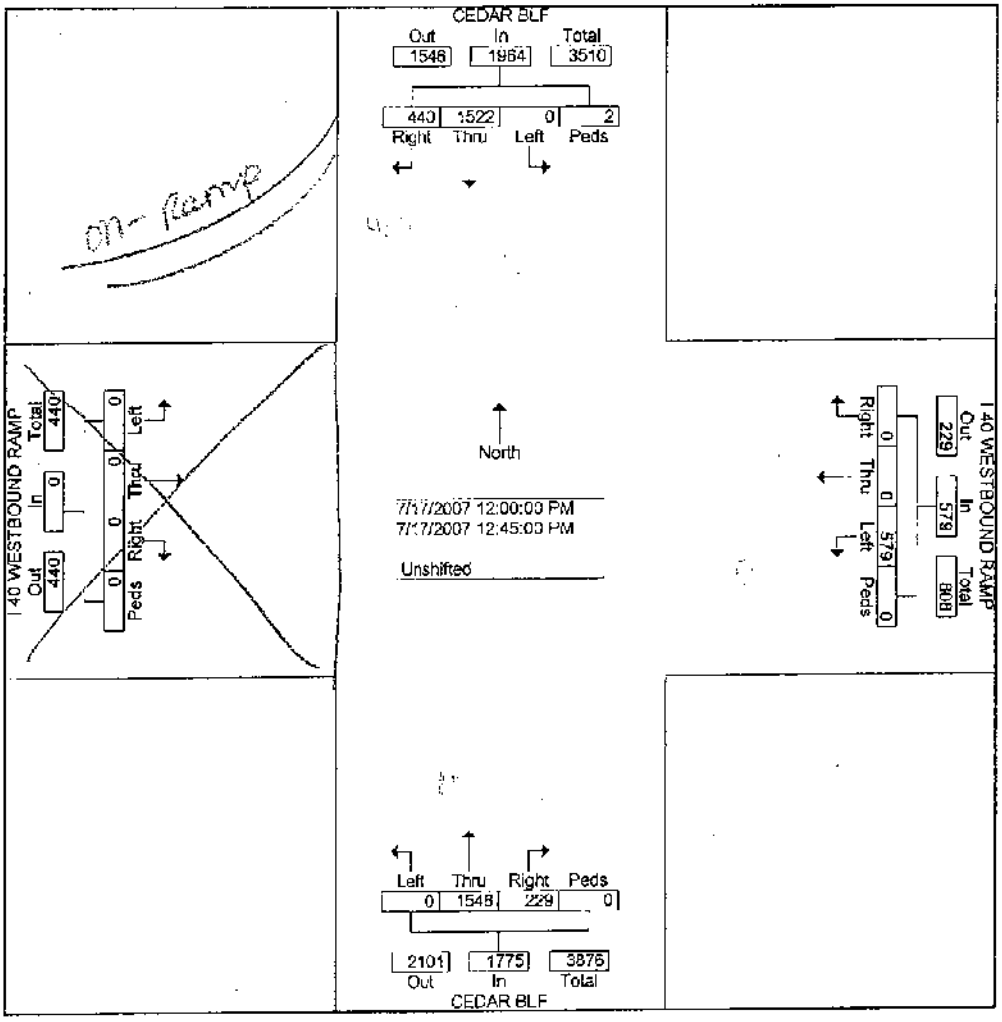
	CEDAR BLF From North					I 40 WESTBOUND RAMP From East					CEDAR BLF From South					I 40 WESTBOUND RAMP From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	100	327	0	0	427	0	0	121	0	121	37	303	0	0	340	0	0	0	0	0	888
11:15 AM	124	335	0	0	459	1	0	148	0	149	45	310	0	0	355	0	0	0	0	0	963
11:30 AM	137	376	0	0	513	0	0	145	0	145	45	316	0	0	361	0	0	0	0	0	1019
11:45 AM	109	364	0	0	473	0	0	166	0	166	56	370	0	0	426	0	0	0	0	0	1065
Total	470	1402	0	0	1872	1	0	580	0	581	183	1299	0	0	1482	0	0	0	0	0	3935
12:00 PM	140	383	0	0	523	0	0	145	0	145	38	355	0	0	393	0	0	0	0	0	1061
12:15 PM	113	414	0	1	528	0	0	130	0	130	57	393	0	0	450	0	0	0	0	0	1108
12:30 PM	95	366	0	0	461	0	0	153	0	153	63	377	0	0	440	0	0	0	0	0	1054
12:45 PM	92	359	0	1	452	0	0	151	0	151	71	421	0	0	492	0	0	0	0	0	1095
Total	440	1522	0	2	1964	0	0	579	0	579	229	1546	0	0	1775	0	0	0	0	0	4318
04:00 PM	153	285	0	0	438	0	0	172	0	172	47	349	0	0	396	0	0	0	0	0	1006
04:15 PM	131	351	0	0	482	0	0	146	0	146	34	353	0	0	387	0	0	0	0	0	1015
04:30 PM	150	409	0	5	564	0	0	155	0	155	67	362	0	0	429	0	0	0	0	0	1148
04:45 PM	136	333	0	0	469	0	0	184	0	184	49	349	0	0	398	0	0	0	0	0	1051
Total	570	1378	0	5	1953	0	0	657	0	657	197	1413	0	0	1610	0	0	0	0	0	4220
05:00 PM	177	374	0	0	551	0	0	178	0	178	67	415	0	0	482	0	0	0	0	0	1211
05:15 PM	152	408	0	0	560	0	0	153	0	153	40	447	0	0	487	0	0	0	0	0	1200
05:30 PM	150	378	0	0	528	0	0	193	0	193	37	381	0	0	418	0	0	0	0	0	1139
05:45 PM	133	327	0	0	460	0	0	143	0	143	60	383	0	0	443	0	0	0	0	0	1046
Total	612	1487	0	0	2099	0	0	667	0	667	204	1626	0	0	1830	0	0	0	0	0	4596
Grand Total	2092	5789	0	7	7888	1	0	2483	0	2484	813	5884	0	0	6697	0	0	0	0	0	17069
Apprch %	26.5	73.4	0.0	0.1		0.0	0.0	100.0	0.0		12.1	87.9	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	12.3	33.9	0.0	0.0	46.2	0.0	0.0	14.5	0.0	14.6	4.8	34.5	0.0	0.0	39.2	0.0	0.0	0.0	0.0	0.0	

Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Cedar Bluff @ I-40 WB Ramp
Date: 7/17/07
ted By: Debbie Sexton
Weather: Clear

File Name : 00771-0000-Cedar Bluff_I-40 Westbound
Site Code : 00000000
Start Date : 07/17/2007
Page No : 2

	CEDAR BLF From North					I 40 WESTBOUND RAMP From East					CEDAR BLF From South					I 40 WESTBOUND RAMP From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 11:00 AM to 02:30 PM - Peak 1 of 1																					
Intersection	12:00 PM																				
Volume	440	1522	0	2	1964	0	0	579	0	579	229	1546	0	0	1775	0	0	0	0	0	4318
Percent	22.4	77.5	0.0	0.1		0.0	0.0	100.0	0.0		12.9	87.1	0.0	0.0		0.0	0.0	0.0	0.0		
12:15 Volume	113	414	0	1	528	0	0	130	0	130	57	393	0	0	450	0	0	0	0	0	1108
Peak Factor																					0.974
High Int.	12:15 PM					12:30 PM					12:45 PM					10:45:00 AM					
Volume	113	414	0	1	528	0	0	153	0	153	71	421	0	0	492						
Peak Factor					0.930					0.946					0.902						

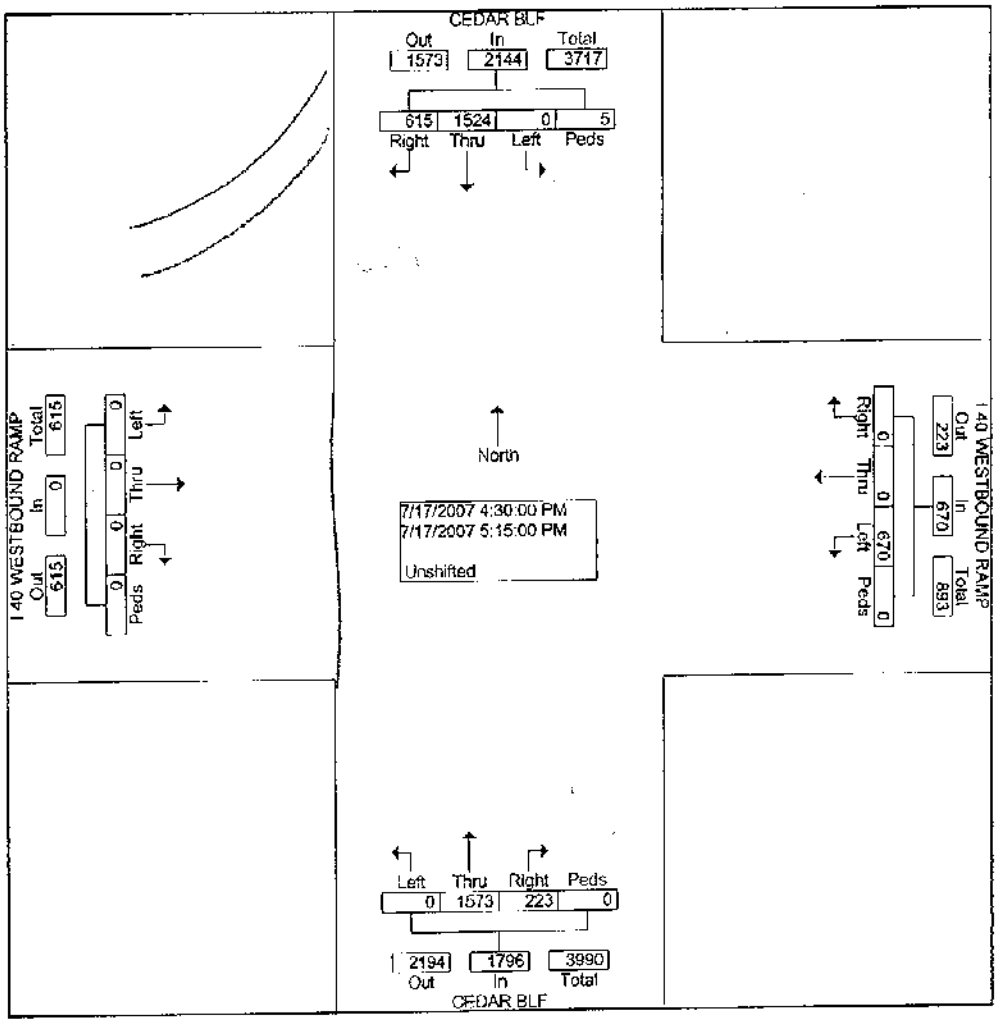


Cannon & Cannon Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville,TN. 37922

Intersection: Cedar Bluff @ I-40 WB Ramp
D[illegible] 7/17/07
[illegible]ted By: Debbie Sexton
Weather: Clear

File Name : 00771-0000-Cedar Bluff_I-40 Westbound
Site Code : 00000000
Start Date : 07/17/2007
Page No : 3

	CEDAR BLF From North					I 40 WESTBOUND RAMP From East					CEDAR BLF From South					I 40 WESTBOUND RAMP From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 02:45 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	615	1524	0	5	2144	0	0	670	0	670	223	1573	0	0	1796	0	0	0	0	0	4610
Percent	28.7	71.1	0.0	0.2		0.0	0.0	100.0	0.0		12.4	87.6	0.0	0.0		0.0	0.0	0.0	0.0		
05:00 Volume	177	374	0	0	551	0	0	178	0	178	67	415	0	0	482	0	0	0	0	0	1211
Peak Factor																					0.952
High Int.	04:30 PM					04:45 PM					05:15 PM										
Volume	150	409	0	5	564	0	0	184	0	184	40	447	0	0	487						
Peak Factor					0.950					0.910					0.922						



Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston Pike @ Essex
Date: 9-27-07
Counted By: Debbie Sexton
Weather: Clear

File Name : Kingston Pike_Essex_9_27_07
Site Code : 00000000
Start Date : 9/27/2007
Page No : 1

Groups Printed- Unshifted

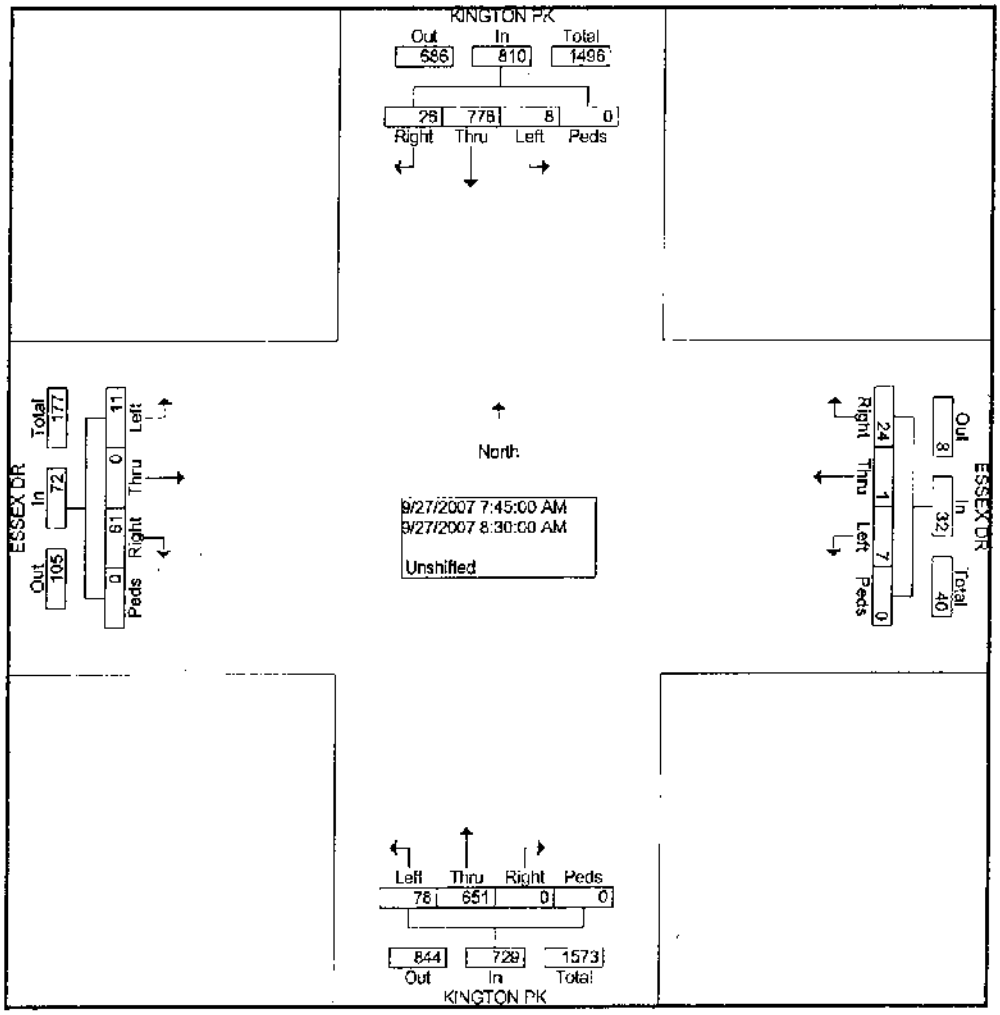
	KINGTON PK Southbound					ESSEX DR Westbound					KINGTON PK Northbound					ESSEX DR Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:45 AM	0	72	2	0	74	0	0	3	0	3	4	65	0	0	69	0	0	9	0	9	155
Total	0	72	2	0	74	0	0	3	0	3	4	65	0	0	69	0	0	9	0	9	155
07:00 AM	1	113	6	0	120	0	0	7	0	7	4	114	0	0	118	1	0	10	0	11	256
07:15 AM	1	143	3	0	147	1	0	6	0	7	10	148	0	0	158	2	0	9	0	11	323
07:30 AM	3	206	7	0	216	2	0	9	0	11	13	185	1	0	199	2	0	13	0	15	441
07:45 AM	3	208	5	0	216	1	0	10	0	11	16	181	0	0	197	3	0	10	0	13	437
Total	8	670	21	0	699	4	0	32	0	36	43	628	1	0	672	8	0	42	0	50	1457
08:00 AM	3	176	3	0	182	1	0	5	0	6	20	150	0	0	170	2	0	12	0	14	372
08:15 AM	1	189	10	0	200	3	0	3	0	6	18	140	0	0	158	2	0	22	0	24	388
08:30 AM	1	203	8	0	212	2	1	6	0	9	24	160	0	0	204	4	0	17	0	21	446
Grand Total	13	1310	44	0	1367	10	1	49	0	60	109	1163	1	0	1273	16	0	102	0	118	2818
Apprch %	1.0	95.8	3.2	0.0		16.7	1.7	81.7	0.0		8.6	91.4	0.1	0.0		13.6	0.0	86.4	0.0		
Total %	0.5	46.5	1.6	0.0	48.5	0.4	0.0	1.7	0.0	2.1	3.9	41.3	0.0	0.0	45.2	0.6	0.0	3.6	0.0	4.2	

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston Pike @ Essex
Date: 9-27-07
Counted By: Debbie Sexton
Weather: Clear

File Name : Kingston Pike_Essex_9_27_07
Site Code : 00000000
Start Date : 9/27/2007
Page No : 2

	KINGTON PK Southbound					ESSEX DR Westbound					KINGTON PK Northbound					ESSEX DR Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 06:45 AM to 08:30 AM - Peak 1 of 1																					
Intersection	07:45 AM																				
Volume	8	776	26	0	810	7	1	24	0	32	78	651	0	0	729	11	0	61	0	72	1643
Percent	1.0	95.8	3.2	0.0		21.9	3.1	75.0	0.0		10.7	89.3	0.0	0.0		15.3	0.0	84.7	0.0		
08:30 Volume	1	203	8	0	212	2	1	6	0	9	24	180	0	0	204	4	0	17	0	21	446
Peak Factor																					0.921
High Int.	07:45 AM					07:45 AM					08:30 AM					08:15 AM					
Volume	3	208	5	0	216	1	0	10	0	11	24	180	0	0	204	2	0	22	0	24	
Peak Factor					0.938					0.727					0.893					0.750	



Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston Pk. @ Windsor Sq.
Date: 9-26-07
Counted By: Pam Drummer
Weather: Clear

File Name : Kingston Pike_Windsor Square_9_26_07
Site Code : 00000000
Start Date : 9/26/2007
Page No : 1

Groups Printed- Unshifted

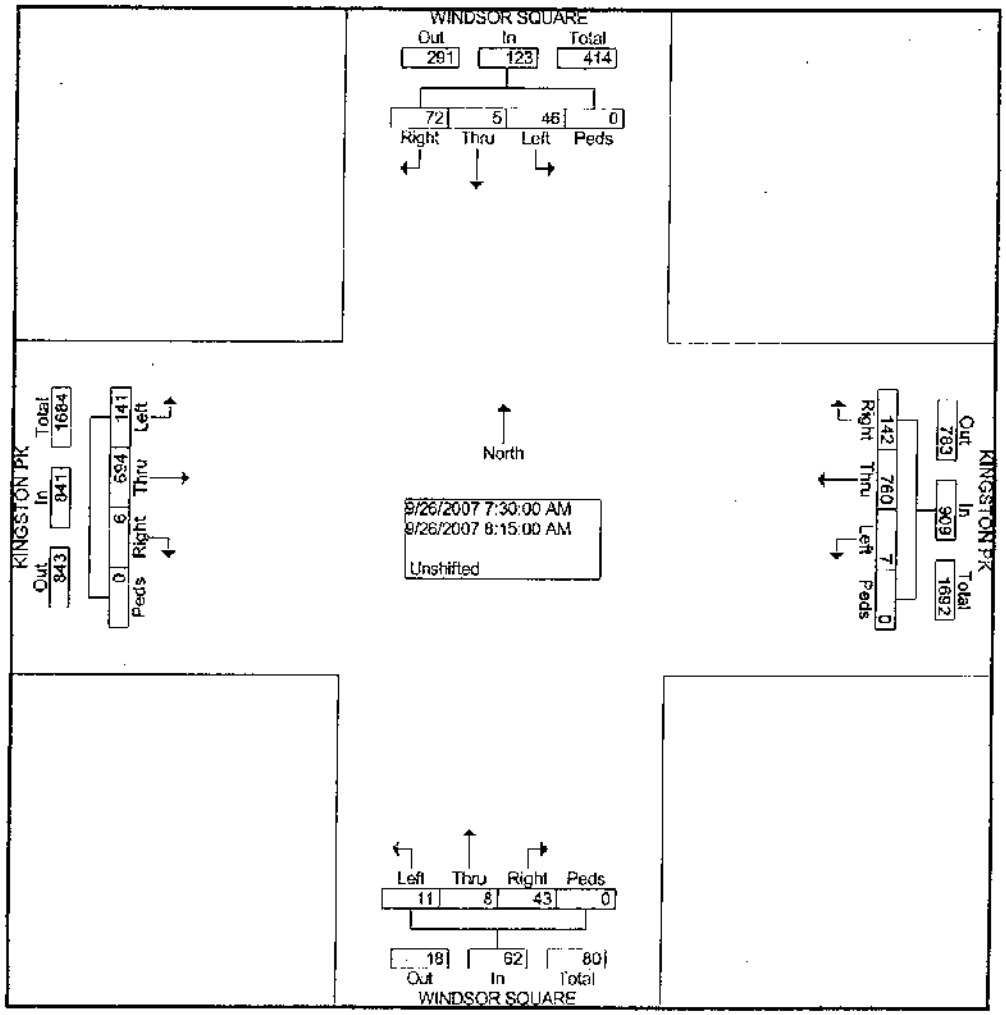
	WINDSOR SQUARE Southbound					KINGSTON PK Westbound					WINDSOR SQUARE Northbound					KINGSTON PK Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.09	1.09	1.09	1.09		1.09	1.09	1.09	1.09		1.09	1.09	1.09	1.09		1.09	1.09	1.09	1.09		
07:00 AM	5	2	12	0	19	3	82	10	0	95	10	1	4	0	15	15	93	2	0	110	239
07:15 AM	8	0	14	0	22	1	104	23	0	128	1	1	3	0	5	27	109	1	0	137	292
07:30 AM	11	0	24	0	35	2	197	34	0	233	2	1	13	0	16	32	179	0	0	211	495
07:45 AM	12	2	11	0	25	0	185	38	0	223	4	4	11	0	19	55	184	2	0	241	508
Total	36	4	61	0	101	6	568	105	0	679	17	7	31	0	55	129	565	5	0	699	1534
08:00 AM	13	1	15	0	29	3	165	45	0	213	4	1	7	0	12	34	169	2	0	205	459
08:15 AM	10	2	22	0	34	2	213	25	0	240	1	2	12	0	15	20	162	2	0	184	473
08:30 AM	15	1	13	0	29	3	166	35	0	204	7	2	12	0	21	27	183	2	0	212	466
08:45 AM	19	1	23	0	43	0	205	28	0	233	5	1	11	0	17	23	183	2	0	208	501
Total	57	5	73	0	135	8	749	133	0	890	17	6	42	0	65	104	697	8	0	809	1899
Grand Total	93	9	134	0	236	14	1317	238	0	1569	34	13	73	0	120	233	1262	13	0	1508	3433
Apprch %	39.4	3.8	56.8	0.0		0.9	83.9	15.2	0.0		28.3	10.8	60.8	0.0		15.5	83.7	0.9	0.0		
Total %	2.7	0.3	3.9	0.0	6.9	0.4	38.4	6.9	0.0	45.7	1.0	0.4	2.1	0.0	3.5	6.8	36.8	0.4	0.0	43.9	

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston Pk. @ Windsor Sq.
Date: 9-26-07
Counted By: Pam Drummer
Weather: Clear

File Name : Kingston Pike_Windsor Square_9_26_07
Site Code : 00000000
Start Date : 9/26/2007
Page No : 2

Start Time	WINDSOR SQUARE Southbound Left	Thru	Right	Peds	App. Total	KINGSTON PK Westbound Left	Thru	Right	Peds	App. Total	WINDSOR SQUARE Northbound Left	Thru	Right	Peds	App. Total	KINGSTON PK Eastbound Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	46	5	72	0	123	7	760	142	0	909	11	8	43	0	62	141	694	6	0	841	1935
Percent	37.4	4.1	58.5	0.0		0.8	83.6	15.6	0.0		17.7	12.9	69.4	0.0		16.8	82.5	0.7	0.0		
07:45 Volume	12	2	11	0	25	0	185	38	0	223	4	4	11	0	19	55	184	2	0	241	508
Peak Factor																					0.952
High Int.	07:30 AM					08:15 AM					07:45 AM					07:45 AM					
Volume	11	0	24	0	35	2	213	25	0	240	4	4	11	0	19	55	184	2	0	241	
Peak Factor					0.879					0.947					0.816					0.872	



Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston @ Market Place
Date: 9-4-07
Counted By: KHA
Weather: Clear

File Name : Kingston Pike Market Place-KHA
Site Code : 00000005
Start Date : 9/4/2007
Page No : 1

Groups Printed- 1 - Unshifted

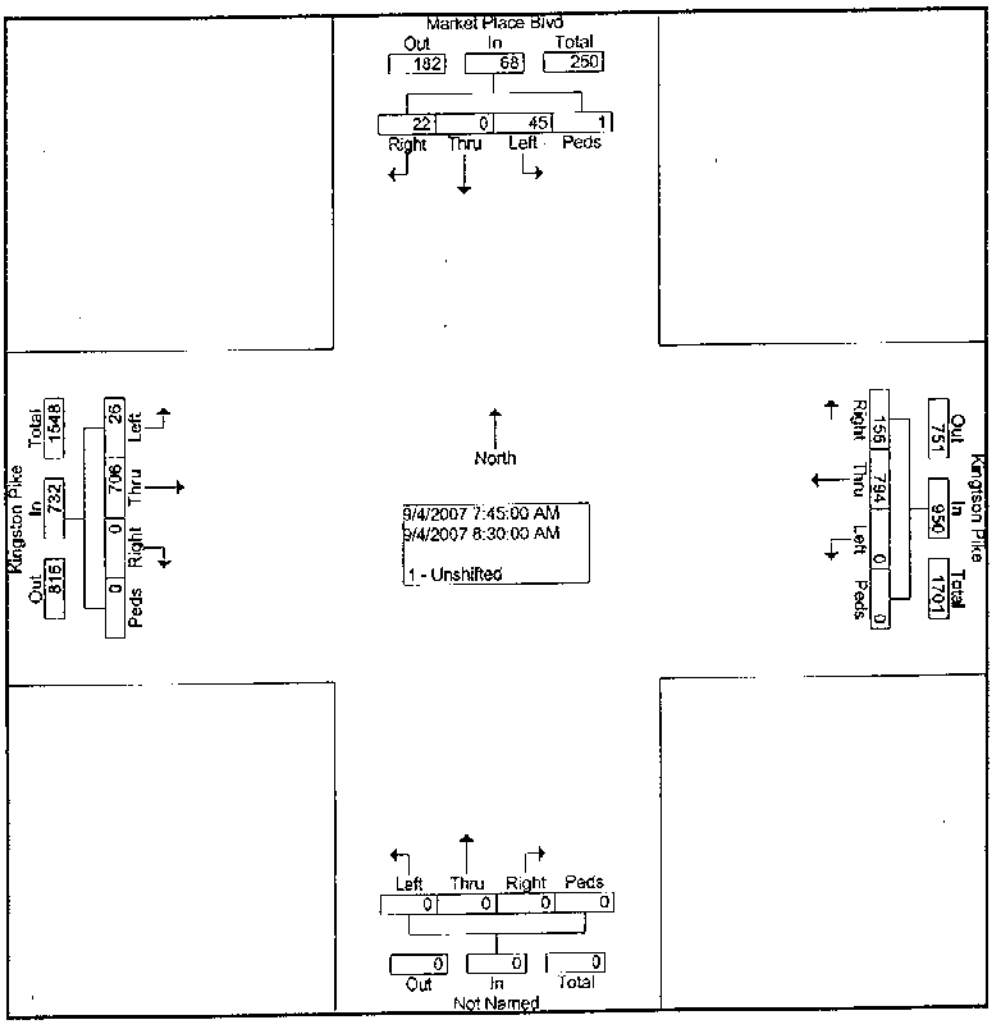
	Market Place Blvd Southbound					Kingtson Pike Westbound					Northbound					Kingston Pike Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	1	0	3	0	4	0	75	11	0	86	0	0	0	0	0	1	86	0	0	87	177
07:15 AM	6	0	6	0	12	0	137	15	0	152	0	0	0	0	0	4	98	0	0	102	266
07:30 AM	5	0	2	0	7	0	152	18	0	170	0	0	0	0	0	4	170	0	0	174	351
07:45 AM	10	0	5	0	15	0	195	46	0	241	0	0	0	0	0	7	193	0	0	200	456
Total	22	0	16	0	38	0	559	90	0	649	0	0	0	0	0	16	547	0	0	563	1250
08:00 AM	8	0	7	0	15	0	220	37	0	257	0	0	0	0	0	9	181	0	0	190	462
08:15 AM	12	0	6	1	19	0	208	35	0	243	0	0	0	0	0	7	168	0	0	175	437
08:30 AM	15	0	4	0	19	0	171	38	0	209	0	0	0	0	0	3	164	0	0	167	395
08:45 AM	16	0	6	0	22	0	195	48	0	243	0	0	0	0	0	8	179	0	0	187	452
Total	51	0	23	1	75	0	794	158	0	952	0	0	0	0	0	27	692	0	0	719	1746
Grand Total	73	0	39	1	113	0	1353	248	0	1601	0	0	0	0	0	43	1239	0	0	1282	2996
Apprch %	64.6	0.0	34.5	0.9		0.0	84.5	15.5	0.0		0.0	0.0	0.0	0.0		3.4	96.6	0.0	0.0		
Total %	2.4	0.0	1.3	0.0	3.8	0.0	45.2	8.3	0.0	53.4	0.0	0.0	0.0	0.0	0.0	1.4	41.4	0.0	0.0	42.8	

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston @ Market Place
Date: 9-4-07
Counted By: KHA
Weather: Clear

File Name : Kingston Pike Market Place-KHA
Site Code : 00000005
Start Date : 9/4/2007
Page No : 2

	Market Place Blvd Southbound					Kingtson Pike Westbound					Northbound					Kingston Pike Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:45 AM																				
Volume	45	0	22	1	68	0	794	156	0	950	0	0	0	0	0	26	706	0	0	732	1750
Percent	66.2	0.0	32.4	1.5		0.0	83.6	16.4	0.0		0.0	0.0	0.0	0.0		3.6	96.4	0.0	0.0		
08:00 Volume	8	0	7	0	15	0	220	37	0	257	0	0	0	0	0	9	181	0	0	190	462
Peak Factor																					0.947
High Int.	08:15 AM					08:00 AM					6:45:00 AM					07:45 AM					
Volume	12	0	6	1	19	0	220	37	0	257	0	0	0	0	0	7	193	0	0	200	
Peak Factor					0.895					0.924										0.915	



Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston @ Cedar Bluff
Date: 8-30-07
Counted By: KHA
Weather: Clear

File Name : kingston pike cedar bluff-kha
Site Code : 00000004
Start Date : 8/30/2007
Page No : 1

Groups Printed- 1 - Unshifted

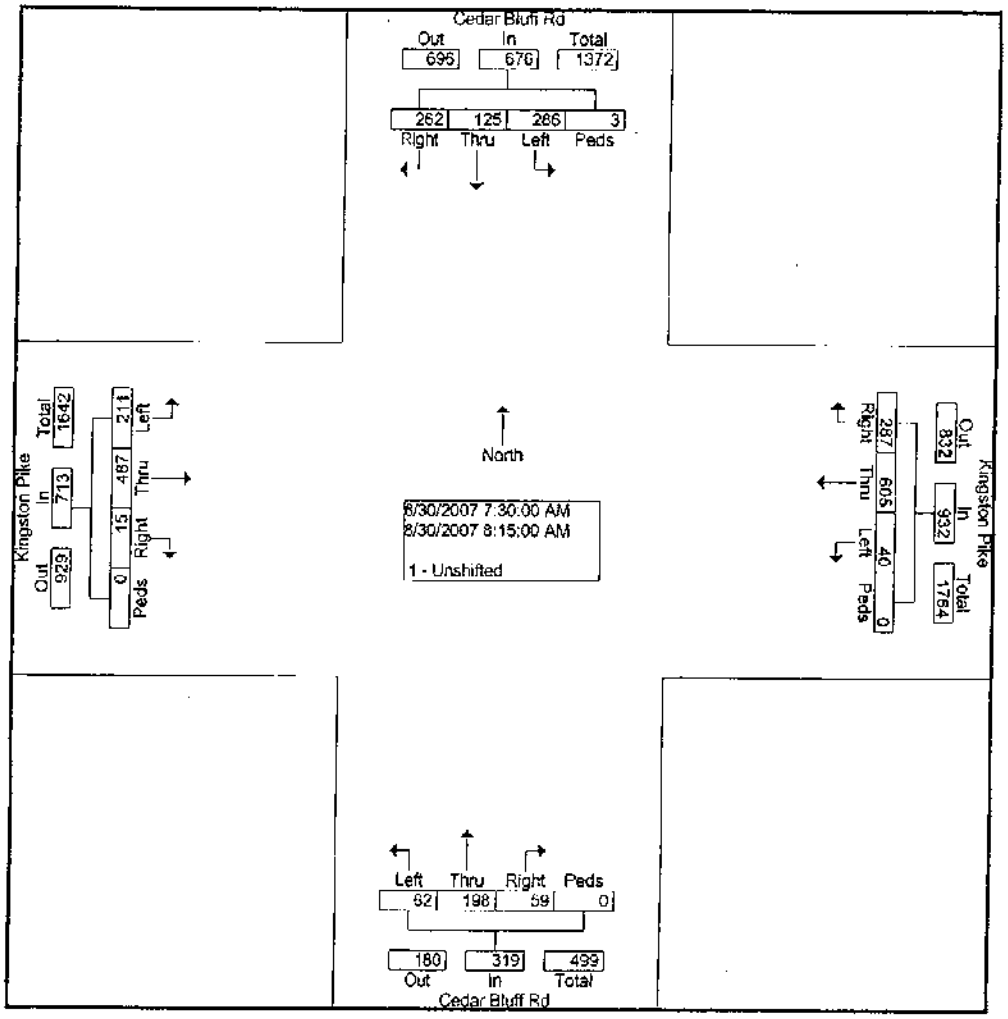
	Cedar Bluff Rd Southbound					Kingston Pike Westbound					Cedar Bluff Rd Northbound					Kingston Pike Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	35	21	17	0	73	4	53	27	0	84	7	28	6	0	41	21	64	1	0	86	284
07:15 AM	57	17	36	0	110	3	112	45	0	160	16	58	5	0	79	34	66	2	0	102	451
07:30 AM	47	32	76	1	156	6	141	82	0	229	7	59	13	0	79	67	100	3	0	170	634
07:45 AM	76	35	53	1	165	14	169	84	0	267	20	59	14	0	93	59	130	2	0	191	716
Total	215	105	182	2	504	27	475	238	0	740	50	204	38	0	292	181	360	8	0	549	2085
08:00 AM	79	28	77	0	184	10	128	76	0	214	19	38	18	0	75	44	131	7	0	182	655
08:15 AM	84	30	56	1	171	10	167	45	0	222	16	42	14	0	72	41	126	3	0	170	635
08:30 AM	68	26	56	0	150	20	131	42	0	193	20	32	10	0	62	44	121	3	0	168	573
08:45 AM	69	43	50	0	162	27	170	40	0	237	12	42	13	0	67	51	138	9	0	198	664
Total	300	127	239	1	667	67	596	203	0	866	67	154	55	0	276	180	516	22	0	718	2527
Grand Total	515	232	421	3	1171	94	1071	441	0	1606	117	358	93	0	568	361	876	30	0	1267	4612
Apprch %	44.0	19.8	36.0	0.3		5.9	66.7	27.5	0.0		20.6	63.0	16.4	0.0		28.5	69.1	2.4	0.0		
Total %	11.2	5.0	9.1	0.1	25.4	2.0	23.2	9.6	0.0	34.8	2.5	7.8	2.0	0.0	12.3	7.8	19.0	0.7	0.0	27.5	

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston @ Cedar Bluff
Date: 8-30-07
Counted By: KHA
Weather: Clear

File Name : kingston pike cedar bluff-kha
Site Code : 00000004
Start Date : 8/30/2007
Page No : 2

	Cedar Bluff Rd Southbound					Kingston Pike Westbound					Cedar Bluff Rd Northbound					Kingston Pike Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	286	125	262	3	676	40	605	287	0	932	62	198	59	0	319	211	487	15	0	713	2640
Percent	42.3	18.5	38.8	0.4		4.3	64.9	30.8	0.0		19.4	62.1	18.5	0.0		29.6	68.3	2.1	0.0		
07:45 Volume	76	35	53	1	165	14	169	84	0	267	20	59	14	0	93	59	130	2	0	191	716
Peak Factor																					0.922
High Int.	08:00 AM					07:45 AM					07:45 AM					07:45 AM					
Volume	79	28	77	0	184	14	169	84	0	267	20	59	14	0	93	59	130	2	0	191	
Peak Factor					0.918					0.873					0.858					0.933	



Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston @ Peters
Date: 8-29-07
Counted By: KHA
Weather: Clear

File Name : Kingston Pike Peters-KHA
Site Code : 00000003
Start Date : 8/29/2007
Page No : 1

Groups Printed- 1 - Unshifted

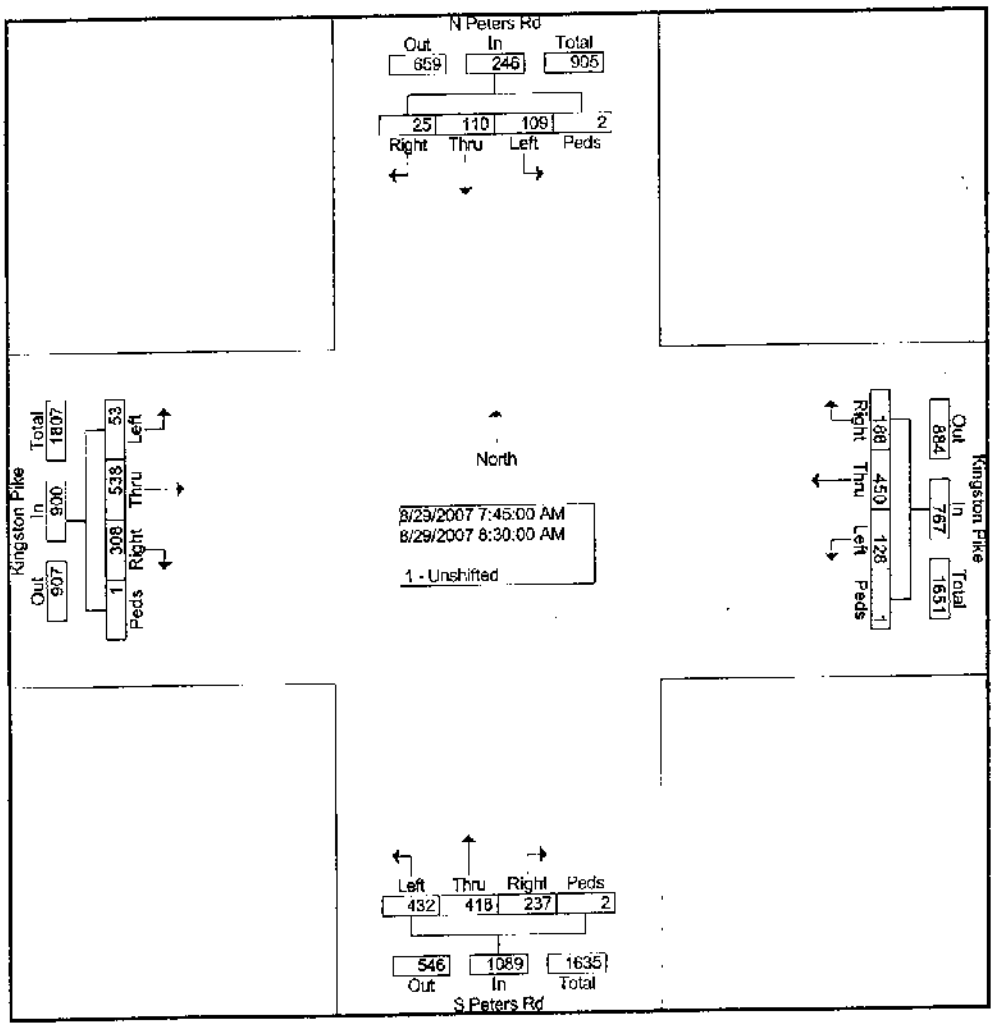
	N Peters Rd Southbound					Kingston Pike Westbound					S Peters Rd Northbound					Kingston Pike Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	8	11	5	0	24	21	39	17	0	77	40	52	30	0	122	4	54	45	0	103	326
07:15 AM	11	15	5	0	31	29	62	18	0	109	95	90	41	0	226	8	72	58	0	138	504
07:30 AM	14	14	4	0	32	17	94	42	0	153	119	133	54	0	306	6	109	50	0	165	656
07:45 AM	21	29	8	1	59	35	108	58	0	201	134	129	79	1	343	13	134	59	0	206	809
Total	54	69	22	1	146	102	303	135	0	540	388	404	204	1	997	31	369	212	0	612	2295
08:00 AM	35	28	3	0	66	38	116	41	0	195	118	126	82	0	326	12	128	83	0	223	810
08:15 AM	21	28	8	0	57	30	113	44	1	188	96	90	36	0	222	18	134	78	1	231	698
08:30 AM	32	25	6	1	64	25	113	45	0	183	84	73	40	1	198	10	142	88	0	240	685
08:45 AM	43	30	12	0	85	30	116	46	0	192	91	66	23	0	179	11	124	70	0	205	661
Total	131	111	29	1	272	123	458	176	1	758	389	354	181	1	925	51	528	319	1	899	2854
Grand Total	185	180	51	2	418	225	761	311	1	1298	777	758	385	2	1922	82	897	531	1	1511	5149
Approch %	44.3	43.1	12.2	0.5		17.3	58.6	24.0	0.1		40.4	39.4	20.0	0.1		5.4	59.4	35.1	0.1		
Total %	3.6	3.5	1.0	0.0	8.1	4.4	14.8	6.0	0.0	25.2	15.1	14.7	7.5	0.0	37.3	1.6	17.4	10.3	0.0	29.3	

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Kingston @ Peters
Date: 8-29-07
Counted By: KHA
Weather: Clear

File Name : Kingston Pike Peters-KHA
Site Code : 00000003
Start Date : 8/29/2007
Page No : 2

	N Peters Rd Southbound					Kingston Pike Westbound					S Peters Rd Northbound					Kingston Pike Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:45 AM																				
Volume	109	110	25	2	246	128	450	188	1	767	432	418	237	2	1089	53	538	308	1	900	3002
Percent	44.3	44.7	10.2	0.8		16.7	58.7	24.5	0.1		39.7	38.4	21.8	0.2		5.9	59.8	34.2	0.1		
08:00 Volume	35	28	3	0	66	38	116	41	0	195	118	126	82	0	326	12	128	83	0	223	810
Peak Factor																					0.927
High Int.	08:00 AM					07:45 AM					07:45 AM					08:30 AM					
Volume	35	28	3	0	66	35	108	58	0	201	134	129	79	1	343	10	142	88	0	240	
Peak Factor					0.932					0.954					0.794					0.938	



Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: N Peters @ Market Place
Date: 9-27-07
Counted By: Melinda Dickson
Weather: Clear

File Name : Peters Rd_Market Place_9_27_07
Site Code : 00000000
Start Date : 9/27/2007
Page No : 1

Groups Printed- Unshifted

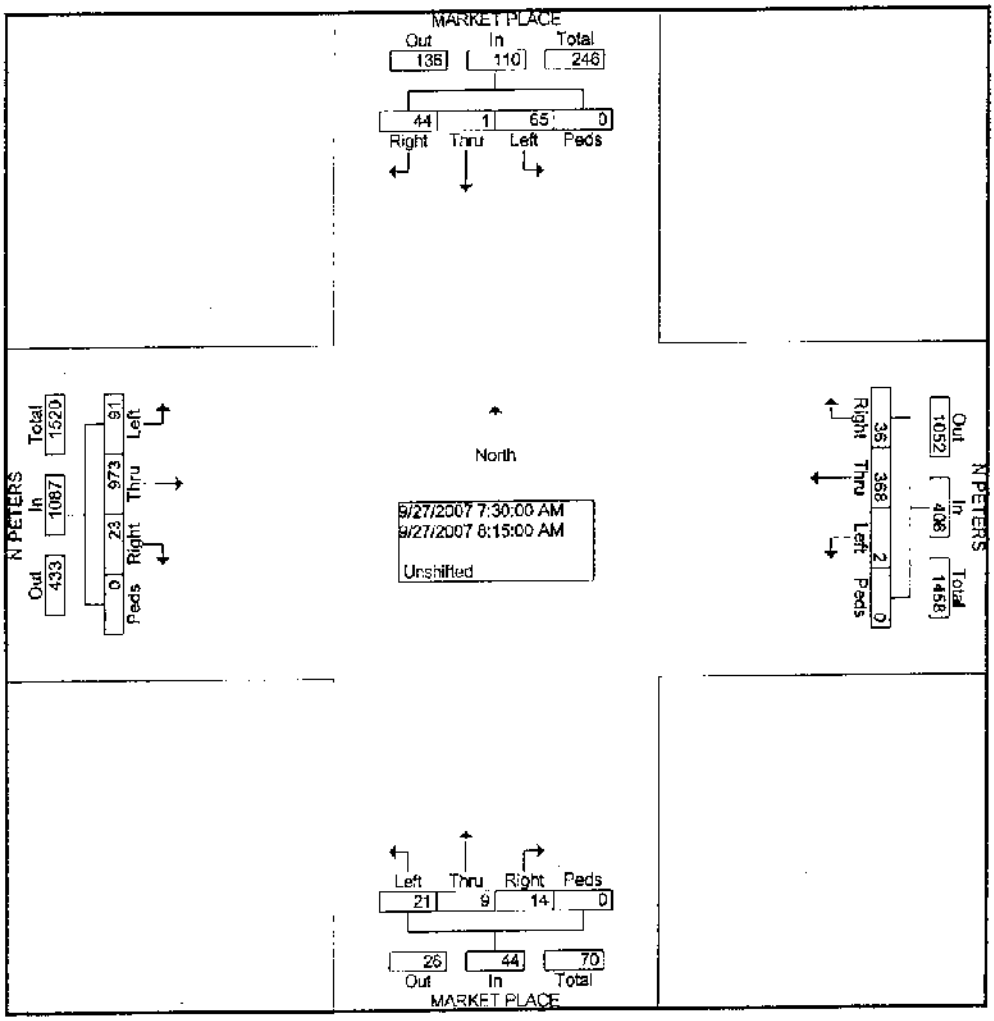
	MARKET PLACE Southbound					N PETERS Westbound					MARKET PLACE Northbound					N PETERS Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	3	0	2	0	5	3	66	2	0	71	5	1	0	0	6	9	116	0	0	125	207
07:15 AM	4	0	5	0	9	2	69	5	0	76	7	1	2	0	10	13	196	1	0	210	305
07:30 AM	13	0	6	0	19	0	85	8	0	93	9	4	1	0	14	14	203	1	0	218	344
07:45 AM	22	1	10	0	33	1	106	9	0	116	2	1	4	0	7	23	292	15	0	330	486
Total	42	1	23	0	66	6	326	24	0	356	23	7	7	0	37	59	807	17	0	883	1342
08:00 AM	12	0	12	0	24	0	93	7	0	100	7	0	7	0	14	33	237	3	0	273	411
08:15 AM	18	0	16	0	34	1	84	12	0	97	3	4	2	0	9	21	241	4	0	266	406
08:30 AM	7	0	14	0	21	2	84	12	0	98	4	2	4	0	10	22	184	7	0	213	342
08:45 AM	13	0	11	0	24	3	99	12	0	114	3	2	5	0	10	34	202	4	0	240	388
Total	50	0	53	0	103	6	360	43	0	409	17	8	18	0	43	110	864	18	0	992	1547
Grand Total	92	1	76	0	169	12	686	67	0	765	40	15	25	0	80	169	1671	35	0	1875	2889
Apprch %	54.4	0.6	45.0	0.0		1.6	89.7	8.8	0.0		50.0	18.8	31.3	0.0		9.0	89.1	1.9	0.0		
Total %	3.2	0.0	2.6	0.0	5.8	0.4	23.7	2.3	0.0	26.5	1.4	0.5	0.9	0.0	2.8	5.8	57.8	1.2	0.0	64.9	

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: N Peters @ Market Place
Date: 9-27-07
Counted By: Melinda Dickson
Weather: Clear

File Name : Peters Rd_Market Place_9_27_07
Site Code : 00000000
Start Date : 9/27/2007

	MARKET PLACE Southbound					N PETERS Westbound					MARKET PLACE Northbound					N PETERS Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	65	1	44	0	110	2	368	36	0	406	21	9	14	0	44	91	973	23	0	1087	1647
Percent	59.1	0.9	40.0	0.0		0.5	90.6	8.9	0.0		47.7	20.5	31.8	0.0		8.4	89.5	2.1	0.0		
07:45 Volume	22	1	10	0	33	1	106	9	0	116	2	1	4	0	7	23	292	15	0	330	486
Peak Factor																					0.847
High Int.	08:15 AM					07:45 AM					07:30 AM					07:45 AM					
Volume	18	0	16	0	34	1	106	9	0	116	9	4	1	0	14	23	292	15	0	330	
Peak Factor					0.809					0.875					0.786					0.823	



Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Peters @ Cedar Bluff
Date: 9-21-07
Counted By: KHA
Weather: Clear

File Name : Cedar Bluff Peters-am-pm-KHA
Site Code : 00000017
Start Date : 9/21/2007
Page No : 1

Groups Printed- 1 - 1 - Unshifted

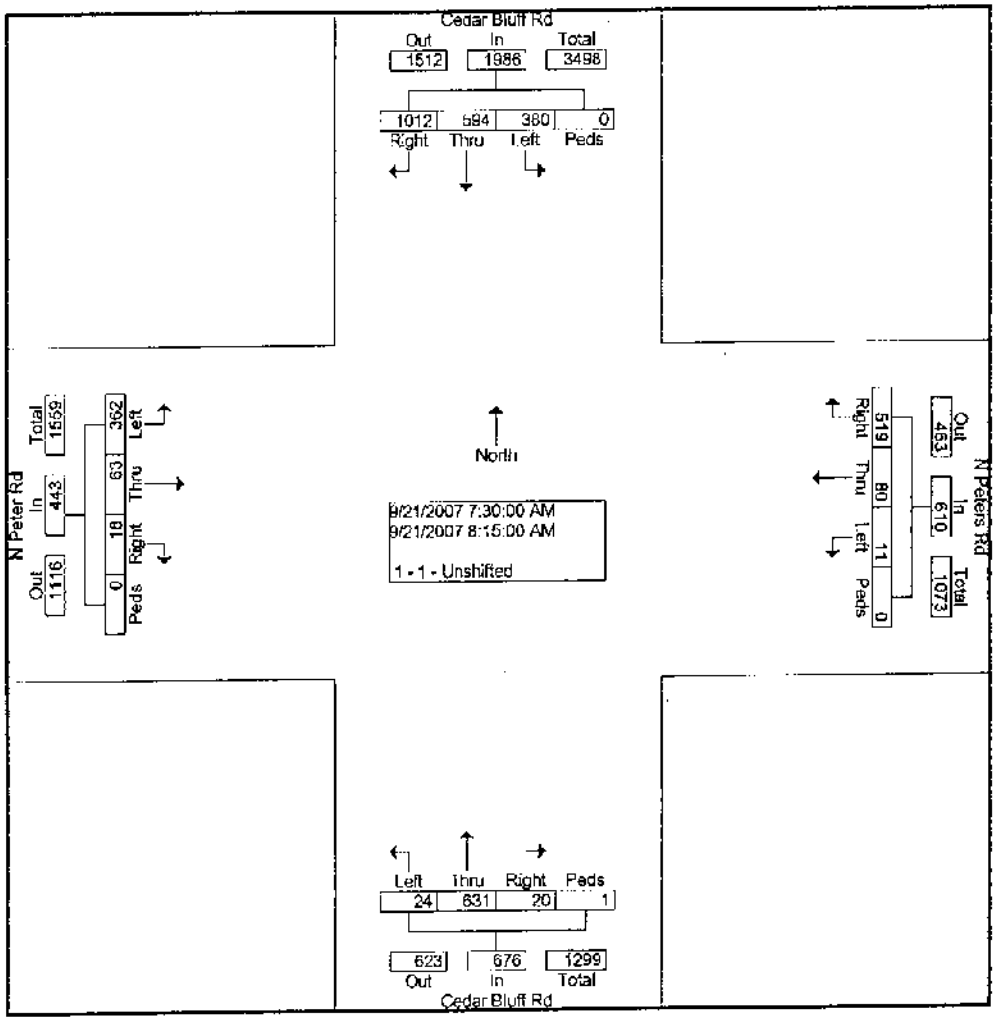
	Cedar Bluff Rd Southbound					N Peters Rd Westbound					Cedar Bluff Rd Northbound					N Peter Rd Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	44	73	107	0	224	6	8	66	0	80	1	65	2	0	68	65	5	2	0	72	444
07:15 AM	56	100	203	0	359	0	8	79	0	87	6	134	4	0	144	54	7	5	0	66	656
07:30 AM	70	116	212	0	398	0	18	116	0	134	2	181	6	1	190	86	13	5	0	104	826
07:45 AM	110	150	334	0	594	5	23	154	0	182	10	183	2	0	195	92	9	3	0	104	1075
Total	280	439	856	0	1575	11	57	415	0	483	19	563	14	1	597	297	34	15	0	346	3001
08:00 AM	104	169	239	0	512	3	16	111	0	130	7	155	6	0	168	92	22	4	0	118	928
08:15 AM	96	159	227	0	482	3	23	138	0	164	5	112	6	0	123	92	19	6	0	117	886
08:30 AM	85	139	223	0	457	3	20	100	0	123	5	116	7	0	128	88	21	4	0	113	821
08:45 AM	118	157	217	0	492	4	23	124	0	151	1	100	4	0	105	87	14	8	0	109	857
Total	413	624	906	0	1943	13	82	473	0	568	18	483	23	0	524	359	76	22	0	457	3492
Grand Total	693	1063	1762	0	3518	24	139	888	0	1051	37	1046	37	1	1121	656	110	37	0	803	6493
Apprch %	19.7	30.2	50.1	0.0		2.3	13.2	84.5	0.0		3.3	93.3	3.3	0.1		81.7	13.7	4.6	0.0		
Total %	10.7	16.4	27.1	0.0	54.2	0.4	2.1	13.7	0.0	16.2	0.6	16.1	0.6	0.0	17.3	10.1	1.7	0.6	0.0	12.4	

Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Peters @ Cedar Bluff
Date: 9-21-07
Counted By: KHA
Weather: Clear

File Name : Cedar Bluff Peters-am-pm-KHA
Site Code : 00000017
Start Date : 9/21/2007
Page No : 2

	Cedar Bluff Rd Southbound					N Peters Rd Westbound					Cedar Bluff Rd Northbound					N Peter Rd Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	380	594	1012	0	1986	11	80	519	0	610	24	631	20	1	676	362	63	18	0	443	3715
Percent	19.1	29.9	51.0	0.0		1.8	13.1	85.1	0.0		3.6	93.3	3.0	0.1		81.7	14.2	4.1	0.0		
07:45 Volume	110	150	334	0	594	5	23	154	0	182	10	183	2	0	195	92	9	3	0	104	1075
Peak Factor																					0.864
High Int.	07:45 AM					07:45 AM					07:45 AM					08:00 AM					
Volume	110	150	334	0	594	5	23	154	0	182	10	183	2	0	195	92	22	4	0	118	
Peak Factor					0.836					0.838					0.867					0.939	



Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Cedar Bluff @ I-40 EB Offr
Date: 9-25-07
Counted By: Pam Drummer
Weather: Clear

File Name : cedar bluff_I-40 EB offramp_9_25_07
Site Code : 00000000
Start Date : 9/25/2007
Page No : 1

Groups Printed- Unshifted

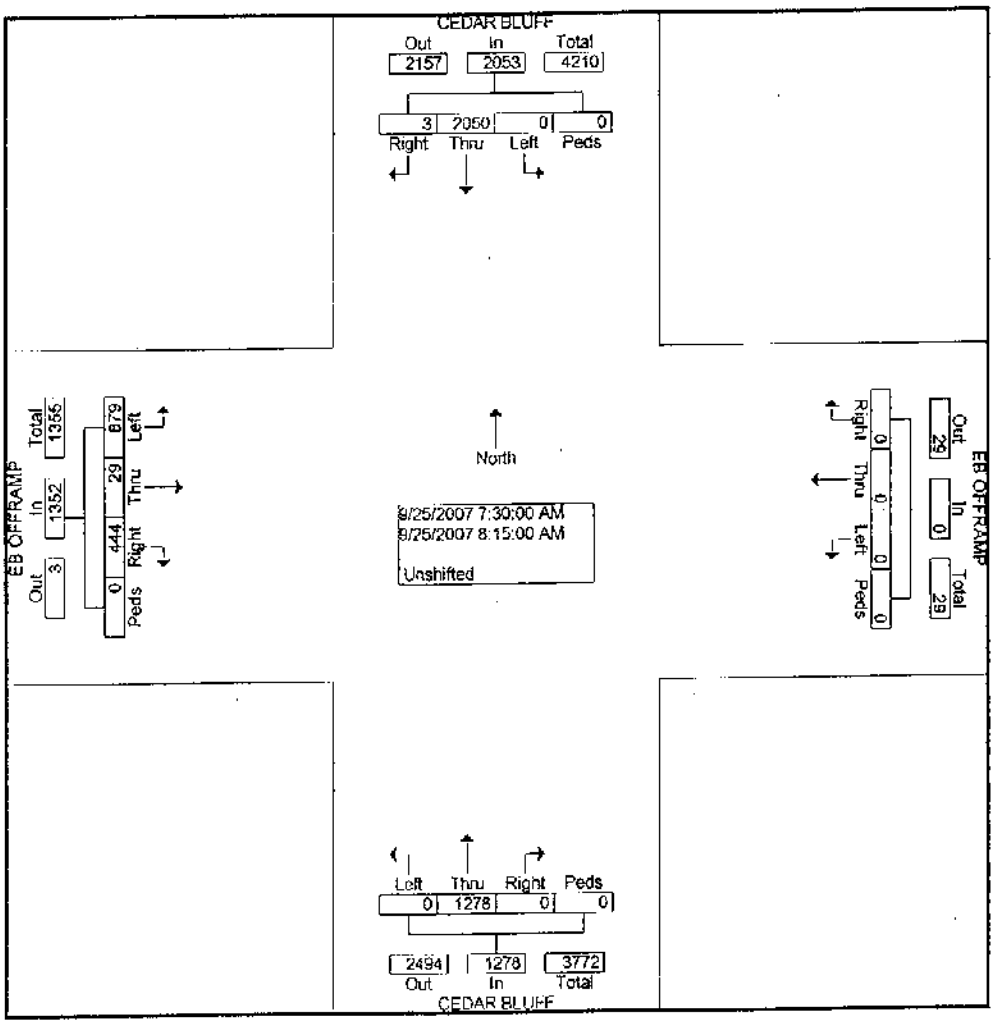
	CEDAR BLUFF Southbound					EB OFFRAMP Westbound					CEDAR BLUFF Northbound					EB OFFRAMP Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	231	0	0	231	0	0	0	0	0	0	153	0	0	153	99	0	37	0	136	520
07:15 AM	0	331	0	0	331	0	0	0	0	0	0	220	0	0	220	211	0	69	0	280	831
07:30 AM	0	362	0	0	362	0	0	0	0	0	0	374	0	0	374	248	29	98	0	375	1111
07:45 AM	0	625	0	0	625	0	0	0	0	0	0	379	0	0	379	216	0	144	0	360	1364
Total	0	1549	0	0	1549	0	0	0	0	0	0	1126	0	0	1126	774	29	348	0	1151	3826
08:00 AM	0	665	0	0	665	0	0	0	0	0	0	298	0	0	298	195	0	102	0	297	1260
08:15 AM	0	398	3	0	401	0	0	0	0	0	0	227	0	0	227	220	0	100	0	320	948
08:30 AM	0	466	0	0	466	0	0	0	0	0	0	253	0	0	253	195	0	88	0	283	1002
08:45 AM	0	501	0	0	501	0	0	0	0	0	0	219	0	0	219	132	0	99	0	231	951
Total	0	2030	3	0	2033	0	0	0	0	0	0	997	0	0	997	742	0	389	0	1131	4161
Grand Total	0	3579	3	0	3582	0	0	0	0	0	0	2123	0	0	2123	1516	29	737	0	2282	7987
Apprch %	0.0	99.9	0.1	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		66.4	1.3	32.3	0.0		
Total %	0.0	44.8	0.0	0.0	44.8	0.0	0.0	0.0	0.0	0.0	0.0	26.6	0.0	0.0	26.6	19.0	0.4	9.2	0.0	28.6	

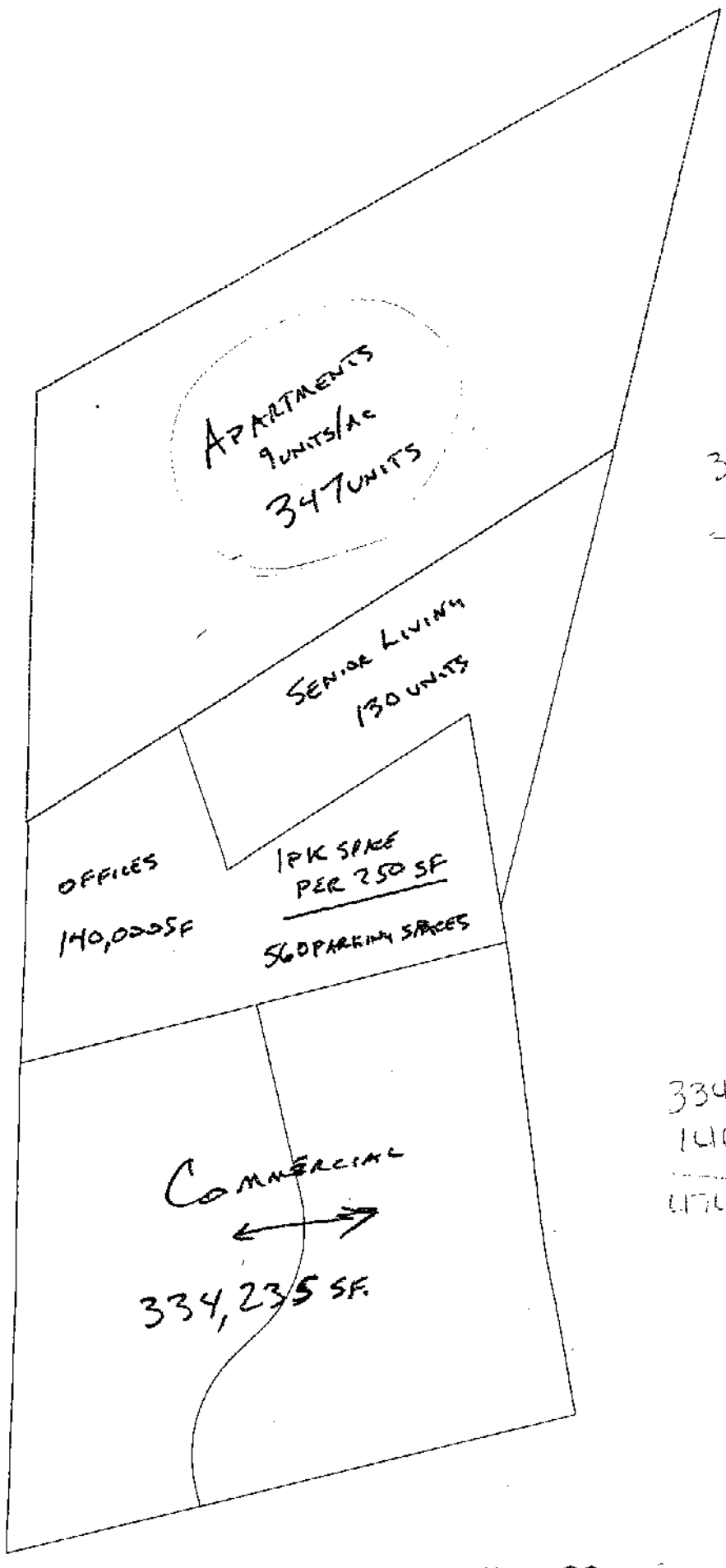
Cannon & Cannon, Inc.
Consulting Engineers - Field Surveyors
9724 Kingston Pike, Suite 1100
Knoxville, TN 37922

Intersection: Cedar Bluff @ I-40 EB Offr
Date: 9-25-07
Counted By: Pam Drummer
Weather: Clear

File Name : cedar bluff_I-40 EB offramp_9_25_07
Site Code : 00000000
Start Date : 9/25/2007

	CEDAR BLUFF Southbound					EB OFFRAMP Westbound					CEDAR BLUFF Northbound					EB OFFRAMP Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	0	2050	3	0	2053	0	0	0	0	0	0	1278	0	0	1278	879	29	444	0	1352	4683
Percent	0.0	99.9	0.1	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		65.0	2.1	32.8	0.0		
07:45 Volume	0	625	0	0	625	0	0	0	0	0	0	379	0	0	379	216	0	144	0	360	1364
Peak Factor																					0.858
High Int.	08:00 AM					6:45:00 AM					07:45 AM					07:30 AM					
Volume	0	665	0	0	665	0	0	0	0	0	0	379	0	0	379	248	29	98	0	375	
Peak Factor					0.772										0.843					0.901	





347
130
477

334,235 sf
140,000 sf
474,235

CILMORE HILL 00 771-0000

TRIP GENERATION SUMMARY

Sherrill Property Development
Project No.: 00771-0000
9/13/2007

	Knoxville Apartments	Senior Adult Housing - Attached	General Office	Shopping Center	PROJECT TOTAL
ITE Code	Local	252	710	820	
Size					
Units	347	130			
Sq. Ft.			140,000	334,235	
Trip Rate					
Weekday, trips/day	2920	3.48	1729	14878	
Directional Dist: Entering	50%	50%	50%	50%	
Directional Dist: Exiting	50%	50%	50%	50%	
Total Weekday Trips	**2,920.0**	**452.4**	**1,729.0**	**14,878.0**	19,979.4
Weekday Trips Entering	1,460.0	226.2	864.5	7,439.0	9,989.7
Weekday Trips Exiting	1,460.0	226.2	864.5	7,439.0	9,989.7
Adjacent Street					
AM Peak, trips/hr	Equation	0.08	Equation	Equation	
Directional Dist: Entering	22%	45%	88%	61%	
Directional Dist: Exiting	78%	55%	12%	39%	
Total AM Trips	**169.0**	**10.4**	**246.0**	**323.0**	748.4
AM Trips Entering	37.2	4.7	216.5	197.0	455.4
AM Trips Exiting	131.8	5.7	29.5	126.0	293.0
MD Peak, trips/hr	Equation	0.08	Equation	Equation	
Directional Dist: Entering	22%	45%	88%	48%	
Directional Dist: Exiting	78%	55%	12%	52%	
Total AM Trips	**169.0**	**10.4**	**246.0**	**1,388.0**	1,813.4
AM Trips Entering	37.2	4.7	216.5	666.2	924.6
AM Trips Exiting	131.8	5.7	29.5	721.8	888.8
PM Peak, trips/hr	Equation	0.11	Equation	Equation	
Directional Dist: Entering	55%	61%	17%	48%	
Directional Dist: Exiting	45%	39%	83%	52%	
Total PM Trips	**242.0**	**14.3**	**236.0**	**1,388.0**	1,880.3
PM Trips Entering	133.1	8.7	40.1	666.2	848.2
PM Trips Exiting	108.9	5.6	195.9	721.8	1,032.1
Peak of Generator			Same as Adj. Str.		
AM Peak, trips/hr		0.06			
Directional Dist: Entering		50%			
Directional Dist: Exiting		50%			
Total AM Trips	0.0	7.8	0.0	0.0	7.8
AM Trips Entering	0.0	3.9	0.0	0.0	3.9
AM Trips Exiting	0.0	3.9	0.0	0.0	3.9
PM Peak, trips/hr		0.11			
Directional Dist: Entering		53%			
Directional Dist: Exiting		47%			
Total PM Trips	0.0	14.3	0.0	0.0	14.3
PM Trips Entering	0.0	7.6	0.0	0.0	7.6
PM Trips Exiting	0.0	6.7	0.0	0.0	6.7

Knoxville Apts. 347 units

weekday:	$T = 15.193(x)^{.899} = 15.193(347)^{.899} = 2920$	$R^2 = .88$
AM Peak:	$T = 0.758(x)^{.924} = 0.758(347)^{.924} = 169$	$R^2 = .75$
PM Peak:	$T = 0.669(x) + 10.069 = 0.669(347) + 10.069 = 242$	$R^2 = .79$

710 Gen office 140,000 sf.

weekday:	$Ln(T) = 0.77\ Ln(x) + 3.65 = 0.77\ Ln(140) + 3.65 = 1729$	$R^2 = .80$
AM Peak:	$Ln(T) = 0.80\ Ln(x) + 1.55 = 0.80\ Ln(140) + 1.55 = 246$	$R^2 = .83$
PM Peak:	$T = 1.12(x) + 78.81 = 1.12(140) + 78.81 = 236$	$R^2 = .82$

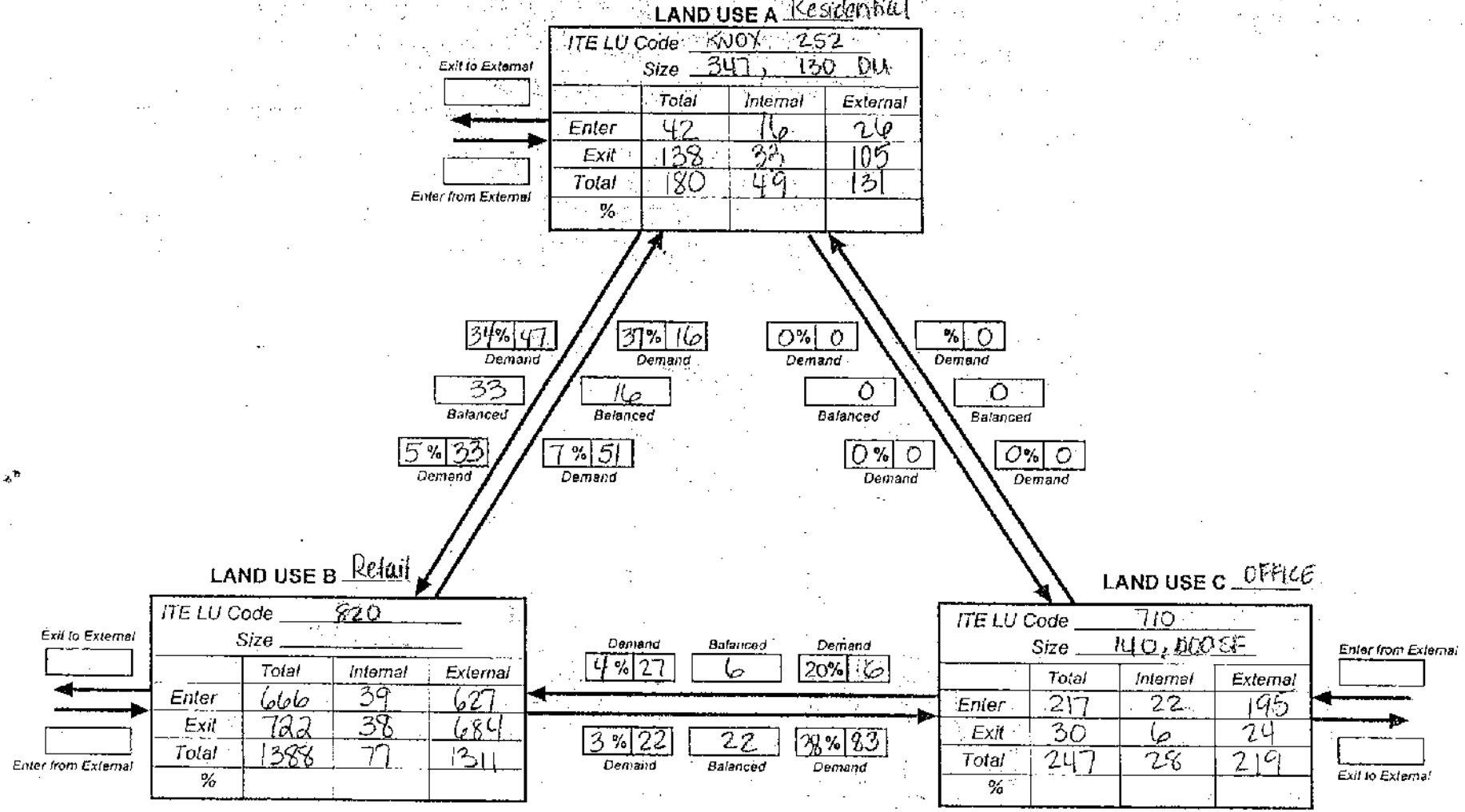
820 Shopping Center 334,235 sf.

weekday:	$Ln(T) = 0.65\ Ln(x) + 5.83 = 0.65\ Ln(334.2) + 5.83 = 14,878$	$R^2 = .78$
AM Peak:	$Ln(T) = 0.60\ Ln(x) + 2.29 = 0.60\ Ln(334.2) + 2.29 = 323$	$R^2 = .52$
PM Peak:	$Ln(T) = 0.66\ Ln(x) + 3.40 = 0.66\ Ln(334.2) + 3.40 = 1388$	$R^2 = .81$

Analyst BP
Date 10/24/07

MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt Sherrill Hill
Time Period MD Peak



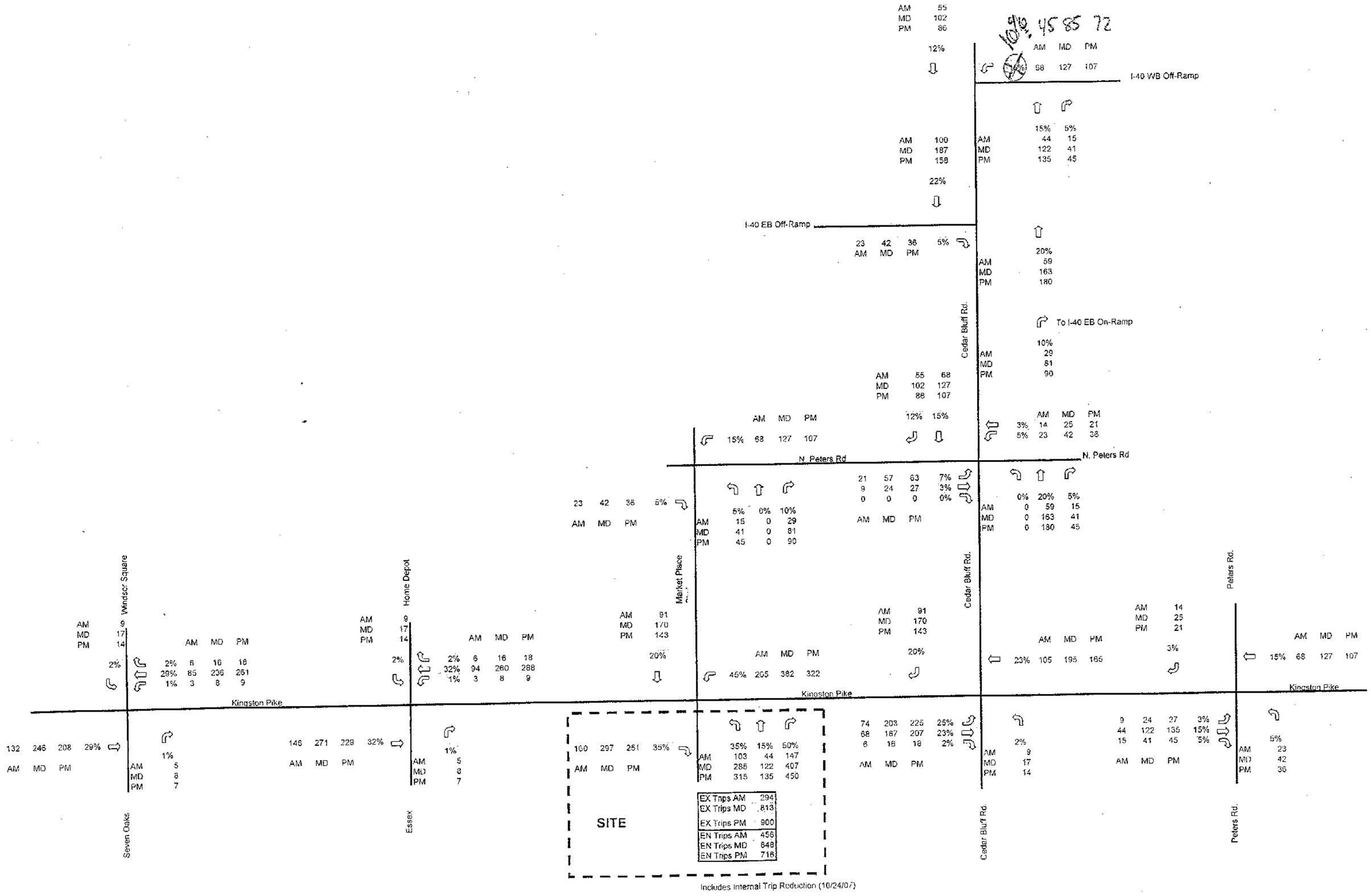
Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter	26	627	195	848
Exit	105	684	24	813
Total	131	1311	219	1661
Single-Use Trip Gen. Est.	180	1388	247	1815

Source: Kaku Associates, Inc.

INTERNAL CAPTURE 154

8%

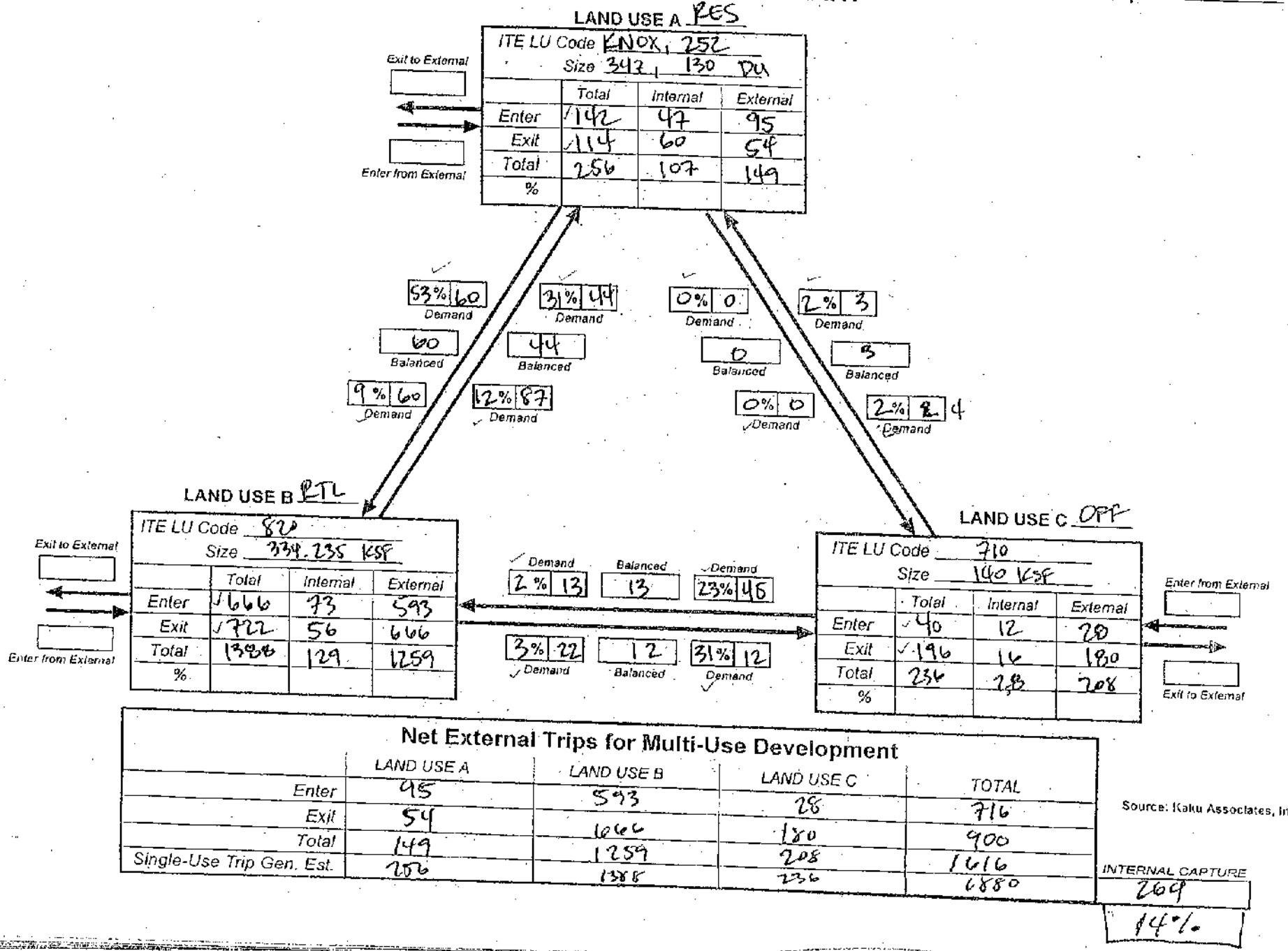


Includes Internal Trip Reduction (10/24/07)

Analyst NSB
Date 10/15/07

MULTI-USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt SHERRILL HILL
Time Period PM PEAK



Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter	95	593	28	716
Exit	54	666	180	900
Total	149	1259	208	1616
Single-Use Trip Gen. Est.	256	1388	236	1880

Source: Kaku Associates, Inc.

INTERNAL CAPTURE 264
14%

Scenario E
2012 Combined

BB
9/18/~~07~~
10/24/07

Kingston Pike @ Market Place
(includes pass-by + RI/RO Adj.)
(includes Internal Trip Red.)

Market Place (southbound approach, lanes: left / through / right)

	↲	↓	↳
AM	28	91	57
MD	12	151	268
PM	170	143	316

Kingston Pike (westbound approach)

	AM	MD	PM
↰	196	243	207
←	982	~~1275~~ 1272	1171
↲	205	~~389~~ 382	322

Kingston Pike (eastbound approach)

	AM	MD	PM
↱	34	65	44
→	~~912~~ 896	~~1362~~ 1338	~~1466~~ 1447
↳	~~112~~ 128	~~185~~ 238	~~175~~ 201

Sherrill Hills (northbound approach)

	↰	↑	↱
AM	163	44	~~193~~ 125
MD	~~261~~ 285	~~115~~ 122	~~268~~ 346
PM	~~291~~ 315	~~152~~ 135	~~286~~ 382

59
~~55~~/50
22
~~57~~ 61
~~62~~ 68

46 26 25
22
57
62

3B

~~9/10/07~~
10/24/07

2012 *Combined
Kingston Pk @ Market Place
(includes internal trip Red.)

28 91 57
72 ~~151~~ 170 268
(70) (143) (316)
↲ ↓ ↳

← 196 243 (207)
← 1004 1343 (1238)
← 205 ~~339~~ 382 (~~322~~) 322

34 65 (44) → ↑
891 1332 (1431) →
1160 ~~261~~ 297 (~~250~~) 251 ↓

↰ ↑ ↱
103 44 147
~~261~~ 285 ~~115~~ 122 ~~382~~ 407
(~~291~~ 315) (~~135~~ 135) (~~410~~) 450

w/ Pass-by trips.

28 91 57
72 151 268
(70) (143) (316)
↲ ↓ ↳

← 196 243 (207)
← 982 ~~1222~~ 1272 (1178)
← 205 ~~339~~ 382 (322)

↰ ↑ ↱

34 65 (44) → ↑
874 1277 (1378) →
1160 ~~261~~ 297 (~~250~~) 251 ↓

103 44 147
~~261~~ 285 ~~115~~ 122 ~~382~~ 407
(~~291~~ 315) (~~135~~ 135) (~~410~~) 450

~~9/10/07~~

Pass-by

10/24/07

Land Use 820 - Shopping Center pg 42-50
Multi Use Dev. pg. 100

Use 25% pass-by at Shopping Center Trips Only
off of Kingston Pike

AM Entering = 197 total

EB = 197 x .35 = 69 x .25 = 17 EB pass-by trips
WB = 197 x .45 = 89 x .25 = 22 WB pass-by trips

MD Entering = 666 - ~~40~~ 39 (internal) = ~~640~~ 627

EB = ~~640~~ 627 x .35 = ~~224~~ 219 x .25 = ~~56~~ 55 EB pass-by trips
WB = ~~640~~ 627 x .45 = ~~288~~ 282 x .25 = ~~72~~ 71 WB pass-by trips

PM Entering = 666 - ~~72~~ 73 (internal) = ~~594~~ 593

EB = ~~594~~ 593 x .35 = ~~208~~ 208 x .25 = ~~52~~ 52 EB pass-by trips
WB = ~~594~~ 593 x .45 = ~~267~~ 267 x .25 = ~~67~~ 67 WB pass-by trips

← -22 - ~~68~~ 71 (-67)

-17 - ~~56~~ 55 (-52) →

*next adjust for right-in/right-out.

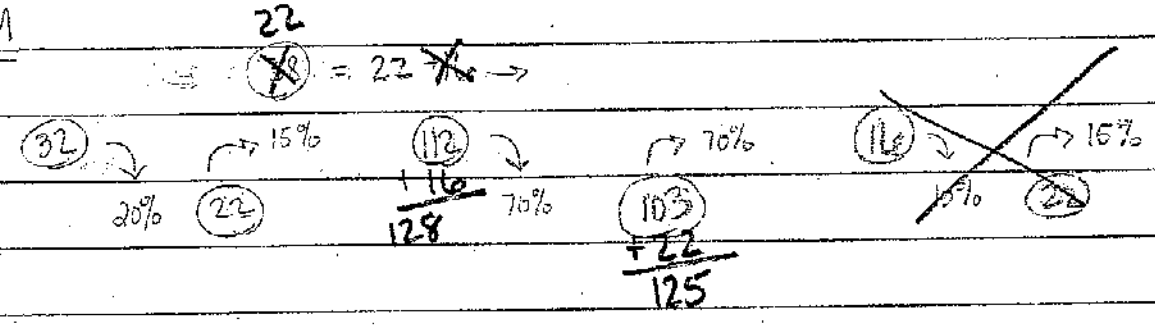
B3

10/24/07

Volume Adjustment for Right-in/Right-out

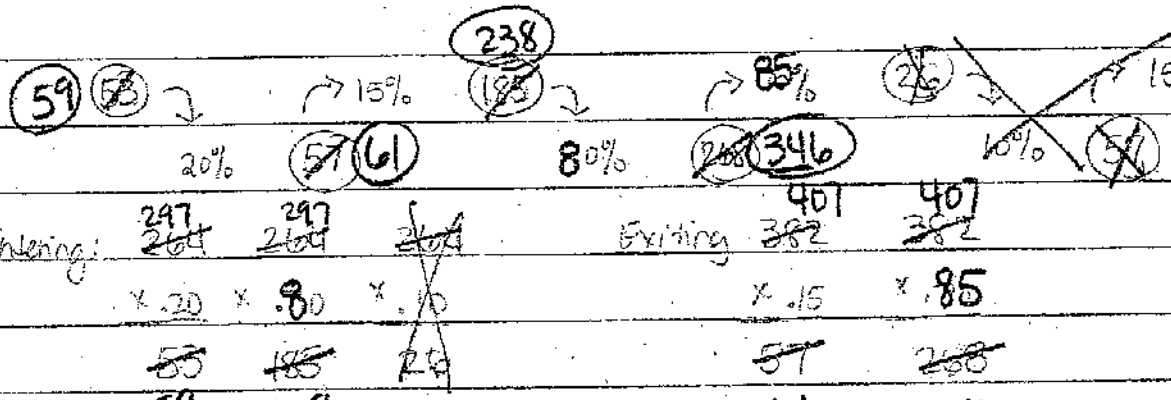
2012 Scenario 5 only

AM



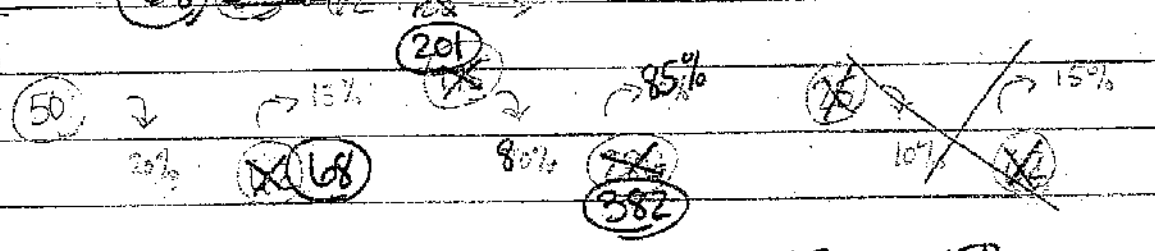
Entering:	160	160	160	Exiting:	147	147	
	x.20	x.70	x.10		x.15	x.70	
	32	112	16		22	103	

MD



Entering:	297	297		Exiting	382	407	
	x.20	x.80	x.10		x.15	x.85	
	59	238	25		61	346	

PM



Entering	251	251	250	Exiting:	450	450	
	x.20	x.80	x.10		x.15	x.85	
	50	175	25		67	255	

CAPACITY AND LEVEL-OF-SERVICE CONCEPTS

In a general sense, a roadway is similar to a pipeline or other material carrying conduit in that it has a certain capacity for the amount of material (vehicles) that it can efficiently carry. As the number of vehicles in a given time period gradually increases, the quality of traffic flow gradually decreases. On roadway sections this results in increasing turbulence in the traffic stream, and at intersections it results in increasing stops and delay. As the volumes begin to approach the capacity of the facility, these problems rapidly magnify, with resulting serious levels of congestion, stops, delay, excess fuel consumption, pollutant emissions, etc.

The Federal Highway Administration has published the Year 2000 Highway Capacity Manual (HCM2000), which establishes theoretical techniques to quantify the capacity conditions on all types of roadways, intersections, ramps, pedestrian facilities, etc. A basic concept that is applicable to most of these techniques is the idea of level of service (LOS). This concept establishes a rating system that quantifies the quality of traffic flow, as perceived by motorists and/or passengers. The general system is similar to a school grade scale, and is outlined as follows:

Level of Service (LOS)	General Quality of Traffic Flow	Description of Corresponding Conditions
A	Excellent	Roadways – Free flow, high maneuverability Intersections – Very few stops, very low delay
B	Very Good	Roadways – Free flow, slightly lower maneuverability Intersections – Minor stops, low delay
C	Good	Roadways – Stable flow, restricted maneuverability Intersections – Significant stops, significant delay
D	Fair	Roadways – Marginally stable flow, congestion seriously restricts maneuverability Intersections – High stops, long but tolerable delay
E	Poor	Roadways – Unstable flow*, lower operating speeds, congestion severely restricts maneuverability Intersections – All vehicles stop, very long queues and very long intolerable delay
F	Very Poor	Roadways – Forced flow, stoppages may be lengthy, congestion severely restricts maneuverability Intersections – All vehicles stop, extensive queues and extremely long intolerable delay

*Unstable flow is such that minor fluctuations or disruptions can result in rapid degradation to LOS F.

Another measure of intersection capacity that is often used in the evaluation of intersection operations is the volume to capacity (V/C) ratio. This ratio is defined as "the ratio of flow rate to capacity", and is a good measure of how much of an intersection's available capacity has been used up by the analysis volumes. Conversely, it also provides an indication of the reserve capacity available for future growth in traffic volumes.

The Intersection Capacity Utilization (ICU) is another measure that expresses a value similar to the V/C ratio. Specifically, the ICU method "sums the amount of the time required to serve all movements at saturation for a given cycle length and divides by that reference cycle length." The ICU is considered a more accurate measure of volume to capacity conditions for a signalized intersection, primarily because it accounts for the effects of the signal timing on intersection capacity.

CAPACITY ANALYSES

2007 EXISTING CONDITIONS

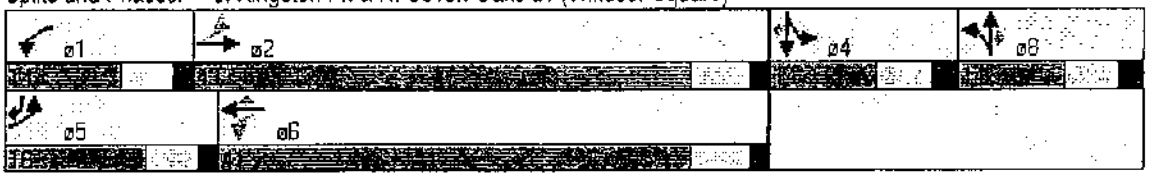
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	141	694	6	7	760	142	11	8	43	46	5	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	150		0	0		0	100		0
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.999				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.971		0.950	0.961	
Satd. Flow (prot)	1770	3536	0	1770	3539	1583	0	1809	1583	1681	1701	1583
Flt Permitted	0.261			0.372				0.971		0.950	0.961	
Satd. Flow (perm)	486	3536	0	693	3539	1583	0	1809	1583	1681	1701	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				149			45			76
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1185			1095			456			868	
Travel Time (s)		18.0			16.6			10.4			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	148	731	6	7	800	149	12	8	45	48	5	76
Shared Lane Traffic (%)										45%		
Lane Group Flow (vph)	148	737	0	7	800	149	0	20	45	26	27	76
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	16.0	43.0	0.0	14.0	41.0	41.0	14.0	14.0	14.0	14.0	14.0	16.0
Total Split (%)	18.8%	50.6%	0.0%	16.5%	48.2%	48.2%	16.5%	16.5%	16.5%	16.5%	16.5%	18.8%
Maximum Green (s)	10.5	37.0		8.5	35.0	35.0	8.0	8.0	8.0	8.0	8.0	10.5
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	62.1	61.9		56.3	47.8	47.8		8.0	8.0	8.0	8.0	14.0
Actuated g/C Ratio	0.73	0.73		0.66	0.56	0.56		0.09	0.09	0.09	0.09	0.16
v/c Ratio	0.30	0.29		0.01	0.40	0.16		0.12	0.24	0.16	0.17	0.23
Control Delay	7.6	8.7		1.1	3.6	0.6		37.1	15.0	38.2	38.2	6.0
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	8.7		1.1	3.6	0.6		37.1	15.0	38.2	38.2	6.0
LOS	A	A		A	A	A		D	B	D	D	A
Approach Delay		8.6			3.1			21.8			19.2	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)	31	95		1	11	0		10	0	13	14	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	56	190		m1	27	1		31	31	40	41	22
Internal Link Dist (ft)		1105			1015			376			788	
Turn Bay Length (ft)	200			150						100		
Base Capacity (vph)	514	2575		571	1990	955		170	190	158	160	353
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.29	0.29		0.01	0.40	0.16		0.12	0.24	0.16	0.17	0.22

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 83 (98%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 7.1 Intersection LOS: A
Intersection Capacity Utilization 51.5% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Kingston Pk & N. Seven Oaks Dr (Windsor Square)



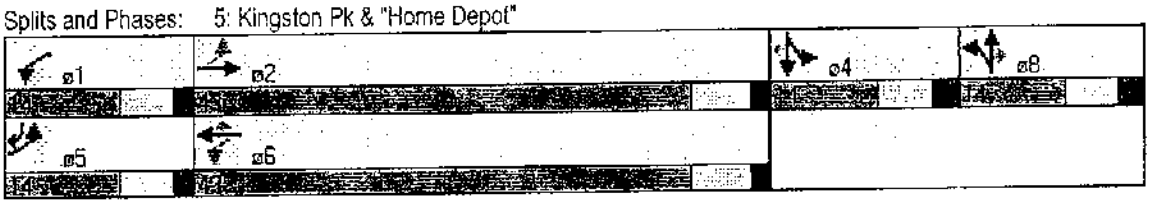
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	85	710	0	8	846	28	7	1	26	11	0	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		300	0		0	100		100
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected	0.950			0.950				0.958		0.950	0.950	
Satd. Flow (prot)	1770	3539	0	1770	3539	1583	0	1785	1583	1681	1681	1583
Flt Permitted	0.249			0.368				0.958		0.950	0.950	
Satd. Flow (perm)	464	3539	0	685	3539	1583	0	1785	1583	1681	1681	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						29			27			71
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1095			1371			223			454	
Travel Time (s)		16.6			20.8			5.1			10.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	89	747	0	8	891	29	7	1	27	12	0	71
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	89	747	0	8	891	29	0	8	27	6	6	71
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	14.0	43.0	0.0	14.0	43.0	43.0	14.0	14.0	14.0	14.0	14.0	14.0
Total Split (%)	16.5%	50.6%	0.0%	16.5%	50.6%	50.6%	16.5%	16.5%	16.5%	16.5%	16.5%	16.5%
Maximum Green (s)	8.5	37.0		8.5	37.0	37.0	8.0	8.0	8.0	8.0	8.0	8.5
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	67.3	67.5		63.8	58.1	58.1		8.0	8.0	8.0	8.0	9.8
Actuated g/C Ratio	0.79	0.79		0.75	0.68	0.68		0.09	0.09	0.09	0.09	0.12
v/c Ratio	0.18	0.27		0.01	0.37	0.03		0.05	0.16	0.04	0.04	0.29
Control Delay	6.5	5.5		3.0	10.0	4.6		35.9	16.3	35.7	35.7	9.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	6.5	5.5		3.0	10.0	4.6		35.9	16.3	35.7	35.7	9.2
LOS	A	A		A	A	A		D	B	D	D	A
Approach Delay		5.6			9.7			20.8			13.0	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)	8	45		1	84	0		4	0	3	3	0

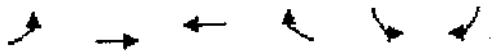
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	0	122		m4	332	5		17	24	15	15	23
Internal Link Dist (ft)		1015			1291			143			374	
Turn Bay Length (ft)	250			150		300				100		100
Base Capacity (vph)	498	2810		626	2419	1091		168	173	158	158	252
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.18	0.27		0.01	0.37	0.03		0.05	0.16	0.04	0.04	0.28

Intersection Summary

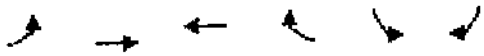
Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 77 (91%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 8.2 Intersection LOS: A
Intersection Capacity Utilization 51.3% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Kingston Pk & "Home Depot"





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	29	769	866	169	49	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.265				0.950	
Satd. Flow (perm)	494	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				178		25
Link Speed (mph)		45	45		30	
Link Distance (ft)		1371	1317		1450	
Travel Time (s)		20.8	20.0		33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	31	809	912	178	52	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	809	912	178	52	25
Turn Type	pm+pt			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	13.5	22.0	22.0	22.0	14.0	14.0
Total Split (s)	16.0	67.0	51.0	51.0	18.0	18.0
Total Split (%)	18.8%	78.8%	60.0%	60.0%	21.2%	21.2%
Maximum Green (s)	10.5	61.0	45.0	45.0	12.0	12.0
Yellow Time (s)	4.0	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	67.6	68.3	62.9	62.9	8.7	8.7
Actuated g/C Ratio	0.80	0.80	0.74	0.74	0.10	0.10
v/c Ratio	0.06	0.28	0.35	0.15	0.29	0.14
Control Delay	1.1	1.6	4.5	0.8	39.2	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.1	1.6	4.5	0.8	39.2	15.5
LOS	A	A	A	A	D	B
Approach Delay		1.6	3.9		31.5	
Approach LOS		A	A		C	
Queue Length 50th (ft)	1	21	31	0	26	0

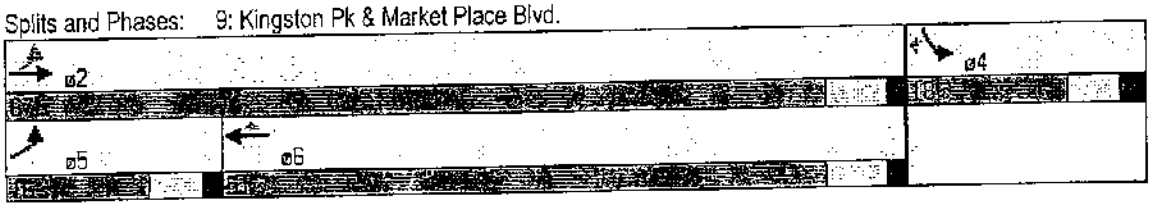


Lane Groups	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 95th (ft)	1	5	107	11	59	23
Internal Link Dist (ft)		1291	1237		1370	
Turn Bay Length (ft)	250					
Base Capacity (vph)	550	2843	2618	1217	250	245
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.28	0.35	0.15	0.21	0.10

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 30 (35%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.35
Intersection Signal Delay: 4.0 Intersection LOS: A
Intersection Capacity Utilization 40.8% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



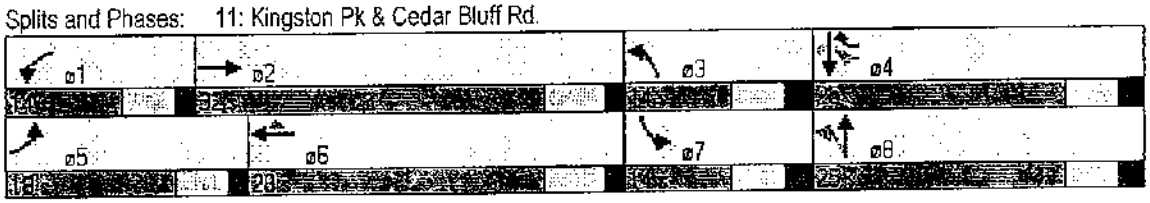
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	221	511	15	41	634	301	65	208	63	300	131	276
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	250		500	150		0	300		0
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	1.00
Frt		0.996				0.850		0.965				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5065	0	1770	5085	1583	1770	3415	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.669			0.501		
Satd. Flow (perm)	3433	5065	0	1770	5085	1583	1246	3415	0	1810	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				317		43				291
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1317			1476			690			1452	
Travel Time (s)		20.0			22.4			15.7			33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	233	538	16	43	667	317	68	219	66	316	138	291
Shared Lane Traffic (%)												
Lane Group Flow (vph)	233	554	0	43	667	317	68	285	0	316	138	291
Turn Type	Prot			Prot		custom	pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6	4	3	8		7	4	
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	4	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0		14.0	22.0	22.0
Total Split (s)	18.0	32.0	0.0	14.0	28.0	25.0	14.0	25.0	0.0	14.0	25.0	25.0
Total Split (%)	21.2%	37.6%	0.0%	16.5%	32.9%	29.4%	16.5%	29.4%	0.0%	16.5%	29.4%	29.4%
Maximum Green (s)	12.5	26.0		8.5	22.0	19.0	8.0	19.0		8.0	19.0	19.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None		None	None	None
Act Effct Green (s)	10.8	37.8		8.3	29.9	46.7	20.8	12.8		22.0	15.6	15.6
Actuated g/C Ratio	0.13	0.44		0.10	0.35	0.55	0.24	0.15		0.26	0.18	0.18
v/c Ratio	0.53	0.25		0.25	0.37	0.31	0.19	0.52		0.51	0.40	0.55
Control Delay	43.8	15.7		42.0	19.5	1.6	20.8	30.7		21.1	32.5	21.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	43.8	15.7		42.0	19.5	1.6	20.8	30.7		21.1	32.5	21.0
LOS	D	B		D	B	A	C	C		C	C	C
Approach Delay		24.1			14.9			28.8			23.2	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	53	56		24	75	0	26	63		80	76	104

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	102	93		m44	131	m0	49	93		127	m136	190
Internal Link Dist (ft)		1237			1396			610			1372	
Turn Bay Length (ft)	400			250		500	150			300		
Base Capacity (vph)	509	2254		179	1786	1072	355	797		622	429	589
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.46	0.25		0.24	0.37	0.30	0.19	0.36		0.51	0.32	0.49

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 27 (32%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 21.2 Intersection LOS: C
Intersection Capacity Utilization 54.8% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 11: Kingston Pk & Cedar Bluff Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	575	329	137	482	201	462	447	255	115	118	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	125		150	425		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	0.95
Frt			0.850			0.850			0.850		0.977	
Flt Protected	0.950			0.950			0.950	0.987		0.950	0.992	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1610	3346	1583	1610	3286	0
Flt Permitted	0.423			0.269			0.950	0.987		0.950	0.992	
Satd. Flow (perm)	788	3539	1583	501	3539	1583	1610	3346	1583	1610	3286	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			291			212			96		18	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1476			692			644			1688	
Travel Time (s)		22.4			10.5			14.6			38.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	60	605	346	144	507	212	486	471	268	121	124	28
Shared Lane Traffic (%)							36%			25%		
Lane Group Flow (vph)	60	605	346	144	507	212	311	646	268	91	182	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	8	1	6	4	8	8	1	4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	8	1	6	4	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	8.0	8.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.5	21.5	14.0	13.5	22.0	14.0	14.0	14.0	13.5	14.0	14.0	
Total Split (s)	13.5	29.0	28.0	14.0	29.5	14.0	28.0	28.0	14.0	14.0	14.0	0.0
Total Split (%)	15.9%	34.1%	32.9%	16.5%	34.7%	16.5%	32.9%	32.9%	16.5%	16.5%	16.5%	0.0%
Maximum Green (s)	8.0	23.5	22.0	8.5	23.5	8.0	22.0	22.0	8.5	8.0	8.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	2.0	1.5	1.5	2.0	2.0	2.0	1.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	6.0	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	None	None	None	None	None	None	None	None	None	
Act Effct Green (s)	32.7	24.7	45.1	34.5	27.2	41.2	21.0	21.0	35.3	8.0	8.0	
Actuated g/C Ratio	0.38	0.29	0.53	0.41	0.32	0.48	0.25	0.25	0.42	0.09	0.09	
v/c Ratio	0.15	0.59	0.35	0.44	0.45	0.24	0.78	0.78	0.37	0.60	0.56	
Control Delay	15.3	28.6	3.3	19.0	25.9	3.0	45.0	37.3	12.1	54.7	40.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.3	28.6	3.3	19.0	25.9	3.0	45.0	37.3	12.1	54.7	40.2	
LOS	B	C	A	B	C	A	D	D	B	D	D	
Approach Delay		19.1			19.1			33.7			45.1	
Approach LOS		B			B			C			D	
Queue Length 50th (ft)	18	148	14	45	120	0	168	174	57	52	46	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m32	109	23	82	168	37	#298	239	114	#121	81	
Internal Link Dist (ft)		1396			612			564			1608	
Turn Bay Length (ft)	225			125		150	425		300	200		
Base Capacity (vph)	395	1026	993	330	1134	877	417	866	717	152	326	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.59	0.35	0.44	0.45	0.24	0.75	0.75	0.37	0.60	0.56	

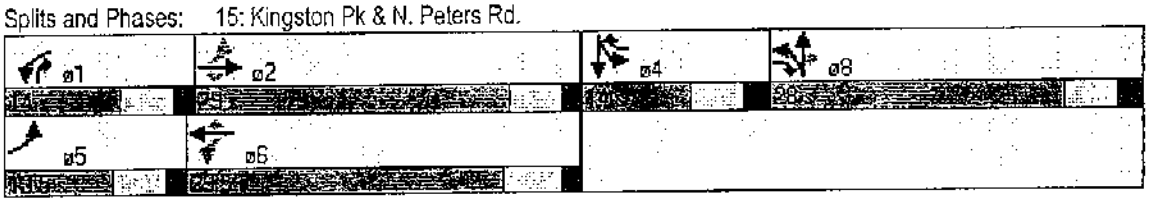
Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 46 (54%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 26.5 Intersection LOS: C
Intersection Capacity Utilization 66.5% ICU Level of Service C
Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kingston Pk & N. Peters Rd.



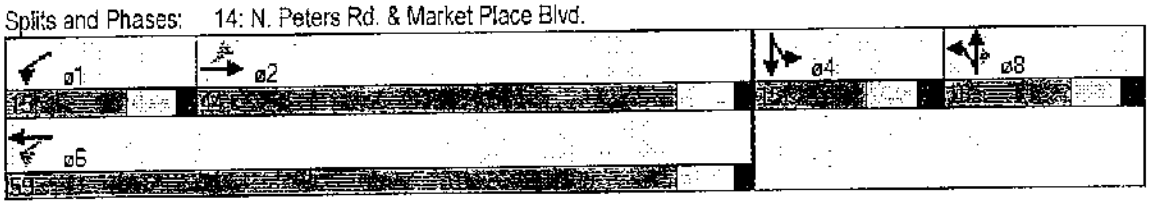
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↰	↕			↑	↱		↕	
Volume (vph)	2	402	40	99	1060	24	71	1	48	23	9	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.997				0.850		0.956	
Flt Protected				0.950				0.953			0.976	
Satd. Flow (prot)	0	3493	0	1770	3529	0	0	1775	1583	0	1738	0
Flt Permitted		0.952		0.426				0.953			0.976	
Satd. Flow (perm)	0	3326	0	794	3529	0	0	1775	1583	0	1738	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			4				51		16	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		863			1366			1450			170	
Travel Time (s)		19.6			31.0			33.0			3.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2	423	42	104	1116	25	75	1	51	24	9	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	467	0	104	1141	0	0	76	51	0	49	0
Turn Type	Perm			pm+pt			Split		Perm	Split		
Protected Phases		2		1	6		8	8		4	4	
Permitted Phases	2			6					8			
Detector Phase	2	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		8.0	10.0		8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	22.0	22.0		13.5	22.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	44.0	44.0	0.0	15.0	59.0	0.0	16.0	16.0	16.0	15.0	15.0	0.0
Total Split (%)	48.9%	48.9%	0.0%	16.7%	65.6%	0.0%	17.8%	17.8%	17.8%	16.7%	16.7%	0.0%
Maximum Green (s)	38.0	38.0		9.5	53.0		10.0	10.0	10.0	9.0	9.0	
Yellow Time (s)	4.5	4.5		4.0	4.5		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	5.5	6.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None	None	None	None	
Act Effct Green (s)		53.0		63.5	64.2			9.2	9.2		8.3	
Actuated g/C Ratio		0.59		0.71	0.71			0.10	0.10		0.09	
v/c Ratio		0.24		0.16	0.45			0.42	0.25		0.28	
Control Delay		13.2		7.3	8.9			45.1	14.2		32.6	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		13.2		7.3	8.9			45.1	14.2		32.6	
LOS		B		A	A			D	B		C	
Approach Delay		13.2			8.7			32.7			32.6	
Approach LOS		B			A			C			C	
Queue Length 50th (ft)		82		22	179			41	0		18	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	125		45	245			84	33		52		
Internal Link Dist (ft)	783			1286			1370			90		
Turn Bay Length (ft)			100									
Base Capacity (vph)	1964		663	2518			199	223		188		
Starvation Cap Reductn	0		0	0			0	0		0		
Spillback Cap Reductn	0		0	0			0	0		0		
Storage Cap Reductn	0		0	0			0	0		0		
Reduced v/c Ratio	0.24		0.16	0.45			0.38	0.23		0.26		

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.45
Intersection Signal Delay: 12.1 Intersection LOS: B
Intersection Capacity Utilization 66.8% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 14: N. Peters Rd. & Market Place Blvd.



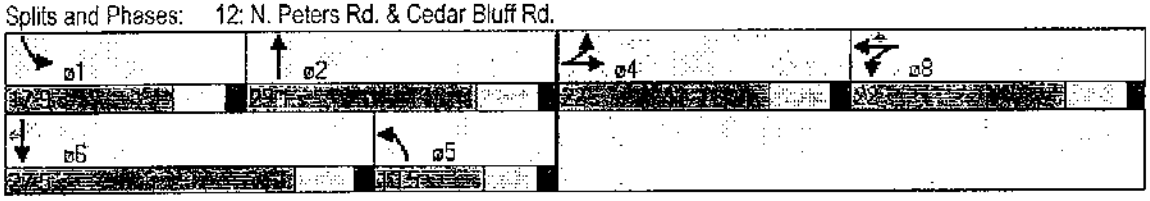
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	350	61	18	11	77	504	24	613	20	369	577	982
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	120		300	275		0	350		500
Storage Lanes	1		0	1		1	1		0	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.91	0.91	1.00	1.00	0.91	0.91	1.00	0.91	0.91	0.97	0.91	1.00
Frt		0.985			0.885	0.850		0.995				0.850
Flt Protected	0.950	0.972		0.950			0.950			0.950		
Satd. Flow (prot)	3221	1623	0	1770	3000	1441	1770	5060	0	3433	5085	1583
Flt Permitted	0.950	0.972		0.950			0.950			0.950		
Satd. Flow (perm)	3221	1623	0	1770	3000	1441	1770	5060	0	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			266	265		5				845
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1366			378			1452			835	
Travel Time (s)		31.0			8.6			33.0			19.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	368	64	19	12	81	531	25	645	21	388	607	1034
Shared Lane Traffic (%)	67108894%					50%						
Lane Group Flow (vph)	258	193	0	12	347	265	25	666	0	388	607	1034
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8						6
Detector Phase	4	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	8.0	10.0		10.0	10.0	10.0
Minimum Split (s)	22.0	22.0		22.0	22.0	22.0	13.5	22.0		15.5	22.0	22.0
Total Split (s)	22.0	22.0	0.0	22.0	22.0	22.0	13.5	23.1	0.0	17.9	27.5	27.5
Total Split (%)	25.9%	25.9%	0.0%	25.9%	25.9%	25.9%	15.9%	27.2%	0.0%	21.1%	32.4%	32.4%
Maximum Green (s)	16.0	16.0		16.0	16.0	16.0	8.0	17.1		12.4	21.5	21.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	4.5		4.0	4.5	4.5
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	5.5	6.0	4.0	5.5	6.0	6.0
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	13.9	13.9		11.4	11.4	11.4	8.0	22.5		13.7	36.3	36.3
Actuated g/C Ratio	0.16	0.16		0.13	0.13	0.13	0.09	0.26		0.16	0.43	0.43
v/c Ratio	0.49	0.71		0.05	0.55	0.63	0.15	0.49		0.70	0.28	0.89
Control Delay	35.2	47.3		31.1	12.4	11.6	29.6	20.1		29.5	18.0	19.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	35.2	47.3		31.1	12.4	11.6	29.6	20.1		29.5	18.0	19.9
LOS	D	D		C	B	B	C	C		C	B	B
Approach Delay		40.4			12.4			20.5			21.2	
Approach LOS		D			B			C			C	
Queue Length 50th (ft)	68	103		6	21	0	10	92		104	90	348

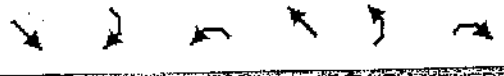
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	106	179	20	58	69	m34	163		m127	m133	m#499	
Internal Link Dist (ft)		1286		298			1372			755		
Turn Bay Length (ft)	275		120		300	275			350		500	
Base Capacity (vph)	606	310	333	781	486	167	1346		563	2173	1160	
Starvation Cap Reductn	0	0	0	0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0		0	0	0	
Reduced v/c Ratio	0.43	0.62	0.04	0.44	0.55	0.15	0.49		0.69	0.28	0.89	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 31 (36%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 21.9 Intersection LOS: C
Intersection Capacity Utilization 90.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: N. Peters Rd. & Cedar Bluff Rd.





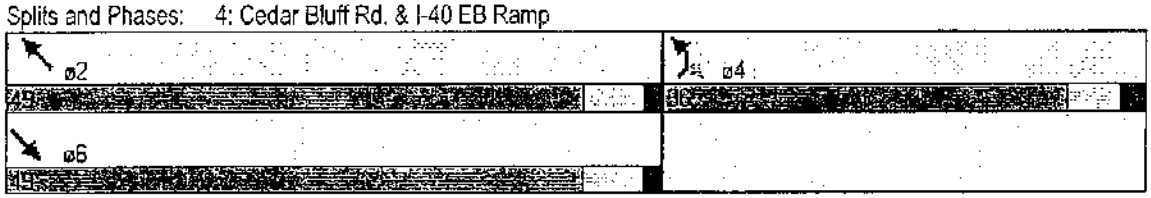
Lane Group	SET	SER	NWL	NWT	NET	NER
Lane Configurations	↑↑↑			↑↑↑	↰↑↑	↱
Volume (vph)	2235	0	0	1393	974	500
Ideal Flow (vphpi)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	0.91
Frt					0.993	0.850
Flt Protected					0.955	
Satd. Flow (prot)	5085	0	0	5085	3427	1441
Flt Permitted					0.955	
Satd. Flow (perm)	5085	0	0	5085	3427	1441
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					2	2
Link Speed (mph)	30			30	30	
Link Distance (ft)	559			835	373	
Travel Time (s)	12.7			19.0	8.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2353	0	0	1466	1025	526
Shared Lane Traffic (%)						10%
Lane Group Flow (vph)	2353	0	0	1466	1078	473
Turn Type						Perm
Protected Phases	6			2	4	
Permitted Phases						4
Detector Phase	6			2	4	4
Switch Phase						
Minimum Initial (s)	10.0			10.0	8.0	8.0
Minimum Split (s)	22.0			22.0	14.0	14.0
Total Split (s)	49.0	0.0	0.0	49.0	36.0	36.0
Total Split (%)	57.6%	0.0%	0.0%	57.6%	42.4%	42.4%
Maximum Green (s)	43.0			43.0	30.0	30.0
Yellow Time (s)	4.5			4.5	4.0	4.0
All-Red Time (s)	1.5			1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Min			C-Min	None	None
Act Effct Green (s)	43.3			43.3	29.7	29.7
Actuated g/C Ratio	0.51			0.51	0.35	0.35
v/c Ratio	0.91			0.57	0.90	0.93
Control Delay	25.9			7.3	37.7	55.5
Queue Delay	1.0			0.0	0.0	0.0
Total Delay	26.8			7.3	37.7	55.5
LOS	C			A	D	E
Approach Delay	26.8			7.3	43.1	
Approach LOS	C			A	D	
Queue Length 50th (ft)	401			63	275	262
Queue Length 95th (ft)	#486			101	#395	#473
Internal Link Dist (ft)	479			755	293	
Turn Bay Length (ft)						

Lane Group	SET	SER	NWL	NWT	NEL	NER
Base Capacity (vph)	2588		2588	1211	510	
Starvation Cap Reductn	80		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.94		0.57	0.89	0.93	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 41 (48%), Referenced to phase 2:NWT and 6:SET, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 26.2 Intersection LOS: C
Intersection Capacity Utilization 86.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Cedar Bluff Rd. & I-40 EB Ramp



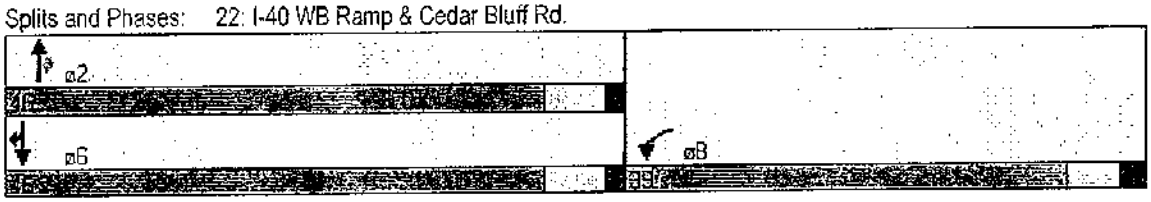
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	0	0	3614	0	0	0	5085	1863	0	5085	1863
Flt Permitted												
Satd. Flow (perm)	0	0	0	3614	0	0	0	5085	1863	0	5085	1863
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		151			240			559			476	
Travel Time (s)		3.4			5.5			12.7			10.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type				Prot					Perm			Prot
Protected Phases				8				2			6	6
Permitted Phases									2			
Detector Phase				8				2	2		6	6
Switch Phase												
Minimum Initial (s)				8.0				10.0	10.0		10.0	10.0
Minimum Split (s)				14.0				22.0	22.0		22.0	22.0
Total Split (s)	0.0	0.0	0.0	39.0	0.0	0.0	0.0	46.0	46.0	0.0	46.0	46.0
Total Split (%)	0.0%	0.0%	0.0%	45.9%	0.0%	0.0%	0.0%	54.1%	54.1%	0.0%	54.1%	54.1%
Maximum Green (s)				33.0				40.0	40.0		40.0	40.0
Yellow Time (s)				4.0				4.5	4.5		4.5	4.5
All-Red Time (s)				2.0				1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	6.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0				3.0	3.0		3.0	3.0
Recall Mode				None				C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												
LOS												
Approach Delay												
Approach LOS												
Queue Length 50th (ft)												
Queue Length 95th (ft)												
Internal Link Dist (ft)		71			160			479			396	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)												
Starvation Cap Reductn												
Spillback Cap Reductn												
Storage Cap Reductn												
Reduced v/c Ratio												

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.00
Intersection Signal Delay: 0.0 Intersection LOS: A
Intersection Capacity Utilization 0.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 22: I-40 WB Ramp & Cedar Bluff Rd.



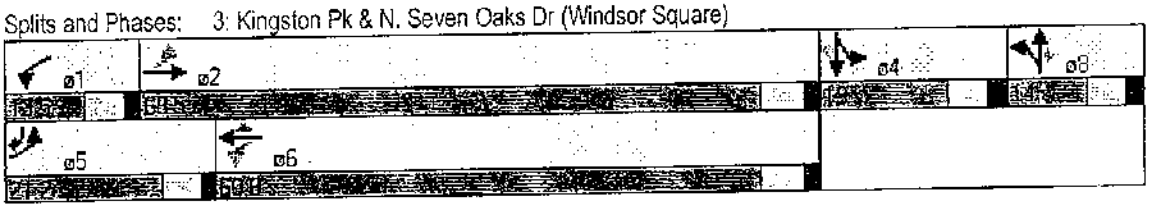
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	167	1151	12	17	1207	216	11	7	19	175	6	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	150		0	0		0	100		0
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.998				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.969		0.950	0.955	
Satd. Flow (prot)	1770	3532	0	1770	3539	1583	0	1805	1583	1681	1690	1583
Flt Permitted	0.127			0.193				0.969		0.950	0.955	
Satd. Flow (perm)	237	3532	0	360	3539	1583	0	1805	1583	1681	1690	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				223			20			137
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1185			1095			456			868	
Travel Time (s)		18.0			16.6			10.4			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	176	1212	13	18	1271	227	12	7	20	184	6	180
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	176	1225	0	18	1271	227	0	19	20	96	94	180
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	21.2	68.5	0.0	13.5	60.8	60.8	14.0	14.0	14.0	19.0	19.0	21.2
Total Split (%)	18.4%	59.6%	0.0%	11.7%	52.9%	52.9%	12.2%	12.2%	12.2%	16.5%	16.5%	18.4%
Maximum Green (s)	15.7	62.5		8.0	54.8	54.8	8.0	8.0	8.0	13.0	13.0	15.7
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	83.9	78.0		75.5	67.0	67.0		8.0	8.0	11.2	11.2	24.8
Actuated g/C Ratio	0.73	0.68		0.66	0.58	0.58		0.07	0.07	0.10	0.10	0.22
v/c Ratio	0.55	0.51		0.05	0.62	0.22		0.15	0.16	0.59	0.57	0.40
Control Delay	14.3	12.7		2.6	6.2	0.6		53.3	22.9	64.2	63.2	9.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	12.7		2.6	6.2	0.6		53.3	22.9	64.2	63.2	9.7
LOS	B	B		A	A	A		D	C	E	E	A
Approach Delay		12.9			5.3			37.7			37.5	
Approach LOS		B			A			D			D	
Queue Length 50th (ft)	43	218		2	183	9		13	0	72	70	21

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	87	391		m2	97	1		38	25	130	128	62
Internal Link Dist (ft)		1105			1015			376			788	
Turn Bay Length (ft)	200			150						100		
Base Capacity (vph)	382	2397		334	2062	1016		126	129	190	191	508
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.46	0.51		0.05	0.62	0.22		0.15	0.16	0.51	0.49	0.35

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 49 (43%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 12.5 Intersection LOS: B
Intersection Capacity Utilization 68.9% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Kingston Pk & N. Seven Oaks Dr (Windsor Square)



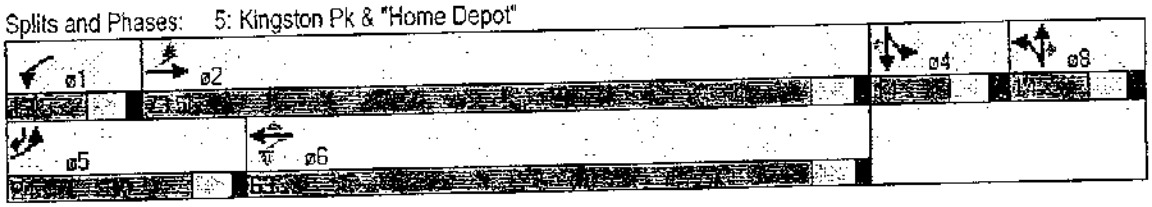
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	192	1199	3	4	1222	98	9	1	9	59	1	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		300	0		0	100		100
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected	0.950			0.950				0.957		0.950	0.954	
Satd. Flow (prot)	1770	3539	0	1770	3539	1583	0	1783	1583	1681	1688	1583
Flt Permitted	0.140			0.206				0.957		0.950	0.954	
Satd. Flow (perm)	261	3539	0	384	3539	1583	0	1783	1583	1681	1688	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						103			9			143
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1095			1371			223			454	
Travel Time (s)		16.6			20.8			5.1			10.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	202	1262	3	4	1286	103	9	1	9	62	1	260
Shared Lane Traffic (%)										49%		
Lane Group Flow (vph)	202	1265	0	4	1286	103	0	10	9	32	31	260
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	24.0	73.5	0.0	13.5	63.0	63.0	14.0	14.0	14.0	14.0	14.0	24.0
Total Split (%)	20.9%	63.9%	0.0%	11.7%	54.8%	54.8%	12.2%	12.2%	12.2%	12.2%	12.2%	20.9%
Maximum Green (s)	18.5	67.5		8.0	57.0	57.0	8.0	8.0	8.0	8.0	8.0	18.5
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	92.7	90.7		83.7	75.2	75.2		8.0	8.0	8.0	8.0	20.5
Actuated g/C Ratio	0.81	0.79		0.73	0.65	0.65		0.07	0.07	0.07	0.07	0.18
v/c Ratio	0.56	0.45		0.01	0.56	0.10		0.08	0.08	0.27	0.26	0.65
Control Delay	22.5	5.3		2.2	5.8	1.3		51.7	28.2	57.1	56.8	23.1
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	5.3		2.2	5.8	1.3		51.7	28.2	57.1	56.8	23.1
LOS	C	A		A	A	A		D	C	E	E	C
Approach Delay		7.7			5.5			40.6			29.7	
Approach LOS		A			A			D			C	
Queue Length 50th (ft)	29	82		0	17	0		7	0	24	23	76

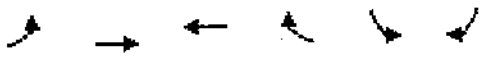
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	163	202		m1	237	16		25	17	58	56	119
Internal Link Dist (ft)		1015			1291			143			374	
Turn Bay Length (ft)	250			150		300				100		100
Base Capacity (vph)	453	2791		376	2315	1071		124	118	117	117	487
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.45	0.45		0.01	0.56	0.10		0.08	0.08	0.27	0.26	0.53

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 46 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 9.1 Intersection LOS: A
Intersection Capacity Utilization 70.3% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Kingston Pk & "Home Depot"





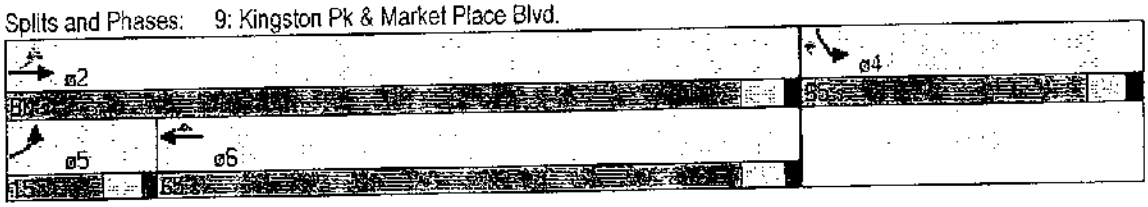
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	55	1149	1159	210	231	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.156				0.950	
Satd. Flow (perm)	291	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				221		65
Link Speed (mph)		45	45		30	
Link Distance (ft)		1371	1317		1450	
Travel Time (s)		20.8	20.0		33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	59	1209	1220	221	243	65
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	1209	1220	221	243	65
Turn Type	pm+pt			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	13.5	22.0	22.0	22.0	14.0	14.0
Total Split (s)	15.0	80.0	65.0	65.0	35.0	35.0
Total Split (%)	13.0%	69.6%	56.5%	56.5%	30.4%	30.4%
Maximum Green (s)	9.5	74.0	59.0	59.0	29.0	29.0
Yellow Time (s)	4.0	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	82.5	82.0	71.2	71.2	21.0	21.0
Actuated g/C Ratio	0.72	0.71	0.62	0.62	0.18	0.18
v/c Ratio	0.19	0.48	0.56	0.21	0.75	0.19
Control Delay	7.5	11.3	7.5	0.5	58.8	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	11.3	7.5	0.5	58.8	10.0
LOS	A	B	A	A	E	B
Approach Delay		11.2	6.5		48.5	
Approach LOS		B	A		D	
Queue Length 50th (ft)	21	309	92	0	172	0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 95th (ft)	38	435	143	2	243	35
Internal Link Dist (ft)		1291	1237		1370	
Turn Bay Length (ft)	250					
Base Capacity (vph)	331	2525	2191	1064	446	448
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.48	0.56	0.21	0.54	0.15

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 10 (9%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 12.7 Intersection LOS: B
Intersection Capacity Utilization 66.1% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



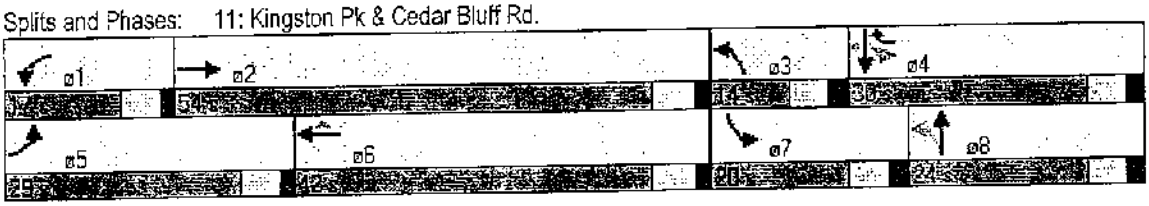
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	379	999	46	61	913	259	89	137	101	400	163	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	250		500	150		0	300		0
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	1.00
Frt		0.993				0.850		0.936				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5050	0	1770	5085	1583	1770	3313	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.649			0.328		
Satd. Flow (perm)	3433	5050	0	1770	5085	1583	1209	3313	0	1185	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				273		106				340
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1317			1476			690			1452	
Travel Time (s)		20.0			22.4			15.7			33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	399	1052	48	64	961	273	94	144	106	421	172	340
Shared Lane Traffic (%)												
Lane Group Flow (vph)	399	1100	0	64	961	273	94	250	0	421	172	340
Turn Type	Prot			Prot		custom	pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6	4	3	8		7	4	
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	4	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	14.0	14.0	14.0		14.0	14.0	14.0
Total Split (s)	29.0	54.0	0.0	17.0	42.0	30.0	14.0	24.0	0.0	20.0	30.0	30.0
Total Split (%)	25.2%	47.0%	0.0%	14.8%	36.5%	26.1%	12.2%	20.9%	0.0%	17.4%	26.1%	26.1%
Maximum Green (s)	23.5	48.0		11.5	36.0	24.0	8.0	18.0		14.0	24.0	24.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None		None	None	None
Act Effct Green (s)	18.5	58.8		9.6	47.2	65.0	19.9	11.9		31.7	17.8	17.8
Actuated g/C Ratio	0.16	0.51		0.08	0.41	0.57	0.17	0.10		0.28	0.15	0.15
v/c Ratio	0.72	0.43		0.43	0.46	0.27	0.38	0.57		0.71	0.60	0.64
Control Delay	58.6	14.2		58.1	15.8	2.2	35.8	32.5		40.7	53.4	10.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	58.6	14.2		58.1	15.8	2.2	35.8	32.5		40.7	53.4	10.2
LOS	E	B		E	B	A	D	C		D	D	B
Approach Delay		26.0			15.0			33.4			31.9	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	144	129		45	109	15	54	54		134	121	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	203	138		m65	146	m26	90	90		165	182	79
Internal Link Dist (ft)		1237			1396			610			1372	
Turn Bay Length (ft)	400			250		500	150			300		
Base Capacity (vph)	702	2585		177	2085	1084	249	608		601	389	599
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.57	0.43		0.36	0.46	0.25	0.38	0.41		0.70	0.44	0.57

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 2 (2%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 24.5 Intersection LOS: C
Intersection Capacity Utilization 66.5% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
l Phase conflict between lane groups.

Splits and Phases: 11: Kingston Pk & Cedar Bluff Rd.



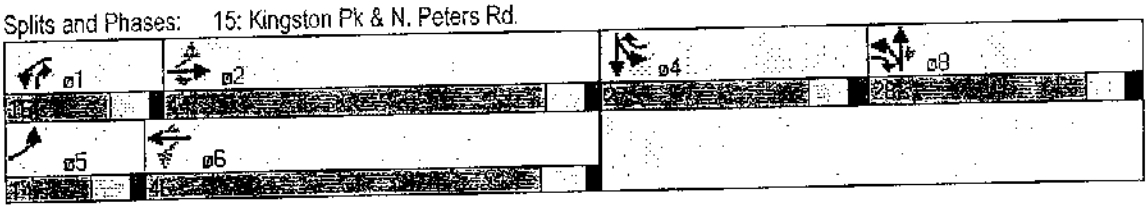
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	923	374	132	849	350	306	362	152	293	178	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	125		150	425		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	0.95
Frt			0.850			0.850			0.850		0.956	
Flt Protected	0.950			0.950			0.950	0.990		0.950	0.988	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1610	3356	1583	1610	3202	0
Flt Permitted	0.183			0.128			0.950	0.990		0.950	0.988	
Satd. Flow (perm)	341	3539	1583	238	3539	1583	1610	3356	1583	1610	3202	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			291			134			55		45	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1476			692			644			1688	
Travel Time (s)		22.4			10.5			14.6			38.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	144	972	394	139	894	368	322	381	160	308	187	121
Shared Lane Traffic (%)							29%			33%		
Lane Group Flow (vph)	144	972	394	139	894	368	229	474	160	206	410	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	8	1	6	4	8	8	1	4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	8	1	6	4	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	8.0	8.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.5	21.5	14.0	13.5	22.0	14.0	14.0	14.0	13.5	14.0	14.0	
Total Split (s)	14.0	44.0	28.0	16.0	46.0	27.0	28.0	28.0	16.0	27.0	27.0	0.0
Total Split (%)	12.2%	38.3%	24.3%	13.9%	40.0%	23.5%	24.3%	24.3%	13.9%	23.5%	23.5%	0.0%
Maximum Green (s)	8.5	38.5	22.0	10.5	40.0	21.0	22.0	22.0	10.5	21.0	21.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	2.0	1.5	1.5	2.0	2.0	2.0	1.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	6.0	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	None	None	None	None	None	None	None	None	None	
Act Effct Green (s)	51.2	42.6	62.9	53.5	43.3	68.2	20.8	20.8	36.5	18.9	18.9	
Actuated g/C Ratio	0.45	0.37	0.55	0.47	0.38	0.59	0.18	0.18	0.32	0.16	0.16	
v/c Ratio	0.56	0.74	0.39	0.58	0.67	0.37	0.79	0.78	0.30	0.78	0.73	
Control Delay	30.4	32.6	4.1	27.2	33.8	8.8	64.4	54.6	20.1	66.1	48.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.4	32.6	4.1	27.2	33.8	8.8	64.4	54.6	20.1	66.1	48.3	
LOS	C	C	A	C	C	A	E	D	C	E	D	
Approach Delay		25.0			26.6			50.8			54.2	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	60	242	33	57	301	82	176	182	55	158	139	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m135	343	99	98	377	143	#300	246	109	#265	196	
Internal Link Dist (ft)		1396			612			564			1608	
Turn Bay Length (ft)	225			125		150	425		300	200		
Base Capacity (vph)	259	1312	1012	252	1333	1020	308	642	551	294	621	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.56	0.74	0.39	0.55	0.67	0.36	0.74	0.74	0.29	0.70	0.66	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 34.7 Intersection LOS: C
Intersection Capacity Utilization 76.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kingston Pk & N. Peters Rd.



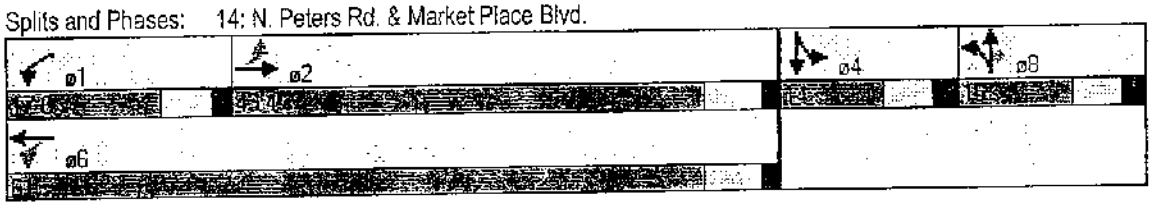
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↰	↕			↕	↱		↕	
Volume (vph)	9	779	129	188	959	65	86	5	131	40	9	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.991				0.850		0.962	
Flt Protected				0.950				0.955			0.971	
Satd. Flow (prot)	0	3465	0	1770	3507	0	0	1779	1583	0	1740	0
Flt Permitted		0.942		0.180				0.955			0.971	
Satd. Flow (perm)	0	3264	0	335	3507	0	0	1779	1583	0	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			14				138		17	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		863			1366			1450			170	
Travel Time (s)		19.6			31.0			33.0			3.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	820	136	198	1009	68	91	5	138	42	9	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	965	0	198	1077	0	0	96	138	0	71	0
Turn Type	Perm			pm+pt			Split		Perm	Split		
Protected Phases		2		1	6		8	8		4	4	
Permitted Phases	2			6					8			
Detector Phase	2	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		8.0	10.0		8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	22.0	22.0		13.5	22.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	43.4	43.4	0.0	17.6	61.0	0.0	15.0	15.0	15.0	14.0	14.0	0.0
Total Split (%)	48.2%	48.2%	0.0%	19.6%	67.8%	0.0%	16.7%	16.7%	16.7%	15.6%	15.6%	0.0%
Maximum Green (s)	37.4	37.4		12.1	55.0		9.0	9.0	9.0	8.0	8.0	
Yellow Time (s)	4.5	4.5		4.0	4.5		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	5.5	6.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None	None	None	None	
Act Effct Green (s)		42.7		58.6	58.1			8.7	8.7		8.0	
Actuated g/C Ratio		0.47		0.65	0.65			0.10	0.10		0.09	
v/c Ratio		0.62		0.53	0.47			0.56	0.50		0.42	
Control Delay		20.6		12.4	9.6			51.8	13.7		38.9	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		20.6		12.4	9.6			51.8	13.7		38.9	
LOS		C		B	A			D	B		D	
Approach Delay		20.6			10.0			29.3			38.9	
Approach LOS		C			B			C			D	
Queue Length 50th (ft)		215		44	162			53	0		29	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		298		74	209			#103	53		72	
Internal Link Dist (ft)		783			1286			1370			90	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1562		411	2269			178	283		170	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	
Reduced v/c Ratio		0.62		0.48	0.47			0.54	0.49		0.42	

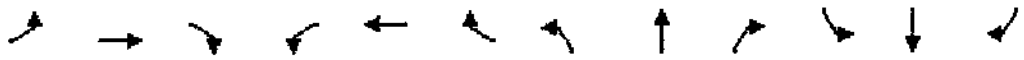
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 16.6 Intersection LOS: B
Intersection Capacity Utilization 80.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 14: N. Peters Rd. & Market Place Blvd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	687	300	39	67	288	654	50	572	137	697	632	855
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	120		300	275		0	350		500
Storage Lanes	1		0	1		1	1		0	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.91	0.91	1.00	1.00	0.91	0.91	1.00	0.91	0.91	0.97	0.91	1.00
Frt		0.989			0.920	0.850		0.971				0.850
Flt Protected	0.950	0.981		0.950			0.950			0.950		
Satd. Flow (prot)	3221	1645	0	1770	3119	1441	1770	4938	0	3433	5085	1583
Flt Permitted	0.950	0.981		0.950			0.950			0.950		
Satd. Flow (perm)	3221	1645	0	1770	3119	1441	1770	4938	0	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			200	344		39				721
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1366			378			1452			835	
Travel Time (s)		31.0			8.6			33.0			19.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	723	316	41	71	303	688	53	602	144	734	665	900
Shared Lane Traffic (%)	67108894%					50%						
Lane Group Flow (vph)	506	574	0	71	647	344	53	746	0	734	665	900
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8						6
Detector Phase	4	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	8.0	10.0		10.0	10.0	10.0
Minimum Split (s)	22.0	22.0		22.0	22.0	22.0	13.5	22.0		15.5	22.0	22.0
Total Split (s)	43.0	43.0	0.0	23.0	23.0	23.0	13.5	23.9	0.0	30.1	40.5	40.5
Total Split (%)	35.8%	35.8%	0.0%	19.2%	19.2%	19.2%	11.3%	19.9%	0.0%	25.1%	33.8%	33.8%
Maximum Green (s)	37.0	37.0		17.0	17.0	17.0	8.0	17.9		24.6	34.5	34.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	4.5		4.0	4.5	4.5
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	5.5	6.0	4.0	5.5	6.0	6.0
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		None	Max	Max
Act Effct Green (s)	37.0	37.0		17.0	17.0	17.0	8.0	17.9		24.6	37.2	37.2
Actuated g/C Ratio	0.31	0.31		0.14	0.14	0.14	0.07	0.15		0.20	0.31	0.31
v/c Ratio	0.51	1.13		0.28	1.05	0.69	0.45	0.97		1.04	0.42	0.91
Control Delay	36.2	118.5		49.5	85.6	12.8	66.5	74.0		91.9	34.6	22.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	36.2	118.5		49.5	85.6	12.8	66.5	74.0		91.9	34.6	22.9
LOS	D	F		D	F	B	E	E		F	C	C
Approach Delay		80.0			59.6			73.5			48.3	
Approach LOS		E			E			E			D	
Queue Length 50th (ft)	176	~565		50	~223	0	40	202		~317	154	160



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	234	#812		96	#350	103	84	#291		#438	194	#491
Internal Link Dist (ft)		1286			298			1372			755	
Turn Bay Length (ft)	275			120		300	275			350		500
Base Capacity (vph)	993	509		251	614	499	118	770		704	1576	988
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.51	1.13		0.28	1.05	0.69	0.45	0.97		1.04	0.42	0.91

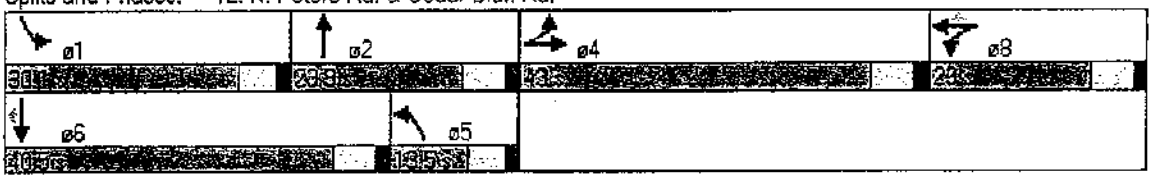
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 115
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.13
Intersection Signal Delay: 61.0 Intersection LOS: E
Intersection Capacity Utilization 89.1% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: N. Peters Rd. & Cedar Bluff Rd.



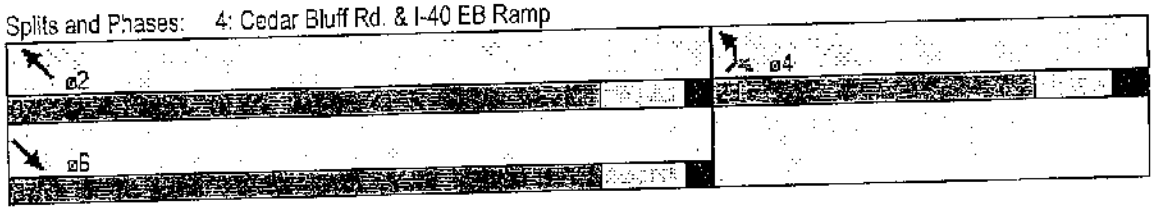
Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↑↑↑			↑↑↑	↑↑	↱
Volume (vph)	1948	0	0	1465	489	423
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	0.91
Frt					0.968	0.850
Flt Protected					0.962	
Satd. Flow (prot)	5085	0	0	5085	3365	1441
Flt Permitted					0.962	
Satd. Flow (perm)	5085	0	0	5085	3365	1441
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					4	4
Link Speed (mph)	30			30	30	
Link Distance (ft)	559			835	373	
Travel Time (s)	12.7			19.0	8.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2051	0	0	1542	515	445
Shared Lane Traffic (%)						32%
Lane Group Flow (vph)	2051	0	0	1542	657	303
Turn Type						Perm
Protected Phases	6			2	4	
Permitted Phases						4
Detector Phase	6			2	4	4
Switch Phase						
Minimum Initial (s)	10.0			10.0	8.0	8.0
Minimum Split (s)	22.0			22.0	14.0	14.0
Total Split (s)	37.0	0.0	0.0	37.0	23.0	23.0
Total Split (%)	61.7%	0.0%	0.0%	61.7%	38.3%	38.3%
Maximum Green (s)	31.0			31.0	17.0	17.0
Yellow Time (s)	4.5			4.5	4.0	4.0
All-Red Time (s)	1.5			1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Min			C-Min	None	None
Act Effct Green (s)	32.1			32.1	15.9	15.9
Actuated g/C Ratio	0.54			0.54	0.26	0.26
v/c Ratio	0.75			0.57	0.74	0.79
Control Delay	8.5			10.6	25.4	36.9
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	8.5			10.6	25.4	36.9
LOS	A			B	C	D
Approach Delay	8.5			10.6	29.0	
Approach LOS	A			B	C	
Queue Length 50th (ft)	127			129	107	106
Queue Length 95th (ft)	168			168	158	#229
Internal Link Dist (ft)	479			755	293	
Turn Bay Length (ft)						

Lane Group	SET	SER	NWL	NWT	NEL	NER
Base Capacity (vph)	2722		2722	956	411	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.75		0.57	0.69	0.74	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 2 (3%), Referenced to phase 2:NWT and 6:SET, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 13.5 Intersection LOS: B
Intersection Capacity Utilization 66.0% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Cedar Bluff Rd. & I-40 EB Ramp



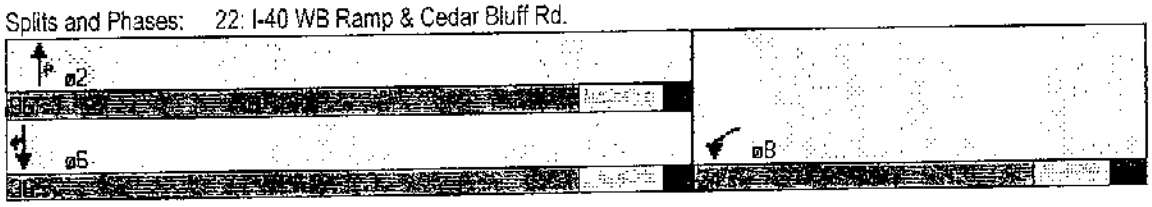
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NB	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	614	0	0	0	1639	242	0	1614	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt									0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3433	0	0	0	5085	1583	0	5085	1583
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3433	0	0	0	5085	1583	0	5085	1583
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												492
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		151			240			559			476	
Travel Time (s)		3.4			5.5			12.7			10.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	646	0	0	0	1725	255	0	1699	492
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	646	0	0	0	1725	255	0	1699	492
Turn Type				Prot					Perm			Prot
Protected Phases				8				2			6	6
Permitted Phases									2			
Detector Phase				8				2	2		6	6
Switch Phase												
Minimum Initial (s)				8.0				10.0	10.0		10.0	10.0
Minimum Split (s)				14.0				22.0	22.0		22.0	22.0
Total Split (s)	0.0	0.0	0.0	24.0	0.0	0.0	0.0	36.0	36.0	0.0	36.0	36.0
Total Split (%)	0.0%	0.0%	0.0%	40.0%	0.0%	0.0%	0.0%	60.0%	60.0%	0.0%	60.0%	60.0%
Maximum Green (s)				18.0				30.0	30.0		30.0	30.0
Yellow Time (s)				4.0				4.5	4.5		4.5	4.5
All-Red Time (s)				2.0				1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	6.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0				3.0	3.0		3.0	3.0
Recall Mode				None				C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				15.9				32.1	32.1		32.1	32.1
Actuated g/C Ratio				0.26				0.54	0.54		0.54	0.54
v/c Ratio				0.71				0.63	0.30		0.63	0.46
Control Delay				24.4				7.1	6.3		11.5	2.5
Queue Delay				0.0				0.0	0.0		0.0	0.0
Total Delay				24.4				7.1	6.3		11.5	2.5
LOS				C				A	A		B	A
Approach Delay								7.0			9.5	
Approach LOS								A			A	
Queue Length 50th (ft)				105				104	33		149	0
Queue Length 95th (ft)				151				120	m54		201	40
Internal Link Dist (ft)		71			160			479			396	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)				1030				2717	846		2717	1075
Starvation Cap Reductn				0				0	0		0	0
Spillback Cap Reductn				0				0	0		0	0
Storage Cap Reductn				0				0	0		0	0
Reduced v/c Ratio				0.63				0.63	0.30		0.63	0.46

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 2 (3%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 10.5 Intersection LOS: B
Intersection Capacity Utilization 57.5% ICU Level of Service B
Analysis Period (min) 15
m: Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: I-40 WB Ramp & Cedar Bluff Rd.



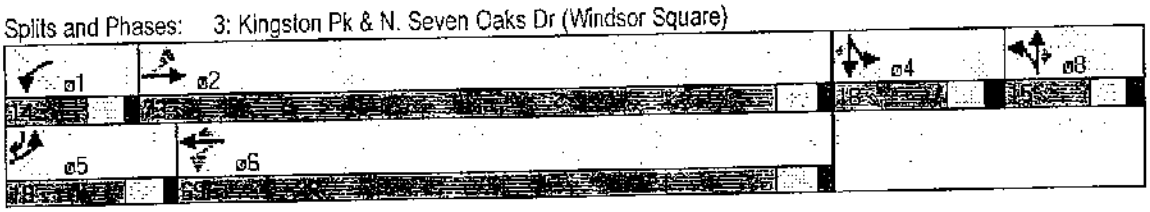
Lane Group	EBL	EBT	EBR	WB	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	1087	17	25	1098	139	11	7	15	122	13	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	150		0	0		0	100		0
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.998				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.969		0.950	0.961	
Satd. Flow (prot)	1770	3532	0	1770	3539	1583	0	1805	1583	1681	1701	1583
Flt Permitted	0.175			0.202				0.969		0.950	0.961	
Satd. Flow (perm)	326	3532	0	376	3539	1583	0	1805	1583	1681	1701	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				146			16			144
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1185			1095			456			868	
Travel Time (s)		18.0			16.6			10.4			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	124	1144	18	26	1156	146	12	7	16	128	14	144
Shared Lane Traffic (%)										45%		
Lane Group Flow (vph)	124	1162	0	26	1156	146	0	19	16	70	72	144
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	18.0	73.0	0.0	14.0	69.0	69.0	15.0	15.0	15.0	18.0	18.0	18.0
Total Split (%)	15.0%	60.8%	0.0%	11.7%	57.5%	57.5%	12.5%	12.5%	12.5%	15.0%	15.0%	15.0%
Maximum Green (s)	12.5	67.0		8.5	63.0	63.0	9.0	9.0	9.0	12.0	12.0	12.5
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	87.2	81.1		83.5	75.0	75.0		8.1	8.1	10.2	10.2	21.7
Actuated g/C Ratio	0.73	0.68		0.70	0.62	0.62		0.07	0.07	0.08	0.08	0.18
v/c Ratio	0.36	0.49		0.07	0.52	0.14		0.16	0.13	0.49	0.50	0.36
Control Delay	8.5	12.9		3.1	6.0	0.3		55.7	25.1	63.7	63.9	7.1
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	12.9		3.1	6.0	0.3		55.7	25.1	63.7	63.9	7.1
LOS	A	B		A	A	A		E	C	E	E	A
Approach Delay		12.4			5.3			41.7			35.2	
Approach LOS		B			A			D			D	
Queue Length 50th (ft)	28	277		3	82	0		14	0	55	56	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	51	355		m6	110	0		39	23	106	107	43
Internal Link Dist (ft)		1105			1015			376			788	
Turn Bay Length (ft)	200			150						100		
Base Capacity (vph)	392	2388		362	2211	1044		135	134	168	170	449
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.32	0.49		0.07	0.52	0.14		0.14	0.12	0.42	0.42	0.32

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 30 (25%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.52
Intersection Signal Delay: 11.8 Intersection LOS: B
Intersection Capacity Utilization 62.2% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Kingston Pk & N. Seven Oaks Dr (Windsor Square)



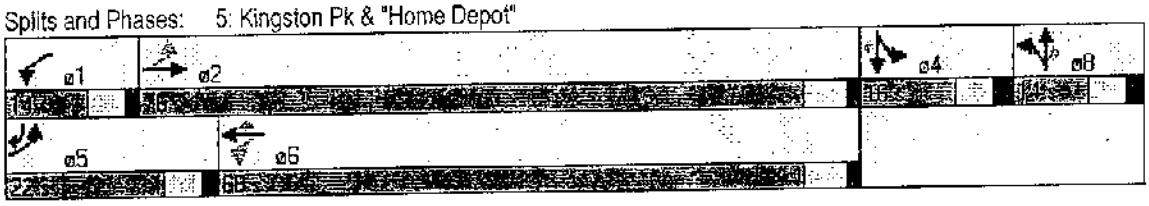
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	1261	4	23	1025	60	5	1	14	44	4	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		300	0		0	100		100
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected	0.950			0.950				0.960		0.950	0.960	
Satd. Flow (prot)	1770	3539	0	1770	3539	1583	0	1788	1583	1681	1699	1583
Flt Permitted	0.211			0.167				0.960		0.950	0.960	
Satd. Flow (perm)	393	3539	0	311	3539	1583	0	1788	1583	1681	1699	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						63			15			173
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1095			1371			223			454	
Travel Time (s)		16.6			20.8			5.1			10.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	104	1327	4	24	1079	63	5	1	15	46	4	186
Shared Lane Traffic (%)										46%		
Lane Group Flow (vph)	104	1331	0	24	1079	63	0	6	15	25	25	186
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	22.0	76.0	0.0	14.0	68.0	68.0	14.0	14.0	14.0	16.0	16.0	22.0
Total Split (%)	18.3%	63.3%	0.0%	11.7%	56.7%	56.7%	11.7%	11.7%	11.7%	13.3%	13.3%	18.3%
Maximum Green (s)	16.5	70.0		8.5	62.0	62.0	8.0	8.0	8.0	10.0	10.0	16.5
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	94.3	89.9		91.5	83.0	83.0		8.0	8.0	8.4	8.4	17.7
Actuated g/C Ratio	0.79	0.75		0.76	0.69	0.69		0.07	0.07	0.07	0.07	0.15
v/c Ratio	0.26	0.50		0.07	0.44	0.06		0.05	0.12	0.21	0.21	0.49
Control Delay	3.9	4.8		0.7	1.5	0.2		53.5	25.3	57.0	56.9	10.5
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	4.8		0.7	1.5	0.2		53.5	25.3	57.0	56.9	10.5
LOS	A	A		A	A	A		D	C	E	E	B
Approach Delay		4.7			1.4			33.3			20.3	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	10	89		0	5	0		4	0	20	20	8

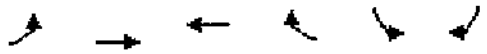
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	22	113		m0	8	m0		19	23	49	49	59
Internal Link Dist (ft)		1015			1291			143			374	
Turn Bay Length (ft)	250			150		300				100		100
Base Capacity (vph)	508	2652		342	2449	1115		119	120	140	142	477
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.20	0.50		0.07	0.44	0.06		0.05	0.13	0.18	0.18	0.39

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 47 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.50
Intersection Signal Delay: 4.9 Intersection LOS: A
Intersection Capacity Utilization 64.2% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Kingston Pk & "Home Depot"





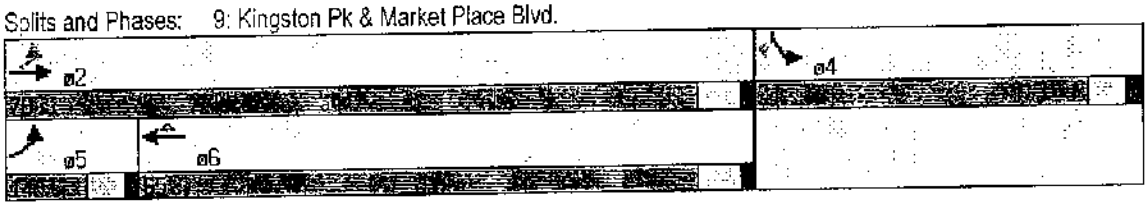
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	38	1235	1068	179	273	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.169				0.950	
Satd. Flow (perm)	315	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				192		65
Link Speed (mph)		45	45		30	
Link Distance (ft)		1371	1317		1450	
Travel Time (s)		20.8	20.0		33.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	41	1328	1148	192	294	65
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	1328	1148	192	294	65
Turn Type	pm+pt			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	13.5	22.0	16.0	16.0	14.0	14.0
Total Split (s)	14.0	79.0	65.0	65.0	41.0	41.0
Total Split (%)	11.7%	65.8%	54.2%	54.2%	34.2%	34.2%
Maximum Green (s)	8.5	73.0	59.0	59.0	35.0	35.0
Yellow Time (s)	4.0	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	83.3	82.8	72.0	72.0	25.2	25.2
Actuated g/C Ratio	0.69	0.69	0.60	0.60	0.21	0.21
v/c Ratio	0.13	0.54	0.54	0.19	0.79	0.17
Control Delay	13.1	16.1	6.0	0.4	59.8	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	16.1	6.0	0.4	59.8	9.2
LOS	B	B	A	A	E	A
Approach Delay		16.0	5.2		50.7	
Approach LOS		B	A		D	
Queue Length 50th (ft)	13	303	56	0	217	0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 95th (ft)	m37	426	96	1	294	34
Internal Link Dist (ft)		1291	1237		1370	
Turn Bay Length (ft)	250					
Base Capacity (vph)	322	2442	2123	1027	516	508
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.54	0.54	0.19	0.57	0.13

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 19 (16%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 15.3 Intersection LOS: B
Intersection Capacity Utilization 59.3% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



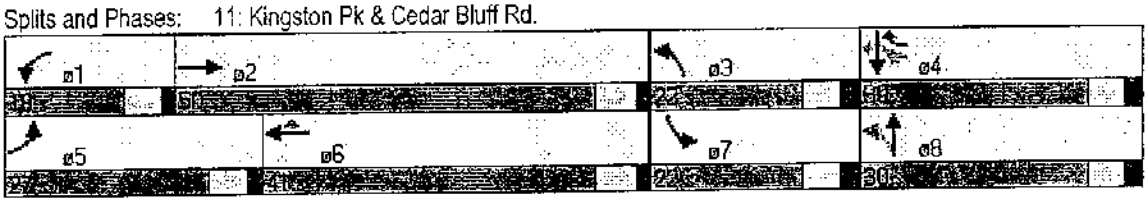
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	357	1144	47	70	868	275	77	177	82	464	207	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	250		500	150		0	300		0
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	1.00
Frt		0.994				0.850		0.953				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5055	0	1770	5085	1583	1770	3373	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.619			0.347		
Satd. Flow (perm)	3433	5055	0	1770	5085	1583	1153	3373	0	1254	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				296		57				275
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1317			1476			690			1452	
Travel Time (s)		20.0			22.4			15.7			33.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	384	1230	51	75	933	296	83	190	88	499	223	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	1281	0	75	933	296	83	278	0	499	223	275
Turn Type	Prot			Prot		custom	pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6	4	3	8		7	4	
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	4	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	22.0	22.0		22.0	22.0	22.0
Total Split (s)	27.0	50.0	0.0	18.0	41.0	30.0	22.0	30.0	0.0	22.0	30.0	30.0
Total Split (%)	22.5%	41.7%	0.0%	15.0%	34.2%	25.0%	18.3%	25.0%	0.0%	18.3%	25.0%	25.0%
Maximum Green (s)	21.5	44.0		12.5	35.0	24.0	16.0	24.0		16.0	24.0	24.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None		None	None	None
Walk Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	0
Act Effct Green (s)	18.2	57.4		10.4	46.8	72.5	25.2	15.5		36.9	24.5	24.5
Actuated g/C Ratio	0.15	0.48		0.09	0.39	0.60	0.21	0.13		0.31	0.20	0.20
v/c Ratio	0.74	0.53		0.49	0.47	0.28	0.28	0.57		0.74	0.59	0.51
Control Delay	57.9	21.4		60.2	17.3	2.0	31.3	42.6		39.8	50.5	8.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	57.9	21.4		60.2	17.3	2.0	31.3	42.6		39.8	50.5	8.0
LOS	E	C		E	B	A	C	D		D	D	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		29.8			16.3			40.0			33.4	
Approach LOS		C			B			D			C	
Queue Length 50th (ft)	150	170		51	109		47	86		162	165	0
Queue Length 95th (ft)	201	324		m83	160		m18	77	120	188	233	69
Internal Link Dist (ft)		1237			1396			610			1372	
Turn Bay Length (ft)	400			250		500	150			300		
Base Capacity (vph)	615	2420		184	1983	1092	385	720		676	407	561
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.62	0.53		0.41	0.47	0.27	0.22	0.39		0.74	0.55	0.49

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 116 (97%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 27.4 Intersection LOS: C
Intersection Capacity Utilization 70.2% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 11: Kingston Pk & Cedar Bluff Rd.



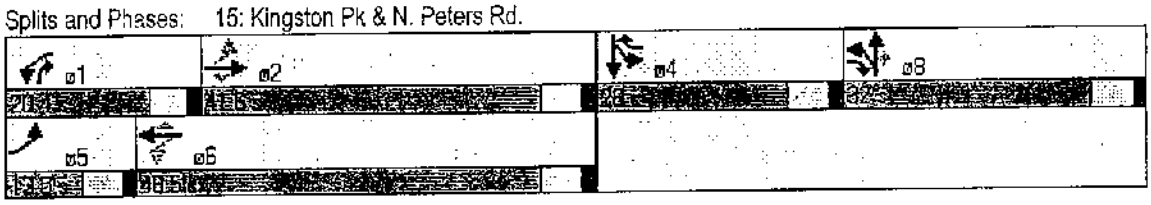
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	92	836	648	209	857	295	315	358	136	243	279	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	125		150	425		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	0.95
Frt			0.850			0.850			0.850		0.970	
Flt Protected	0.950			0.950			0.950	0.989		0.950	0.995	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1610	3353	1583	1610	3272	0
Flt Permitted	0.195			0.128			0.950	0.989		0.950	0.995	
Satd. Flow (perm)	363	3539	1583	238	3539	1583	1610	3353	1583	1610	3272	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			180			64		21	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1476			692			644			1688	
Travel Time (s)		22.4			10.5			14.6			38.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	97	880	682	220	902	311	332	377	143	256	294	86
Shared Lane Traffic (%)							31%			18%		
Lane Group Flow (vph)	97	880	682	220	902	311	229	480	143	210	426	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	8	1	6	4	8	8	1	4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	8	1	6	4	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	8.0	8.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.5	22.0	22.0	13.5	22.0	22.0	22.0	22.0	13.5	22.0	22.0	
Total Split (s)	13.5	41.6	32.0	20.4	48.5	26.0	32.0	32.0	20.4	26.0	26.0	0.0
Total Split (%)	11.3%	34.7%	26.7%	17.0%	40.4%	21.7%	26.7%	26.7%	17.0%	21.7%	21.7%	0.0%
Maximum Green (s)	8.0	35.6	26.0	14.9	42.5	20.0	26.0	26.0	14.9	20.0	20.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.5	4.5	4.0	4.5	4.5	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	None	None	None	None	None	None	None	None	None	
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	48.3	39.8	64.0	58.6	45.4	70.2	24.3	24.3	43.9	18.9	18.9	
Actuated g/C Ratio	0.40	0.33	0.53	0.49	0.38	0.58	0.20	0.20	0.37	0.16	0.16	
v/c Ratio	0.40	0.75	0.75	0.76	0.67	0.31	0.70	0.71	0.23	0.83	0.80	
Control Delay	26.5	42.1	19.4	39.1	35.0	6.1	56.6	50.6	14.5	75.3	58.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	26.5	42.1	19.4	39.1	35.0	6.1	56.6	50.6	14.5	75.3	58.3	
LOS	C	D	B	D	C	A	E	D	B	E	E	

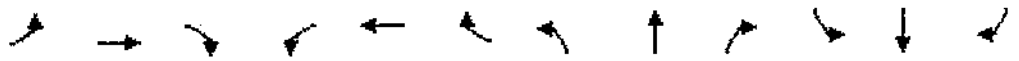
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		31.9			29.4			46.2			63.9	
Approach LOS		C			C			D			E	
Queue Length 50th (ft)	45	253	195	100	316	45	179	188	39	173	166	
Queue Length 95th (ft)	m92	357	357	#202	393	95	278	250	85	#306	228	
Internal Link Dist (ft)		1396			612			564			1608	
Turn Bay Length (ft)	225			125		150	425		300	200		
Base Capacity (vph)	240	1173	929	308	1338	1015	349	726	636	268	563	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.40	0.75	0.73	0.71	0.67	0.31	0.66	0.66	0.22	0.78	0.76	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 114 (95%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 38.2 Intersection LOS: D
Intersection Capacity Utilization 78.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kingston Pk & N. Peters Rd.





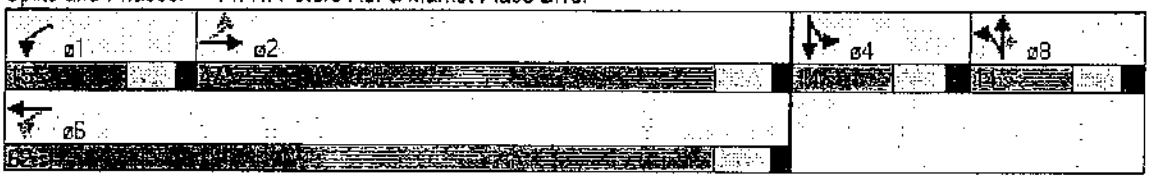
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↱		↰	↑↑↱			↰↑	↱		↔	
Volume (vph)	18	1027	78	184	886	60	77	4	124	21	3	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.991				0.850		0.949	
Flt Protected		0.999		0.950				0.955			0.973	
Satd. Flow (prot)	0	3500	0	1770	3507	0	0	1779	1583	0	1720	0
Flt Permitted		0.927		0.128				0.955			0.973	
Satd. Flow (perm)	0	3248	0	238	3507	0	0	1779	1583	0	1720	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			14				131		15	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		863			1366			1450			170	
Travel Time (s)		19.6			31.0			33.0			3.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	19	1081	82	194	933	63	81	4	131	22	3	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1182	0	194	996	0	0	85	131	0	40	0
Turn Type	Perm			pm+pt			Split		Perm	Split		
Protected Phases		2		1	6		8	8		4	4	
Permitted Phases	2			6					8			
Detector Phase	2	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		8.0	10.0		8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	22.0	22.0		13.5	22.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	47.0	47.0	0.0	15.0	62.0	0.0	14.0	14.0	14.0	14.0	14.0	0.0
Total Split (%)	52.2%	52.2%	0.0%	16.7%	68.9%	0.0%	15.6%	15.6%	15.6%	15.6%	15.6%	0.0%
Maximum Green (s)	41.0	41.0		9.5	56.0		8.0	8.0	8.0	8.0	8.0	
Yellow Time (s)	4.5	4.5		4.0	4.5		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	5.5	6.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None	None	None	None	
Act Effct Green (s)		47.2		62.1	61.6			8.0	8.0		8.0	
Actuated g/C Ratio		0.52		0.69	0.68			0.09	0.09		0.09	
v/c Ratio		0.69		0.61	0.41			0.54	0.50		0.24	
Control Delay		20.2		17.3	7.7			52.4	14.7		31.0	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		20.2		17.3	7.7			52.4	14.7		31.0	
LOS		C		B	A			D	B		C	
Approach Delay		20.2			9.3			29.5			31.0	
Approach LOS		C			A			C			C	
Queue Length 50th (ft)		288		42	140			47	0		13	

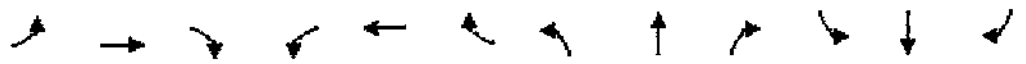
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		376	97	182				#100	53		44	
Internal Link Dist (ft)		783		1286				1370			90	
Turn Bay Length (ft)			100									
Base Capacity (vph)		1708	326	2404				158	260		167	
Starvation Cap Reductn		0	0	0				0	0		0	
Spillback Cap Reductn		0	0	0				0	0		0	
Storage Cap Reductn		0	0	0				0	0		0	
Reduced v/c Ratio		0.69	0.60	0.41				0.54	0.50		0.24	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 16.2 Intersection LOS: B
Intersection Capacity Utilization 81.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 14: N. Peters Rd. & Market Place Blvd.





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	917	195	25	32	248	645	56	653	71	598	670	949
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	120		300	275		0	350		500
Storage Lanes	1		0	1		1	1		0	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.91	0.91	1.00	1.00	0.91	0.91	1.00	0.91	0.91	0.97	0.91	1.00
Frt		0.992			0.915	0.850		0.985				0.850
Flt Protected	0.950	0.973		0.950			0.950			0.950		
Satd. Flow (prot)	3221	1636	0	1770	3102	1441	1770	5009	0	3433	5085	1583
Flt Permitted	0.950	0.973		0.950			0.950			0.950		
Satd. Flow (perm)	3221	1636	0	1770	3102	1441	1770	5009	0	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			228	343		14				704
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1366			378			1452			835	
Travel Time (s)		31.0			8.6			33.0			19.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	976	207	27	34	264	686	60	695	76	636	713	1010
Shared Lane Traffic (%)	67108894%					50%						
Lane Group Flow (vph)	683	527	0	34	607	343	60	771	0	636	713	1010
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8						6
Detector Phase	4	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	8.0	10.0		10.0	10.0	10.0
Minimum Split (s)	22.0	22.0		22.0	22.0	22.0	13.5	22.0		15.5	22.0	22.0
Total Split (s)	39.0	39.0	0.0	22.0	22.0	22.0	13.5	29.8	0.0	29.2	45.5	45.5
Total Split (%)	32.5%	32.5%	0.0%	18.3%	18.3%	18.3%	11.3%	24.8%	0.0%	24.3%	37.9%	37.9%
Maximum Green (s)	33.0	33.0		16.0	16.0	16.0	8.0	23.8		23.7	39.5	39.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	4.5		4.0	4.5	4.5
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	5.5	6.0	4.0	5.5	6.0	6.0
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		None	Max	Max
Act Effct Green (s)	33.0	33.0		16.0	16.0	16.0	8.0	23.8		23.6	42.1	42.1
Actuated g/C Ratio	0.28	0.28		0.13	0.13	0.13	0.07	0.20		0.20	0.35	0.35
v/c Ratio	0.77	1.17		0.14	0.99	0.70	0.51	0.77		0.94	0.40	1.00
Control Delay	46.8	136.2		47.8	67.3	13.5	69.6	50.4		70.7	30.9	40.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	46.8	136.2		47.8	67.3	13.5	69.6	50.4		70.7	30.9	40.8
LOS	D	F		D	E	B	E	D		E	C	D
Approach Delay		85.8			47.9			51.8			45.9	
Approach LOS		F			D			D			D	
Queue Length 50th (ft)	268	~535		24	169	0	46	205		252	157	~396

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	343	#775		56	#301	104	92	254		#363	195	#690
Internal Link Dist (ft)		1286			298			1372			755	
Turn Bay Length (ft)	275			120		300	275			350		500
Base Capacity (vph)	887	451		236	611	489	118	1006		679	1786	1012
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.77	1.17		0.14	0.99	0.70	0.51	0.77		0.94	0.40	1.00

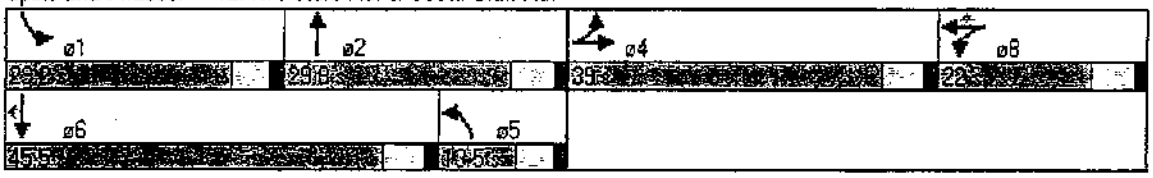
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 119.9
Natural Cycle: 115
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.17
Intersection Signal Delay: 56.1 Intersection LOS: E
Intersection Capacity Utilization 93.8% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: N. Peters Rd. & Cedar Bluff Rd.



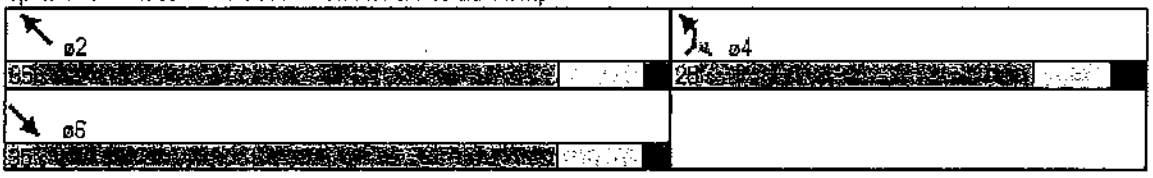
Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↑↑↑			↑↑↑	↰↑↑	↱
Volume (vph)	1970	0	0	1536	579	546
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	0.91
Frt					0.963	0.850
Flt Protected					0.964	
Satd. Flow (prot)	5085	0	0	5085	3355	1441
Flt Permitted					0.964	
Satd. Flow (perm)	5085	0	0	5085	3355	1441
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					3	3
Link Speed (mph)	30			30	30	
Link Distance (ft)	559			835	373	
Travel Time (s)	12.7			19.0	8.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2074	0	0	1617	609	575
Shared Lane Traffic (%)						35%
Lane Group Flow (vph)	2074	0	0	1617	810	374
Turn Type						Perm
Protected Phases	6			2	4	
Permitted Phases						4
Detector Phase	6			2	4	4
Switch Phase						
Minimum Initial (s)	10.0			10.0	8.0	8.0
Minimum Split (s)	22.0			22.0	14.0	14.0
Total Split (s)	35.0	0.0	0.0	35.0	25.0	25.0
Total Split (%)	58.3%	0.0%	0.0%	58.3%	41.7%	41.7%
Maximum Green (s)	29.0			29.0	19.0	19.0
Yellow Time (s)	4.5			4.5	4.0	4.0
All-Red Time (s)	1.5			1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Min			C-Min	None	None
Act Effct Green (s)	29.7			29.7	18.3	18.3
Actuated g/C Ratio	0.50			0.50	0.30	0.30
v/c Ratio	0.82			0.64	0.79	0.85
Control Delay	11.7			12.9	25.6	39.6
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	11.7			12.9	25.6	39.6
LOS	B			B	C	D
Approach Delay	11.7			12.9	30.0	
Approach LOS	B			B	C	
Queue Length 50th (ft)	140			151	133	134
Queue Length 95th (ft)	198			195	192	#283
Internal Link Dist (ft)	479			755	293	
Turn Bay Length (ft)						

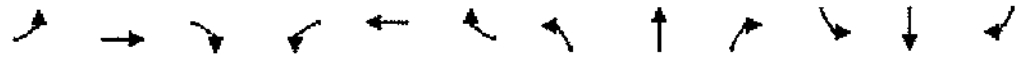
Lane Group	SET	SER	NWT	NWT	NEL	NER
Base Capacity (vph)	2517		2517	1064	458	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.82		0.64	0.76	0.82	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 0 (0%), Referenced to phase 2:NWT and 6:SET, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 16.5	Intersection LOS: B
Intersection Capacity Utilization 70.6%	ICU Level of Service C
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Cedar Bluff Rd. & I-40 EB Ramp





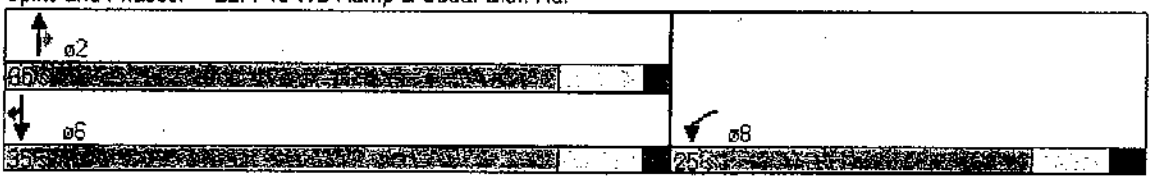
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰				↑↑↑	↱		↑↑↑	↱
Volume (vph)	0	0	0	710	0	0	0	1668	236	0	1615	652
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt									0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3433	0	0	0	5085	1583	0	5085	1583
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3433	0	0	0	5085	1583	0	5085	1583
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												686
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		151			240			559			476	
Travel Time (s)		3.4			5.5			12.7			10.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	747	0	0	0	1756	248	0	1700	686
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	747	0	0	0	1756	248	0	1700	686
Turn Type				Prot					Perm			Prot
Protected Phases				8				2			6	6
Permitted Phases									2			
Detector Phase				8				2	2		6	6
Switch Phase												
Minimum Initial (s)				8.0				10.0	10.0		10.0	10.0
Minimum Split (s)				14.0				22.0	22.0		22.0	22.0
Total Split (s)	0.0	0.0	0.0	25.0	0.0	0.0	0.0	35.0	35.0	0.0	35.0	35.0
Total Split (%)	0.0%	0.0%	0.0%	41.7%	0.0%	0.0%	0.0%	58.3%	58.3%	0.0%	58.3%	58.3%
Maximum Green (s)				19.0				29.0	29.0		29.0	29.0
Yellow Time (s)				4.0				4.5	4.5		4.5	4.5
All-Red Time (s)				2.0				1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	6.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0				3.0	3.0		3.0	3.0
Recall Mode				None				C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				17.4				30.6	30.6		30.6	30.6
Actuated g/C Ratio				0.29				0.51	0.51		0.51	0.51
v/c Ratio				0.75				0.68	0.31		0.66	0.60
Control Delay				24.3				8.4	7.4		12.8	3.5
Queue Delay				0.0				0.0	0.0		0.0	0.0
Total Delay				24.3				8.4	7.4		12.8	3.5
LOS				C				A	A		B	A
Approach Delay								8.2			10.1	
Approach LOS								A			B	
Queue Length 50th (ft)				120				109	34		160	0
Queue Length 95th (ft)				173				154	m61		210	47
Internal Link Dist (ft)		71			160			479			396	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)				1087				2590	806		2590	1143
Starvation Cap Reductn				0				0	0		0	0
Spillback Cap Reductn				0				0	0		0	0
Storage Cap Reductn				0				0	0		0	0
Reduced v/c Ratio				0.69				0.68	0.31		0.66	0.60

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 11.4 Intersection LOS: B
Intersection Capacity Utilization 60.8% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: I-40 WB Ramp & Cedar Bluff Rd.



CAPACITY ANALYSES

2012 BACKGROUND CONDITIONS

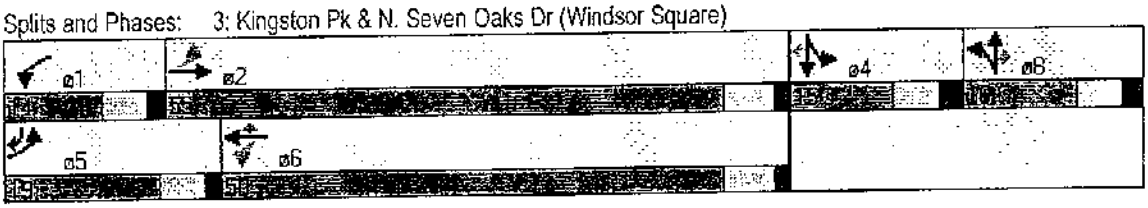
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	804	7	8	881	165	13	9	50	53	6	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	150		0	0		0	100		0
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.999				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.970		0.950	0.961	
Satd. Flow (prot)	1770	3536	0	1770	3539	1583	0	1807	1583	1681	1701	1583
Flt Permitted	0.227			0.332				0.970		0.950	0.961	
Satd. Flow (perm)	423	3536	0	618	3539	1583	0	1807	1583	1681	1701	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				174			53			87
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1185			1095			456			868	
Travel Time (s)		18.0			16.6			10.4			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	172	846	7	8	927	174	14	9	53	56	6	87
Shared Lane Traffic (%)										45%		
Lane Group Flow (vph)	172	853	0	8	927	174	0	23	53	31	31	87
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	19.0	55.0	0.0	14.0	50.0	50.0	16.0	16.0	16.0	15.0	15.0	19.0
Total Split (%)	19.0%	55.0%	0.0%	14.0%	50.0%	50.0%	16.0%	16.0%	16.0%	15.0%	15.0%	19.0%
Maximum Green (s)	13.5	49.0		8.5	44.0	44.0	10.0	10.0	10.0	9.0	9.0	13.5
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	74.1	72.4		67.5	59.0	59.0		8.2	8.2	8.3	8.3	14.8
Actuated g/C Ratio	0.74	0.72		0.68	0.59	0.59		0.08	0.08	0.08	0.08	0.15
v/c Ratio	0.39	0.33		0.02	0.44	0.17		0.15	0.30	0.22	0.22	0.28
Control Delay	8.1	8.5		3.2	5.0	0.6		45.1	16.9	46.9	46.8	7.0
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	8.5		3.2	5.0	0.6		45.1	16.9	46.9	46.8	7.0
LOS	A	A		A	A	A		D	B	D	D	A
Approach Delay		8.5			4.3			25.4			23.6	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	37	114		1	34	0		14	0	20	20	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SB	SBT	SBR
Queue Length 95th (ft)	66	230		m2	68	1		39	37	50	50	28
Internal Link Dist (ft)		1105			1015			376			788	
Turn Bay Length (ft)	200			150						100		
Base Capacity (vph)	497	2562		518	2089	1006		181	206	151	153	369
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.35	0.33		0.02	0.44	0.17		0.13	0.26	0.21	0.20	0.24

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 20 (20%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.44
Intersection Signal Delay: 8.0 Intersection LOS: A
Intersection Capacity Utilization 56.3% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Kingston Pk & N. Seven Oaks Dr (Windsor Square)



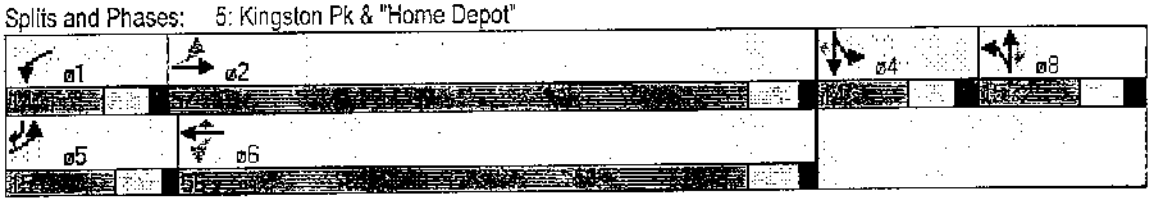
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	823	0	9	981	32	8	1	30	13	0	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		300	0		0	100		100
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected	0.950			0.950				0.957		0.950	0.950	
Satd. Flow (prot)	1770	3539	0	1770	3539	1583	0	1783	1583	1681	1681	1583
Flt Permitted	0.207			0.327				0.957		0.950	0.950	
Satd. Flow (perm)	386	3539	0	609	3539	1583	0	1783	1583	1681	1681	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						34			32			82
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1095			1371			223			454	
Travel Time (s)		16.6			20.8			5.1			10.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	104	866	0	9	1033	34	8	1	32	14	0	82
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	104	866	0	9	1033	34	0	9	32	7	7	82
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	15.0	57.0	0.0	14.0	56.0	56.0	15.0	15.0	15.0	14.0	14.0	15.0
Total Split (%)	15.0%	57.0%	0.0%	14.0%	56.0%	56.0%	15.0%	15.0%	15.0%	14.0%	14.0%	15.0%
Maximum Green (s)	9.5	51.0		8.5	50.0	50.0	9.0	9.0	9.0	8.0	8.0	9.5
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	79.6	79.7		74.7	66.2	66.2		8.0	8.0	8.0	8.0	11.7
Actuated g/C Ratio	0.80	0.80		0.75	0.66	0.66		0.08	0.08	0.08	0.08	0.12
v/c Ratio	0.25	0.31		0.02	0.44	0.03		0.06	0.20	0.05	0.05	0.32
Control Delay	5.5	3.8		1.2	7.6	2.6		43.7	18.5	43.6	43.6	8.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	3.8		1.2	7.6	2.6		43.7	18.5	43.6	43.6	8.7
LOS	A	A		A	A	A		D	B	D	D	A
Approach Delay		4.0			7.4			24.0			13.8	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)	9	41		0	60	0		5	0	4	4	0

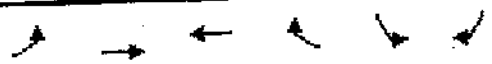
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	24	85		m1	401	2		21	29	18	18	30
Internal Link Dist (ft)		1015			1291			143			374	
Turn Bay Length (ft)	250			150		300				100		100
Base Capacity (vph)	439	2819		556	2341	1059		160	172	134	134	276
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.24	0.31		0.02	0.44	0.03		0.06	0.19	0.05	0.05	0.30

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 22 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.44
Intersection Signal Delay: 6.5 Intersection LOS: A
Intersection Capacity Utilization 55.2% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Kingston Pk & "Home Depot"





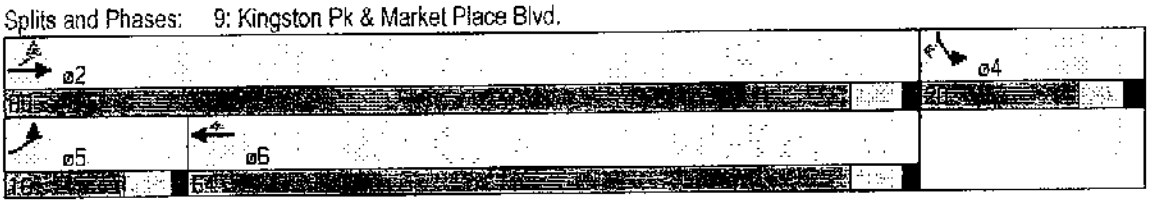
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	34	891	1004	196	57	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.224				0.950	
Satd. Flow (perm)	417	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				206		29
Link Speed (mph)		45	45		30	
Link Distance (ft)		1371	1317		1450	
Travel Time (s)		20.8	20.0		33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	36	938	1057	206	60	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	938	1057	206	60	29
Turn Type	pm+pt			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	13.5	16.0	16.0	16.0	14.0	14.0
Total Split (s)	16.0	80.0	64.0	64.0	20.0	20.0
Total Split (%)	16.0%	80.0%	64.0%	64.0%	20.0%	20.0%
Maximum Green (s)	10.5	74.0	58.0	58.0	14.0	14.0
Yellow Time (s)	4.0	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	81.9	82.6	74.5	74.5	9.4	9.4
Actuated g/C Ratio	0.82	0.83	0.74	0.74	0.09	0.09
v/c Ratio	0.08	0.32	0.40	0.17	0.36	0.17
Control Delay	6.0	8.6	3.7	0.4	48.3	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	8.6	3.7	0.4	48.3	16.9
LOS	A	A	A	A	D	B
Approach Delay		8.5	3.2		38.1	
Approach LOS		A	A		D	
Queue Length 50th (ft)	10	183	45	0	37	0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 95th (ft)	19	355	86	3	75	26
Internal Link Dist (ft)		1291	1237		1370	
Turn Bay Length (ft)	250					
Base Capacity (vph)	484	2925	2638	1233	248	247
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.32	0.40	0.17	0.24	0.12

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 82 (82%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 6.7 Intersection LOS: A
Intersection Capacity Utilization 44.9% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



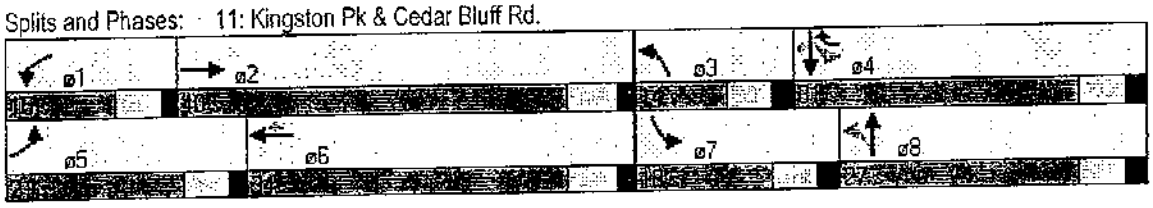
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	256	592	17	48	735	349	75	241	73	348	152	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	250		500	150		0	300		0
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	1.00
Frt		0.996				0.850		0.965				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5065	0	1770	5085	1583	1770	3415	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.656			0.324		
Satd. Flow (perm)	3433	5065	0	1770	5085	1583	1222	3415	0	1171	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				367		36				337
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1317			1476			690			1452	
Travel Time (s)		20.0			22.4			15.7			33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	269	623	18	51	774	367	79	254	77	366	160	337
Shared Lane Traffic (%)												
Lane Group Flow (vph)	269	641	0	51	774	367	79	331	0	366	160	337
Turn Type	Prot			Prot		custom	pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6	4!	3	8!		7	4	
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	4	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	14.0	14.0	14.0		14.0	14.0	14.0
Total Split (s)	21.0	40.0	0.0	15.0	34.0	31.0	14.0	27.0	0.0	18.0	31.0	31.0
Total Split (%)	21.0%	40.0%	0.0%	15.0%	34.0%	31.0%	14.0%	27.0%	0.0%	18.0%	31.0%	31.0%
Maximum Green (s)	15.5	34.0		9.5	28.0	25.0	8.0	21.0		12.0	25.0	25.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None		None	None	None
Act Effct Green (s)	13.1	44.2		9.0	37.5	59.4	22.0	14.0		30.4	20.8	20.8
Actuated g/C Ratio	0.13	0.44		0.09	0.38	0.59	0.22	0.14		0.30	0.21	0.21
v/c Ratio	0.60	0.29		0.32	0.41	0.34	0.25	0.65		0.58	0.41	0.57
Control Delay	55.4	13.4		39.8	21.7	1.3	25.8	41.9		29.5	38.6	7.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	55.4	13.4		39.8	21.7	1.3	25.8	41.9		29.5	38.6	7.9
LOS	E	B		D	C	A	C	D		C	D	A
Approach Delay		25.8			16.2			38.8			22.8	
Approach LOS		C			B			D			C	
Queue Length 50th (ft)	94	46		33	107	0	36	94		91	92	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	134	75		m57	154	m6	66	134		121	149	71
Internal Link Dist (ft)		1237			1396			610			1372	
Turn Bay Length (ft)	400			250		500	150			300		
Base Capacity (vph)	540	2244		174	1906	1148	313	746		627	476	655
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.50	0.29		0.29	0.41	0.32	0.25	0.44		0.58	0.34	0.51

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 71 (71%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 23.2 Intersection LOS: C
Intersection Capacity Utilization 60.0% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 11: Kingston Pk & Cedar Bluff Rd.



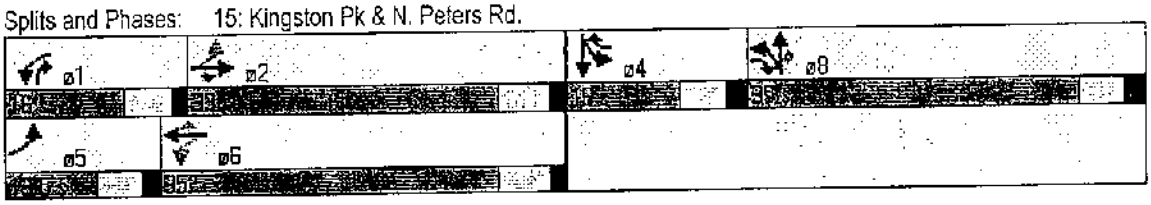
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	666	381	159	559	233	535	518	296	133	137	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	125		150	425		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	0.95
Frt			0.850			0.850			0.850		0.977	
Flt Protected	0.950			0.950			0.950	0.987		0.950	0.992	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1610	3346	1583	1610	3286	0
Flt Permitted	0.364			0.203			0.950	0.987		0.950	0.992	
Satd. Flow (perm)	678	3539	1583	378	3539	1583	1610	3346	1583	1610	3286	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			226			217			71		16	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1476			692			644			1688	
Travel Time (s)		22.4			10.5			14.6			38.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	69	701	401	167	588	245	563	545	312	140	144	33
Shared Lane Traffic (%)							36%			25%		
Lane Group Flow (vph)	69	701	401	167	588	245	360	748	312	105	212	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	8	1	6	4	8	8	1	4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	8	1	6	4	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	8.0	8.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.5	22.0	14.0	13.5	22.0	14.0	14.0	14.0	13.5	14.0	14.0	
Total Split (s)	13.5	33.0	35.0	16.0	35.5	16.0	35.0	35.0	16.0	16.0	16.0	0.0
Total Split (%)	13.5%	33.0%	35.0%	16.0%	35.5%	16.0%	35.0%	35.0%	16.0%	16.0%	16.0%	0.0%
Maximum Green (s)	8.0	27.0	29.0	10.5	29.5	10.0	29.0	29.0	10.5	10.0	10.0	
Yellow Time (s)	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	2.0	1.5	1.5	2.0	2.0	2.0	1.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	None	None	None	None	None	None	None	None	None	
Act Effct Green (s)	38.0	29.5	57.1	42.8	34.0	49.6	27.6	27.6	43.4	9.6	9.6	
Actuated g/C Ratio	0.38	0.30	0.57	0.43	0.34	0.50	0.28	0.28	0.43	0.10	0.10	
v/c Ratio	0.20	0.67	0.40	0.56	0.49	0.27	0.81	0.81	0.43	0.68	0.64	
Control Delay	14.7	30.0	5.2	25.0	29.4	4.1	49.1	41.5	16.5	66.1	49.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	14.7	30.0	5.2	25.0	29.4	4.1	49.1	41.5	16.5	66.1	49.6	
LOS	B	C	A	C	C	A	D	D	B	E	D	
Approach Delay		20.6			22.5			37.9			55.1	
Approach LOS		C			C			D			E	
Queue Length 50th (ft)	20	202	19	65	166	10	229	239	98	72	67	

Lane Groups	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m27	275	112	110	222	53	#379	313	166	#152	107	
Internal Link Dist (ft)		1396			612			564			1608	
Turn Bay Length (ft)	225			125		150	425		300	200		
Base Capacity (vph)	345	1044	1020	308	1204	901	467	970	737	161	343	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.20	0.67	0.39	0.54	0.49	0.27	0.77	0.77	0.42	0.65	0.62	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 12 (12%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 30.2 Intersection LOS: C
Intersection Capacity Utilization 73.4% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kingston Pk & N. Peters Rd.



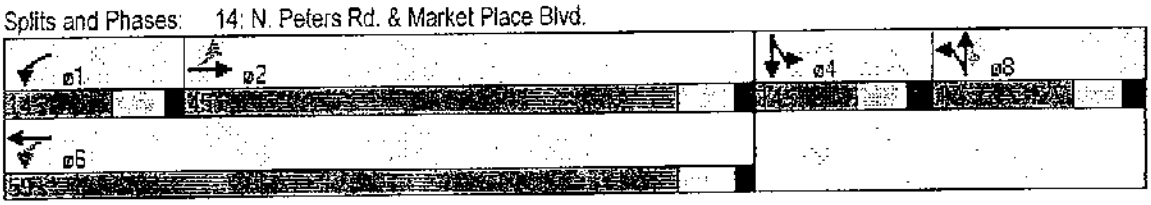
Lane Group	EB	EBT	EBR	WB	WBT	WBR	NB	NBT	NBR	SB	SBT	SBR
Lane Configurations		↔		↰	↑↑			↰	↱		↔	
Volume (vph)	2	466	46	115	1229	28	82	1	56	27	10	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.997				0.850		0.957	
Flt Protected				0.950				0.953			0.976	
Satd. Flow (prot)	0	3493	0	1770	3529	0	0	1775	1583	0	1740	0
Flt Permitted		0.951		0.376				0.953			0.976	
Satd. Flow (perm)	0	3322	0	700	3529	0	0	1775	1583	0	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			4				59		18	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		863			1366			1450			170	
Travel Time (s)		19.6			31.0			33.0			3.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2	491	48	121	1294	29	86	1	59	28	11	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	541	0	121	1323	0	0	87	59	0	57	0
Turn Type	Perm			pm+pt			Split		Perm	Split		
Protected Phases		2		1	6		8	8		4	4	
Permitted Phases	2			6					8			
Detector Phase	2	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		8.0	10.0		8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	22.0	22.0		13.5	22.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	45.0	45.0	0.0	14.0	59.0	0.0	17.0	17.0	17.0	14.0	14.0	0.0
Total Split (%)	50.0%	50.0%	0.0%	15.6%	65.6%	0.0%	18.9%	18.9%	18.9%	15.6%	15.6%	0.0%
Maximum Green (s)	39.0	39.0		8.5	53.0		11.0	11.0	11.0	8.0	8.0	
Yellow Time (s)	4.5	4.5		4.0	4.5		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	5.5	6.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None	None	None	None	
Act Effct Green (s)		46.3		60.5	61.2			9.6	9.6		8.0	
Actuated g/C Ratio		0.51		0.67	0.68			0.11	0.11		0.09	
v/c Ratio		0.32		0.21	0.55			0.46	0.27		0.33	
Control Delay		15.1		8.3	11.2			45.7	13.5		34.5	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		15.1		8.3	11.2			45.7	13.5		34.5	
LOS		B		A	B			D	B		C	
Approach Delay		15.1			10.9			32.7			34.5	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)		98		26	228			47	0		21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		143		51	305			93	35		58	
Internal Link Dist (ft)		783			1286			1370			90	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1716		572	2402			217	245		171	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	
Reduced v/c Ratio		0.32		0.21	0.55			0.40	0.24		0.33	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 14.0 Intersection LOS: B
Intersection Capacity Utilization 74.0% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 14: N. Peters Rd. & Market Place Blvd.



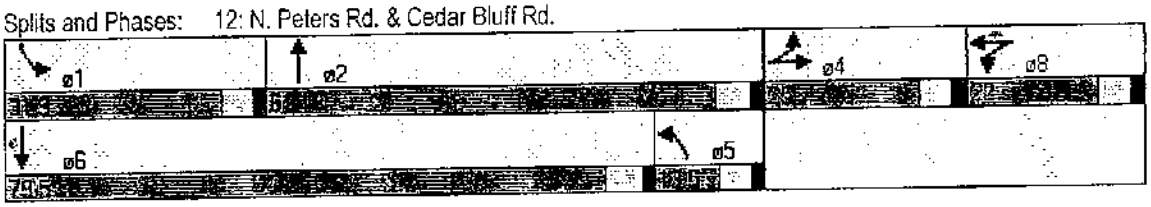
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	406	71	21	13	89	584	28	710	23	428	669	1138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	120		300	275		0	350		500
Storage Lanes	1		0	1		1	1		0	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.91	0.91	1.00	1.00	0.91	0.91	1.00	0.91	0.91	0.97	0.91	1.00
Frt		0.986			0.885	0.850		0.995				0.850
Flt Protected	0.950	0.972		0.950			0.950			0.950		
Satd. Flow (prot)	3221	1623	0	1770	3000	1441	1770	5060	0	3433	5085	1583
Flt Permitted	0.950	0.972		0.950			0.950			0.950		
Satd. Flow (perm)	3221	1623	0	1770	3000	1441	1770	5060	0	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			308	307		4				730
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1366			378			1452			835	
Travel Time (s)		31.0			8.6			33.0			19.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	427	75	22	14	94	615	29	747	24	451	704	1198
Shared Lane Traffic (%)	67108894%					50%						
Lane Group Flow (vph)	299	225	0	14	402	307	29	771	0	451	704	1198
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8						6
Detector Phase	4	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	8.0	10.0		8.0	10.0	10.0
Minimum Split (s)	22.0	22.0		22.0	22.0	22.0	13.5	22.0		13.5	22.0	22.0
Total Split (s)	25.0	25.0	0.0	22.0	22.0	22.0	13.5	61.1	0.0	31.9	79.5	79.5
Total Split (%)	17.9%	17.9%	0.0%	15.7%	15.7%	15.7%	9.6%	43.6%	0.0%	22.8%	56.8%	56.8%
Maximum Green (s)	19.0	19.0		16.0	16.0	16.0	8.0	55.1		26.4	73.5	73.5
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.5
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	5.5	6.0	4.0	5.5	6.0	6.0
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	19.0	19.0		12.4	12.4	12.4	8.0	62.1		23.0	82.5	82.5
Actuated g/C Ratio	0.14	0.14		0.09	0.09	0.09	0.06	0.44		0.16	0.59	0.59
v/c Ratio	0.68	1.01		0.09	0.74	0.75	0.29	0.34		0.80	0.23	0.97
Control Delay	66.5	121.0		58.3	23.7	18.5	70.9	26.7		67.4	15.0	31.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	2.7
Total Delay	66.5	121.0		58.3	23.7	18.5	70.9	26.7		67.4	15.0	34.6
LOS	E	F		E	C	B	E	C		E	B	C
Approach Delay		89.9			22.1			28.3			35.0	
Approach LOS		F			C			C			C	
Queue Length 50th (ft)	144	~228		12	45	0	26	163		205	115	622

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	200	#423		34	102	107	61	219		260	153	#1083
Internal Link Dist (ft)		1286			298			1372			755	
Turn Bay Length (ft)	275			120		300	275			350		500
Base Capacity (vph)	437	223		202	616	437	101	2247		647	2997	1233
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	20
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.68	1.01		0.07	0.65	0.70	0.29	0.34		0.70	0.23	0.99

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 38.2 Intersection LOS: D
Intersection Capacity Utilization 100.5% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: N. Peters Rd. & Cedar Bluff Rd.

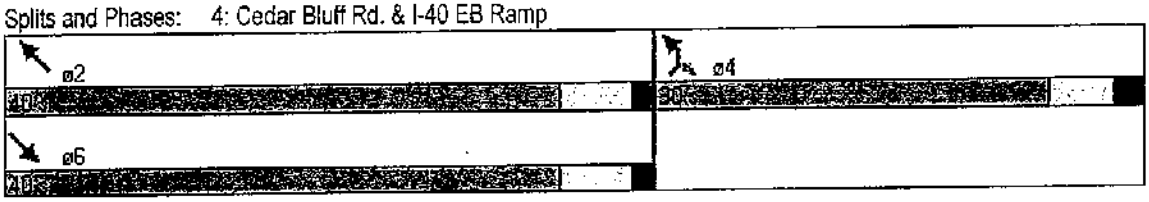


Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↑↑↑			↑↑↑	↑↑	↱
Volume (vph)	2591	0	0	1614	1129	580
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	0.91
Frt					0.993	0.850
Flt Protected					0.955	
Satd. Flow (prot)	5085	0	0	5085	3427	1441
Flt Permitted					0.955	
Satd. Flow (perm)	5085	0	0	5085	3427	1441
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	30			30	30	
Link Distance (ft)	559			835	373	
Travel Time (s)	12.7			19.0	8.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2727	0	0	1699	1188	611
Shared Lane Traffic (%)						10%
Lane Group Flow (vph)	2727	0	0	1699	1249	550
Turn Type						Perm
Protected Phases	6			2	4	
Permitted Phases						4
Detector Phase	6			2	4	4
Switch Phase						
Minimum Initial (s)	10.0			10.0	8.0	8.0
Minimum Split (s)	22.0			22.0	22.0	22.0
Total Split (s)	40.0	0.0	0.0	40.0	30.0	30.0
Total Split (%)	57.1%	0.0%	0.0%	57.1%	42.9%	42.9%
Maximum Green (s)	34.0			34.0	24.0	24.0
Yellow Time (s)	4.5			4.5	4.0	4.0
All-Red Time (s)	1.5			1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Min			C-Min	None	None
Act Effct Green (s)	34.0			34.0	24.0	24.0
Actuated g/C Ratio	0.49			0.49	0.34	0.34
v/c Ratio	1.10			0.69	1.06	1.11
Control Delay	73.9			9.9	69.7	101.1
Queue Delay	1.6			0.0	8.9	9.4
Total Delay	75.4			9.9	78.6	110.6
LOS	E			A	E	F
Approach Delay	75.4			9.9	88.4	
Approach LOS	E			A	F	
Queue Length 50th (ft)	~501			123	~312	~305
Queue Length 95th (ft)	#595			m160	#430	#501
Internal Link Dist (ft)	479			755	293	
Turn Bay Length (ft)						

Lane Group	SET	SER	NWL	NWT	NEL	NER
Base Capacity (vph)	2470		2470	1175	494	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	8		0	24	10	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	1.11		0.69	1.09	1.14	

Intersection Summary
Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NWT and 6:SET, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 61.3 Intersection LOS: E
Intersection Capacity Utilization 98.3% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Cedar Bluff Rd. & I-40 EB Ramp



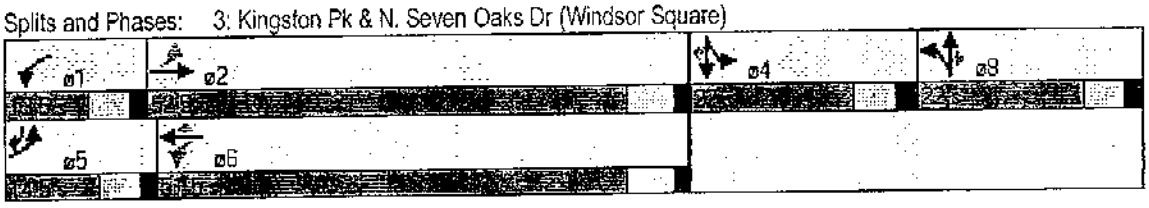
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	1334	14	20	1399	250	13	8	22	203	7	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	150		0	0		0	100		0
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.998				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.969		0.950	0.955	
Satd. Flow (prot)	1770	3532	0	1770	3539	1583	0	1805	1583	1681	1690	1583
Flt Permitted	0.066			0.140				0.969		0.950	0.955	
Satd. Flow (perm)	123	3532	0	261	3539	1583	0	1805	1583	1681	1690	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				208			23			208
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1185			1095			456			868	
Travel Time (s)		18.0			16.6			10.4			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	1404	15	21	1473	263	14	8	23	214	7	208
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	204	1419	0	21	1473	263	0	22	23	111	110	208
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	22.0	22.0	22.0	22.0	22.0	13.5
Total Split (s)	14.5	52.5	0.0	13.5	51.5	51.5	22.0	22.0	22.0	22.0	22.0	14.5
Total Split (%)	13.2%	47.7%	0.0%	12.3%	46.8%	46.8%	20.0%	20.0%	20.0%	20.0%	20.0%	13.2%
Maximum Green (s)	9.0	46.5		8.0	45.5	45.5	16.0	16.0	16.0	16.0	16.0	9.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None	None	None	None	None
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	
Act Effct Green (s)	77.6	71.7		65.9	57.4	57.4		8.2	8.2	12.3	12.3	29.2
Actuated g/C Ratio	0.71	0.65		0.60	0.52	0.52		0.07	0.07	0.11	0.11	0.27
v/c Ratio	0.68	0.62		0.08	0.80	0.28		0.16	0.17	0.59	0.58	0.36
Control Delay	34.8	16.3		2.5	11.1	0.8		50.7	21.0	58.7	58.2	4.3
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	16.3		2.5	11.1	0.8		50.7	21.0	58.7	58.2	4.3
LOS	C	B		A	B	A		D	C	E	E	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		18.6			9.4			35.5			32.2	
Approach LOS		B			A			D			C	
Queue Length 50th (ft)	87	281		1	150	4		15	0	80	78	0
Queue Length 95th (ft)	171	535		m2	#688	m0		40	26	136	135	39
Internal Link Dist (ft)		1105			1015			376			788	
Turn Bay Length (ft)	200			150						100		
Base Capacity (vph)	299	2303		266	1847	926		263	250	245	246	573
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.68	0.62		0.08	0.80	0.28		0.08	0.09	0.45	0.45	0.36

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 38 (35%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 16.1 Intersection LOS: B
Intersection Capacity Utilization 76.5% ICU Level of Service D
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Kingston Pk & N. Seven Oaks Dr (Windsor Square)



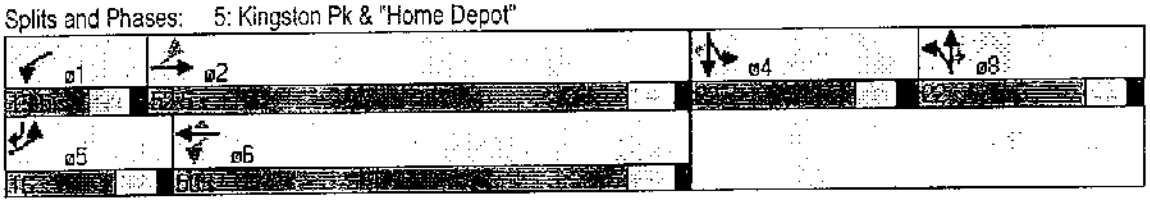
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	223	1390	3	5	1416	114	10	1	10	68	1	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		300	0		0	100		100
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected	0.950			0.950				0.956		0.950	0.954	
Satd. Flow (prot)	1770	3539	0	1770	3539	1583	0	1781	1583	1681	1688	1583
Flt Permitted	0.071			0.163				0.956		0.950	0.954	
Satd. Flow (perm)	132	3539	0	304	3539	1583	0	1781	1583	1681	1688	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						108			11			269
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1095			1371			223			454	
Travel Time (s)		16.6			20.8			5.1			10.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	235	1463	3	5	1491	120	11	1	11	72	1	301
Shared Lane Traffic (%)										49%		
Lane Group Flow (vph)	235	1466	0	5	1491	120	0	12	11	37	36	301
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	22.0	22.0	22.0	22.0	22.0	13.5
Total Split (s)	16.0	52.5	0.0	13.5	50.0	50.0	22.0	22.0	22.0	22.0	22.0	16.0
Total Split (%)	14.5%	47.7%	0.0%	12.3%	45.5%	45.5%	20.0%	20.0%	20.0%	20.0%	20.0%	14.5%
Maximum Green (s)	10.5	46.5		8.0	44.0	44.0	16.0	16.0	16.0	16.0	16.0	10.5
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	
Act Effct Green (s)	87.0	85.0		72.6	64.1	64.1		8.0	8.0	8.7	8.7	26.6
Actuated g/C Ratio	0.79	0.77		0.66	0.58	0.58		0.07	0.07	0.08	0.08	0.24
v/c Ratio	0.66	0.54		0.02	0.72	0.12		0.09	0.09	0.28	0.27	0.51
Control Delay	32.4	12.3		7.2	14.6	3.7		49.5	25.3	52.7	52.4	7.0
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	12.3		7.2	14.6	3.7		49.5	25.3	52.7	52.4	7.0
LOS	C	B		A	B	A		D	C	D	D	A

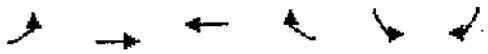
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		15.1			13.8			37.9			15.9	
Approach LOS		B			B			D			B	
Queue Length 50th (ft)	103	103		0	88	0		8	0	26	26	17
Queue Length 95th (ft)	230	439		m2	#703	m19		28	18	61	60	59
Internal Link Dist (ft)		1015			1291			143			374	
Turn Bay Length (ft)	250			150		300				100		100
Base Capacity (vph)	355	2734		307	2063	968		259	240	245	246	586
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.66	0.54		0.02	0.72	0.12		0.05	0.05	0.15	0.15	0.51

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 24 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 14.7 Intersection LOS: B
Intersection Capacity Utilization 78.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Kingston Pk & "Home Depot"





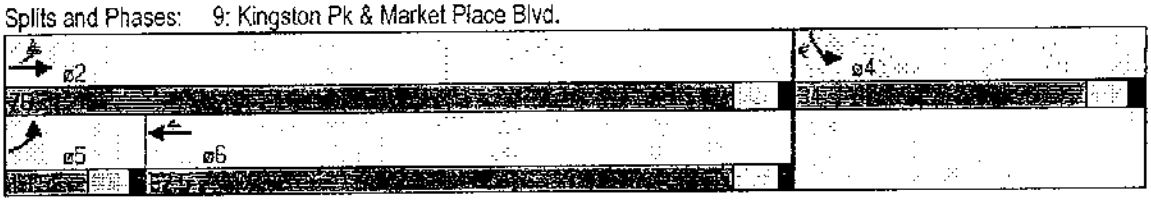
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	65	1332	1343	243	268	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.102				0.950	
Satd. Flow (perm)	190	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				255		76
Link Speed (mph)		45	45		30	
Link Distance (ft)		1371	1317		1450	
Travel Time (s)		20.8	20.0		33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	1402	1414	256	282	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	1402	1414	256	282	76
Turn Type	pm+pt			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	13.5	22.0	22.0	22.0	14.0	14.0
Total Split (s)	13.5	76.0	62.5	62.5	34.0	34.0
Total Split (%)	12.3%	69.1%	56.8%	56.8%	30.9%	30.9%
Maximum Green (s)	8.0	70.0	56.5	56.5	28.0	28.0
Yellow Time (s)	4.0	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	76.2	75.7	64.9	64.9	22.3	22.3
Actuated g/C Ratio	0.69	0.69	0.59	0.59	0.20	0.20
v/c Ratio	0.28	0.58	0.68	0.25	0.79	0.20
Control Delay	14.2	10.9	9.7	0.5	57.0	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	10.9	9.7	0.5	57.0	8.8
LOS	B	B	A	A	E	A
Approach Delay		11.1	8.3		46.7	
Approach LOS		B	A		D	
Queue Length 50th (ft)	16	200	98	0	190	0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 95th (ft)	m49	239	147	1	269	36
Internal Link Dist (ft)		1291	1237		1370	
Turn Bay Length (ft)	250					
Base Capacity (vph)	247	2437	2089	1039	451	460
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.58	0.68	0.25	0.63	0.17

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 8 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 13.4 Intersection LOS: B
Intersection Capacity Utilization 73.2% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



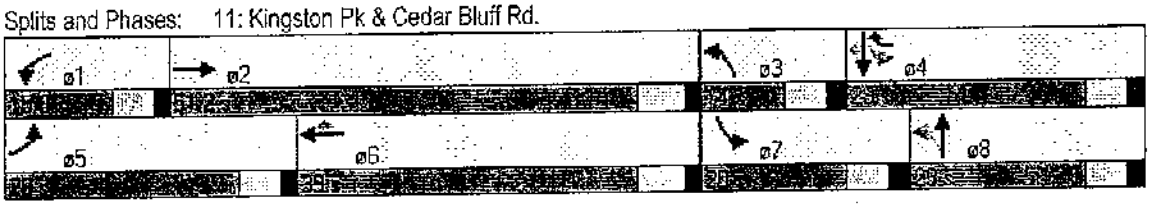
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	439	1158	53	71	1058	300	103	159	117	464	189	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	250		500	150		0	300		0
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	1.00
Frt		0.993				0.850		0.936				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5050	0	1770	5085	1583	1770	3313	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.633			0.296		
Satd. Flow (perm)	3433	5050	0	1770	5085	1583	1179	3313	0	1070	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				316		123				392
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1317			1476			690			1452	
Travel Time (s)		20.0			22.4			15.7			33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	462	1219	56	75	1114	316	108	167	123	488	199	394
Shared Lane Traffic (%)												
Lane Group Flow (vph)	462	1275	0	75	1114	316	108	290	0	488	199	394
Turn Type	Prot			Prot		custom	pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6	4l	3	8l		7	4	
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	4	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	14.0	14.0	14.0		14.0	14.0	14.0
Total Split (s)	28.0	51.2	0.0	15.8	39.0	29.0	14.0	23.0	0.0	20.0	29.0	29.0
Total Split (%)	25.5%	46.5%	0.0%	14.4%	35.5%	26.4%	12.7%	20.9%	0.0%	18.2%	26.4%	26.4%
Maximum Green (s)	22.5	45.2		10.3	33.0	23.0	8.0	17.0		14.0	23.0	23.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None		None	None	None
Act Effct Green (s)	19.4	53.0		9.6	40.5	59.1	20.6	12.6		32.6	18.6	18.6
Actuated g/C Ratio	0.18	0.48		0.09	0.37	0.54	0.19	0.11		0.30	0.17	0.17
v/c Ratio	0.76	0.52		0.48	0.60	0.32	0.41	0.59		0.79	0.63	0.66
Control Delay	53.7	20.3		39.5	32.7	2.2	33.8	30.9		41.5	51.3	9.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	53.7	20.3		39.5	32.7	2.2	33.8	30.9		41.5	51.3	9.9
LOS	D	C		D	C	A	C	C		D	D	A
Approach Delay		29.2			26.7			31.7			31.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	162	163		51	235	6	57	58		145	132	1

Lane Groups	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	218	276		m59	m299	m27	96	98		183	201	86
Internal Link Dist (ft)		1237			1396			610			1372	
Turn Bay Length (ft)	400			250		500	150			300		
Base Capacity (vph)	702	2437		169	1870	1047	264	616		618	390	641
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.66	0.52		0.44	0.60	0.30	0.41	0.47		0.79	0.51	0.61

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 102 (93%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 29.2 Intersection LOS: C
Intersection Capacity Utilization 73.9% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 11: Kingston Pk & Cedar Bluff Rd.



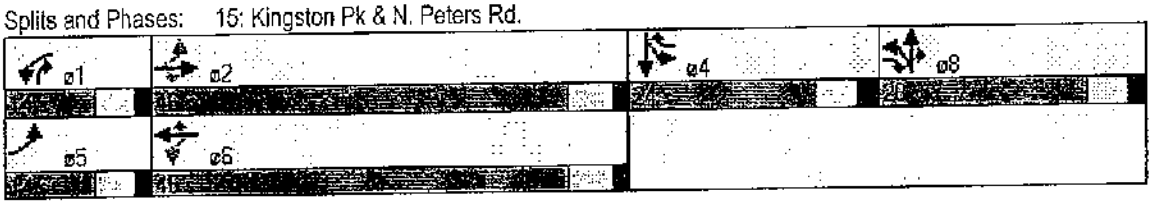
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	159	1070	433	153	984	406	355	420	176	340	206	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	125		150	425		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	0.95
Frt			0.850			0.850			0.850		0.956	
Flt Protected	0.950			0.950			0.950	0.990		0.950	0.988	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1610	3356	1583	1610	3202	0
Flt Permitted	0.107			0.100			0.950	0.990		0.950	0.988	
Satd. Flow (perm)	199	3539	1583	186	3539	1583	1610	3356	1583	1610	3202	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187			80			29		45	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1476			692			644			1688	
Travel Time (s)		22.4			10.5			14.6			38.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	167	1126	456	161	1036	427	374	442	185	358	217	140
Shared Lane Traffic (%)							29%			33%		
Lane Group Flow (vph)	167	1126	456	161	1036	427	266	550	185	240	475	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	8	1	6	4	8	8	1	4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	8	1	6	4	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	8.0	8.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.5	22.0	14.0	13.5	22.0	14.0	14.0	14.0	13.5	14.0	14.0	
Total Split (s)	14.0	46.0	26.0	14.0	46.0	24.0	26.0	26.0	14.0	24.0	24.0	0.0
Total Split (%)	12.7%	41.8%	23.6%	12.7%	41.8%	21.8%	23.6%	23.6%	12.7%	21.8%	21.8%	0.0%
Maximum Green (s)	8.5	40.0	20.0	8.5	40.0	18.0	20.0	20.0	8.5	18.0	18.0	
Yellow Time (s)	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	2.0	1.5	1.5	2.0	2.0	2.0	1.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	None	None	None	None	None	None	None	None	None	
Act Effct Green (s)	49.1	40.1	60.0	49.0	40.0	64.0	19.9	19.9	34.5	18.0	18.0	
Actuated g/C Ratio	0.45	0.36	0.55	0.45	0.36	0.58	0.18	0.18	0.31	0.16	0.16	
v/c Ratio	0.79	0.87	0.48	0.79	0.80	0.45	0.91	0.90	0.36	0.91	0.85	
Control Delay	45.5	36.5	8.9	47.6	37.3	12.0	79.3	64.0	26.8	83.4	55.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	45.5	36.5	8.9	47.6	37.3	12.0	79.3	64.0	26.8	83.4	55.5	
LOS	D	D	A	D	D	B	E	E	C	F	E	
Approach Delay		30.2			31.7			61.2			64.8	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	52	390	83	61	342	128	204	210	84	185	164	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m#145	#482	m235	#169	427	201	#373	#314	147	#348	#253	
Internal Link Dist (ft)		1396			612			564			1608	
Turn Bay Length (ft)	225			125		150	425		300	200		
Base Capacity (vph)	211	1289	949	205	1288	954	293	610	516	263	562	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.79	0.87	0.48	0.79	0.80	0.45	0.91	0.90	0.36	0.91	0.85	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 32 (29%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 41.6 Intersection LOS: D
Intersection Capacity Utilization 85.5% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kingston Pk & N. Peters Rd.



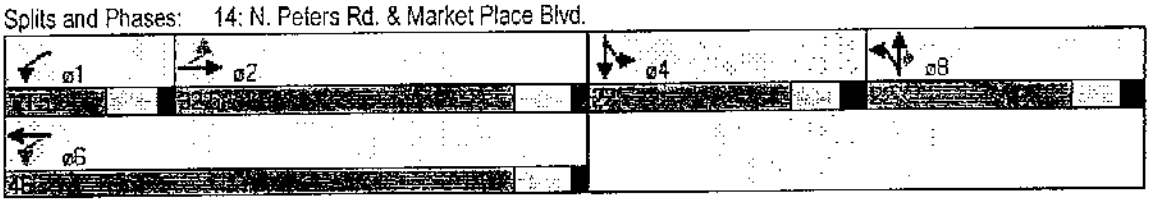
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	903	150	218	1111	75	100	6	152	51	10	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.991				0.850		0.965	
Flt Protected				0.950				0.955			0.970	
Satd. Flow (prot)	0	3465	0	1770	3507	0	0	1779	1583	0	1744	0
Flt Permitted		0.935		0.123				0.955			0.970	
Satd. Flow (perm)	0	3240	0	229	3507	0	0	1779	1583	0	1744	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			10				160		17	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		863			1366			1450			170	
Travel Time (s)		19.6			31.0			33.0			3.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	951	158	229	1169	79	105	6	160	54	11	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1120	0	229	1248	0	0	111	160	0	88	0
Turn Type	Perm			pm+pt			Split		Perm	Split		
Protected Phases		2		1	6		8	8		4	4	
Permitted Phases	2			6					8			
Detector Phase	2	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		8.0	10.0		8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	22.0	22.0		13.5	22.0		22.0	22.0	22.0	22.0	22.0	
Total Split (s)	32.5	32.5	0.0	13.5	46.0	0.0	22.0	22.0	22.0	22.0	22.0	0.0
Total Split (%)	36.1%	36.1%	0.0%	15.0%	51.1%	0.0%	24.4%	24.4%	24.4%	24.4%	24.4%	0.0%
Maximum Green (s)	26.5	26.5		8.0	40.0		16.0	16.0	16.0	16.0	16.0	
Yellow Time (s)	4.5	4.5		4.0	4.5		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	5.5	6.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		None	Max		None	None	None	None	None	
Act Effct Green (s)		26.9		41.1	40.6			10.5	10.5		9.4	
Actuated g/C Ratio		0.36		0.55	0.54			0.14	0.14		0.12	
v/c Ratio		0.96		0.79	0.66			0.45	0.45		0.38	
Control Delay		44.2		35.9	16.1			37.4	10.0		32.1	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		44.2		35.9	16.1			37.4	10.0		32.1	
LOS		D		D	B			D	A		C	
Approach Delay		44.2			19.2			21.2			32.1	
Approach LOS		D			B			C			C	
Queue Length 50th (ft)		270		55	214			50	0		32	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		#484		#204	355			102	51		77	
Internal Link Dist (ft)		783			1286			1370			90	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1172		291	1897			384	467		390	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	
Reduced v/c Ratio		0.96		0.79	0.66			0.29	0.34		0.23	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 75.2
Natural Cycle: 100
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 29.2 Intersection LOS: C
Intersection Capacity Utilization 89.5% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 14: N. Peters Rd. & Market Place Blvd.



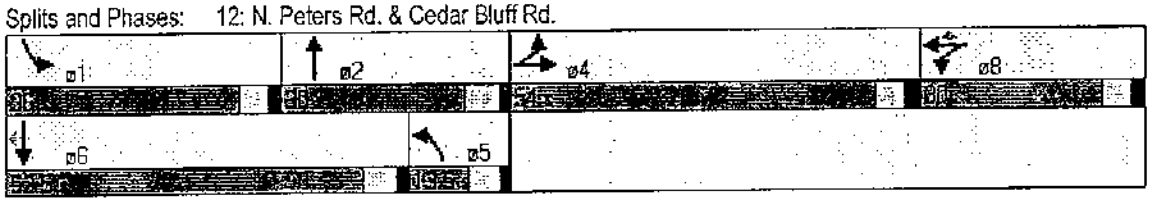
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	796	348	45	78	334	758	58	663	159	808	732	991
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	120		300	275		0	350		500
Storage Lanes	1		0	1		1	1		0	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.91	0.91	1.00	1.00	0.91	0.91	1.00	0.91	0.91	0.97	0.91	1.00
Frt		0.989			0.920	0.850		0.971				0.850
Flt Protected	0.950	0.981		0.950			0.950			0.950		
Satd. Flow (prot)	3221	1645	0	1770	3119	1441	1770	4938	0	3433	5085	1583
Flt Permitted	0.950	0.981		0.950			0.950			0.950		
Satd. Flow (perm)	3221	1645	0	1770	3119	1441	1770	4938	0	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			163	361		32				699
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1366			378			1452			835	
Travel Time (s)		31.0			8.6			33.0			19.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	838	366	47	82	352	798	61	698	167	851	771	1043
Shared Lane Traffic (%)	67108894%					50%						
Lane Group Flow (vph)	587	664	0	82	751	399	61	865	0	851	771	1043
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8						6
Detector Phase	4	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	8.0	10.0		8.0	10.0	10.0
Minimum Split (s)	22.0	22.0		22.0	22.0	22.0	13.5	22.0		13.5	22.0	22.0
Total Split (s)	54.0	54.0	0.0	30.0	30.0	30.0	13.5	30.0	0.0	36.0	52.5	52.5
Total Split (%)	36.0%	36.0%	0.0%	20.0%	20.0%	20.0%	9.0%	20.0%	0.0%	24.0%	35.0%	35.0%
Maximum Green (s)	48.0	48.0		24.0	24.0	24.0	8.0	24.0		30.5	46.5	46.5
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.5
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	5.5	6.0	4.0	5.5	6.0	6.0
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		None	Max	Max
Walk Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	0
Act Effct Green (s)	48.0	48.0		24.0	24.0	24.0	8.0	24.0		30.5	49.2	49.2
Actuated g/C Ratio	0.32	0.32		0.16	0.16	0.16	0.05	0.16		0.20	0.33	0.33
v/c Ratio	0.57	1.26		0.29	1.18	0.75	0.65	1.06		1.22	0.46	1.05
Control Delay	45.0	172.4		58.7	138.1	17.9	99.3	104.9		160.3	41.7	60.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	45.0	172.4		58.7	138.1	17.9	99.3	104.9		160.3	41.7	60.5
LOS	D	F		E	F	B	F	F		F	D	E

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		112.6			93.9			104.5			86.9	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	263	~893		72	~406	36	60	~329		~524	225	~628
Queue Length 95th (ft)	330	#1165		127	#546	175	#131	#425		#656	269	#896
Internal Link Dist (ft)		1286			298			1372			755	
Turn Bay Length (ft)	275			120		300	275			350		500
Base Capacity (vph)	1031	528		283	636	534	94	817		698	1668	989
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.57	1.26		0.29	1.18	0.75	0.65	1.06		1.22	0.46	1.05

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Natural Cycle: 150
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.26
Intersection Signal Delay: 96.3 Intersection LOS: F
Intersection Capacity Utilization 99.9% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: N. Peters Rd. & Cedar Bluff Rd.



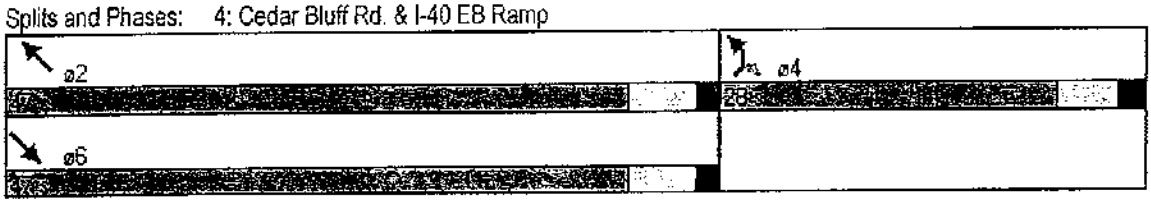
Lane Group	SET	SER	NWT	NWL	NEL	NER
Lane Configurations	↑↑↑			↑↑↑	↰↑	↱
Volume (vph)	2258	0	0	1698	567	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	0.91
Frt					0.968	0.850
Flt Protected					0.962	
Satd. Flow (prot)	5085	0	0	5085	3365	1441
Flt Permitted					0.962	
Satd. Flow (perm)	5085	0	0	5085	3365	1441
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					2	2
Link Speed (mph)	30			30	30	
Link Distance (ft)	559			835	373	
Travel Time (s)	12.7			19.0	8.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2377	0	0	1787	597	516
Shared Lane Traffic (%)						32%
Lane Group Flow (vph)	2377	0	0	1787	762	351
Turn Type						Perm
Protected Phases	6			2	4	
Permitted Phases						4
Detector Phase	6			2	4	4
Switch Phase						
Minimum Initial (s)	10.0			10.0	8.0	8.0
Minimum Split (s)	22.0			22.0	22.0	22.0
Total Split (s)	47.0	0.0	0.0	47.0	28.0	28.0
Total Split (%)	62.7%	0.0%	0.0%	62.7%	37.3%	37.3%
Maximum Green (s)	41.0			41.0	22.0	22.0
Yellow Time (s)	4.5			4.5	4.0	4.0
All-Red Time (s)	1.5			1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Min			C-Min	None	None
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	41.9			41.9	21.1	21.1
Actuated g/C Ratio	0.56			0.56	0.28	0.28
v/c Ratio	0.84			0.63	0.80	0.86
Control Delay	11.1			12.7	32.4	47.8
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	11.1			12.7	32.4	47.8
LOS	B			B	C	D
Approach Delay	11.1			12.7	37.2	
Approach LOS	B			B	D	
Queue Length 50th (ft)	171			196	165	165

Lane Group	SET	SER	NWL	NWT	NEL	NER
Queue Length 95th (ft)	207		243	228	#324	
Internal Link Dist (ft)	479		755	293		
Turn Bay Length (ft)						
Base Capacity (vph)	2840		2840	988	424	
Starvation Cap Reductn	5		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.84		0.63	0.77	0.83	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:NWT and 6:SET, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 17.1 Intersection LOS: B
Intersection Capacity Utilization 74.9% ICU Level of Service D
Analysis Period (min): 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Cedar Bluff Rd. & I-40 EB Ramp



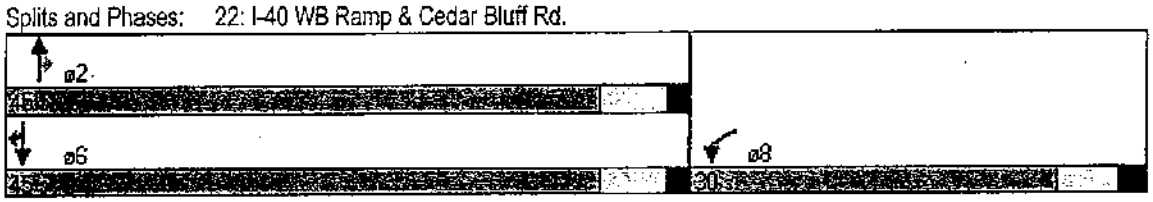
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	712	0	0	0	1900	280	0	1870	541
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt									0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3433	0	0	0	5085	1583	0	5085	1583
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3433	0	0	0	5085	1583	0	5085	1583
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												569
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		151			240			559			476	
Travel Time (s)		3.4			5.5			12.7			10.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	749	0	0	0	2000	295	0	1968	569
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	749	0	0	0	2000	295	0	1968	569
Turn Type				Prot					Perm			Prot
Protected Phases				8				2			6	6
Permitted Phases									2			
Detector Phase				8				2	2		6	6
Switch Phase												
Minimum Initial (s)				8.0				10.0	10.0		10.0	10.0
Minimum Split (s)				22.0				22.0	22.0		22.0	22.0
Total Split (s)	0.0	0.0	0.0	30.0	0.0	0.0	0.0	45.0	45.0	0.0	45.0	45.0
Total Split (%)	0.0%	0.0%	0.0%	40.0%	0.0%	0.0%	0.0%	60.0%	60.0%	0.0%	60.0%	60.0%
Maximum Green (s)				24.0				39.0	39.0		39.0	39.0
Yellow Time (s)				4.0				4.5	4.5		4.5	4.5
All-Red Time (s)				2.0				1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	6.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0				3.0	3.0		3.0	3.0
Recall Mode				None				C-Max	C-Max		C-Max	C-Max
Walk Time (s)				5.0				5.0	5.0		5.0	5.0
Flash Dont Walk (s)				11.0				11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)				0				0	0		0	0
Act Effct Green (s)				21.3				41.7	41.7		41.7	41.7
Actuated g/C Ratio				0.28				0.56	0.56		0.56	0.56
v/c Ratio				0.77				0.71	0.34		0.70	0.50
Control Delay				30.2				8.4	7.1		14.2	2.7
Queue Delay				0.0				0.0	0.0		0.0	0.0
Total Delay				30.2				8.4	7.1		14.2	2.7
LOS				C				A	A		B	A
Approach Delay								8.3			11.7	
Approach LOS								A			B	
Queue Length 50th (ft)				160				147	49		230	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)				213				171	m73		302	45
Internal Link Dist (ft)		71			160			479			396	
Turn Bay Length (ft)												
Base Capacity (vph)				1099				2827	880		2827	1133
Starvation Cap Reductn				0				0	0		0	0
Spillback Cap Reductn				0				0	0		0	0
Storage Cap Reductn				0				0	0		0	0
Reduced v/c Ratio				0.68				0.71	0.34		0.70	0.50

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 12.7 Intersection LOS: B
Intersection Capacity Utilization 65.4% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: I-40 WB Ramp & Cedar Bluff Rd.



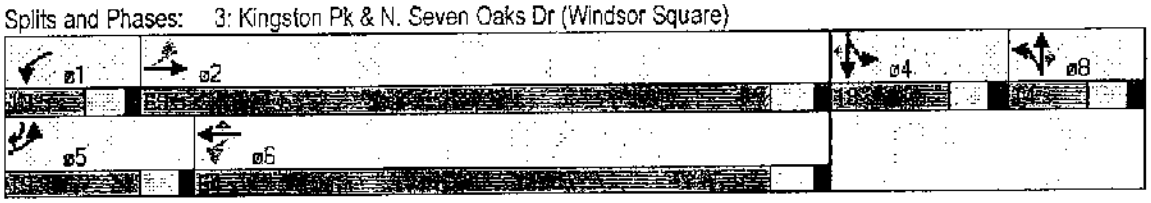
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1260	20	29	1273	161	13	8	17	141	15	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	150		0	0		0	100		0
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.998				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.969		0.950	0.961	
Satd. Flow (prot)	1770	3532	0	1770	3539	1583	0	1805	1583	1681	1701	1583
Flt Permitted	0.118			0.150				0.969		0.950	0.961	
Satd. Flow (perm)	220	3532	0	279	3539	1583	0	1805	1583	1681	1701	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				167			18			129
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1185			1095			456			868	
Travel Time (s)		18.0			16.6			10.4			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	144	1326	21	31	1340	169	14	8	18	148	16	167
Shared Lane Traffic (%)										45%		
Lane Group Flow (vph)	144	1347	0	31	1340	169	0	22	18	81	83	167
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	19.0	69.5	0.0	13.5	64.0	64.0	14.0	14.0	14.0	18.0	18.0	19.0
Total Split (%)	16.5%	60.4%	0.0%	11.7%	55.7%	55.7%	12.2%	12.2%	12.2%	15.7%	15.7%	16.5%
Maximum Green (s)	13.5	63.5		8.0	58.0	58.0	8.0	8.0	8.0	12.0	12.0	13.5
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	83.2	76.1		77.4	68.9	68.9		8.0	8.0	10.4	10.4	22.9
Actuated g/C Ratio	0.72	0.66		0.67	0.60	0.60		0.07	0.07	0.09	0.09	0.20
v/c Ratio	0.49	0.58		0.11	0.63	0.17		0.17	0.14	0.53	0.54	0.40
Control Delay	12.2	14.8		3.1	8.2	0.4		53.9	23.1	62.7	62.9	10.3
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	14.8		3.1	8.2	0.4		53.9	23.1	62.7	62.9	10.3
LOS	B	B		A	A	A		D	C	E	E	B
Approach Delay		14.6			7.3			40.1			36.3	
Approach LOS		B			A			D			D	
Queue Length 50th (ft)	33	353		3	223	0		16	0	61	63	19

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	62	441		m4	113	1		43	24	114	116	62
Internal Link Dist (ft)		1105			1015			376			788	
Turn Bay Length (ft)	200			150						100		
Base Capacity (vph)	344	2338		291	2120	1015		126	127	175	177	466
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.42	0.58		0.11	0.63	0.17		0.17	0.14	0.46	0.47	0.36

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 13.7 Intersection LOS: B
Intersection Capacity Utilization 68.3% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Kingston Pk & N. Seven Oaks Dr (Windsor Square)



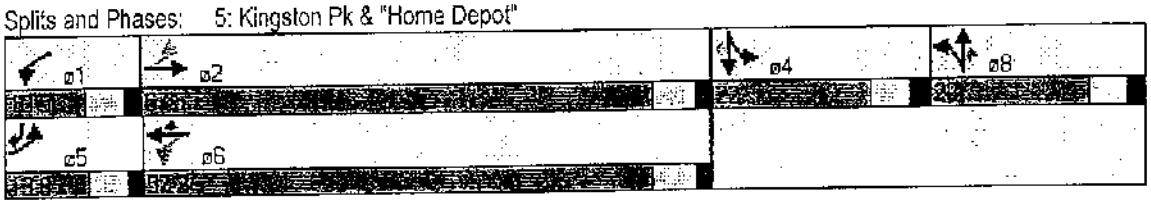
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	1461	5	27	1188	70	6	1	16	51	5	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		300	0		0	100		100
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected	0.950			0.950				0.959		0.950	0.960	
Satd. Flow (prot)	1770	3539	0	1770	3539	1583	0	1786	1583	1681	1699	1583
Flt Permitted	0.157			0.116				0.959		0.950	0.960	
Satd. Flow (perm)	292	3539	0	216	3539	1583	0	1786	1583	1681	1699	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						73			17			214
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1095			1371			223			454	
Travel Time (s)		16.6			20.8			5.1			10.3	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	120	1522	5	28	1238	73	6	1	17	53	5	214
Shared Lane Traffic (%)										46%		
Lane Group Flow (vph)	120	1527	0	28	1238	73	0	7	17	29	29	214
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	13.8	57.5	0.0	13.5	57.2	57.2	22.0	22.0	22.0	22.0	22.0	13.8
Total Split (%)	12.0%	50.0%	0.0%	11.7%	49.7%	49.7%	19.1%	19.1%	19.1%	19.1%	19.1%	12.0%
Maximum Green (s)	8.3	51.5		8.0	51.2	51.2	16.0	16.0	16.0	16.0	16.0	8.3
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	86.9	82.0		83.1	74.6	74.6		8.0	8.0	8.5	8.5	17.2
Actuated g/C Ratio	0.76	0.71		0.72	0.65	0.65		0.07	0.07	0.07	0.07	0.15
v/c Ratio	0.36	0.60		0.11	0.54	0.07		0.06	0.13	0.23	0.23	0.51
Control Delay	10.5	10.6		11.1	19.3	9.8		51.1	23.9	54.6	54.5	8.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	10.6		11.1	19.3	9.8		51.1	23.9	54.6	54.5	8.2
LOS	B	B		B	B	A		D	C	D	D	A
Approach Delay		10.6			18.6			31.8			18.1	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	22	222		11	267	14		5	0	22	22	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	67	304		m16	301	m25		20	24	53	53	50
Internal Link Dist (ft)		1015			1291			143			374	
Turn Bay Length (ft)	250			150		300				100		100
Base Capacity (vph)	336	2524		264	2296	1052		248	235	234	236	421
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.36	0.60		0.11	0.54	0.07		0.03	0.07	0.12	0.12	0.51

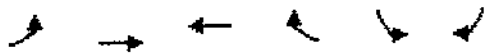
Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 14.6 Intersection LOS: B
Intersection Capacity Utilization 70.0% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Kingston Pk & "Home Depot"



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	44	1431	1238	207	316	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.112				0.950	
Satd. Flow (perm)	209	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				214		75
Link Speed (mph)		45	45		30	
Link Distance (ft)		1371	1317		1450	
Travel Time (s)		20.8	20.0		33.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	47	1539	1331	223	340	75
Shared Lane Traffic (%)						
Lane Group Flow (vph)	47	1539	1331	223	340	75
Turn Type	pm+pt			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	14.0	22.0	22.0	22.0	14.0	14.0
Total Split (s)	14.0	76.0	62.0	62.0	39.0	39.0
Total Split (%)	12.2%	66.1%	53.9%	53.9%	33.9%	33.9%
Maximum Green (s)	8.5	70.0	56.0	56.0	33.0	33.0
Yellow Time (s)	4.0	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	76.8	76.3	65.5	65.5	26.7	26.7
Actuated g/C Ratio	0.67	0.66	0.57	0.57	0.23	0.23
v/c Ratio	0.19	0.66	0.66	0.22	0.83	0.18
Control Delay	10.2	11.1	17.7	1.2	58.4	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	11.1	17.7	1.2	58.4	8.0
LOS	B	B	B	A	E	A
Approach Delay		11.0	15.3		49.3	
Approach LOS		B	B		D	
Queue Length 50th (ft)	10	182	151	0	239	0

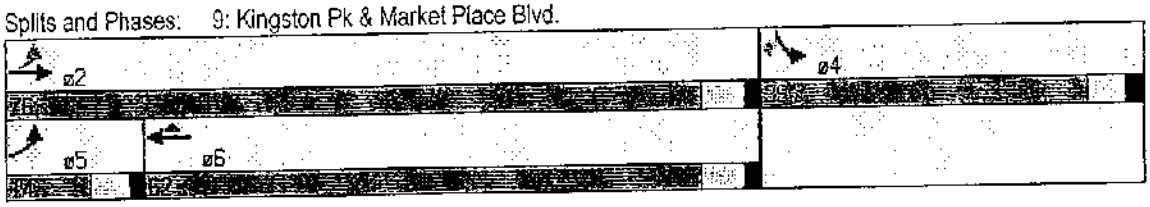


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 95th (ft)	m17	208	279	3	327	36
Internal Link Dist (ft)		1291	1237		1370	
Turn Bay Length (ft)	250					
Base Capacity (vph)	255	2347	2015	993	508	508
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.66	0.66	0.22	0.67	0.15

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 17.4 Intersection LOS: B
Intersection Capacity Utilization 67.1% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



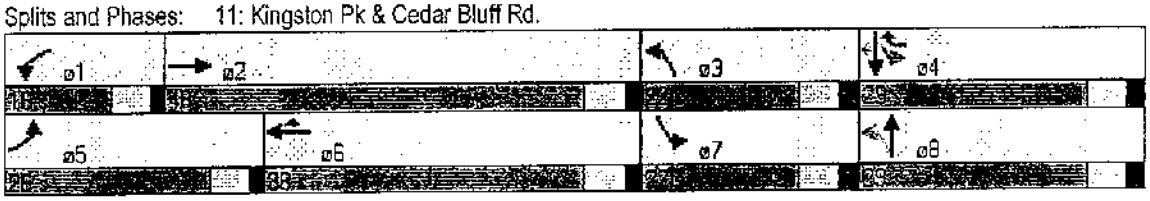
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	414	1326	54	81	1006	319	89	205	95	538	240	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	250		500	150		0	300		0
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	1.00
Frt		0.994				0.850		0.952				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5055	0	1770	5085	1583	1770	3369	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.476			0.306		
Satd. Flow (perm)	3433	5055	0	1770	5085	1583	887	3369	0	1106	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				343		60				319
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1317			1476			690			1452	
Travel Time (s)		20.0			22.4			15.7			33.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	445	1426	58	87	1082	343	96	220	102	578	258	319
Shared Lane Traffic (%)												
Lane Group Flow (vph)	445	1484	0	87	1082	343	96	322	0	578	258	319
Turn Type	Prot			Prot		custom	pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6	4!	3	8!		7	4	
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	4	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	22.0	22.0		22.0	22.0	22.0
Total Split (s)	26.0	48.0	0.0	16.0	38.0	29.0	22.0	29.0	0.0	22.0	29.0	29.0
Total Split (%)	22.6%	41.7%	0.0%	13.9%	33.0%	25.2%	19.1%	25.2%	0.0%	19.1%	25.2%	25.2%
Maximum Green (s)	20.5	42.0		10.5	32.0	23.0	16.0	23.0		16.0	23.0	23.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None		None	None	None
Act Effct Green (s)	19.1	51.3		10.2	39.7	62.4	26.7	16.7		37.9	22.6	22.6
Actuated g/C Ratio	0.17	0.45		0.09	0.35	0.54	0.23	0.15		0.33	0.20	0.20
v/c Ratio	0.78	0.66		0.55	0.62	0.34	0.34	0.60		0.84	0.70	0.56
Control Delay	63.2	23.2		57.7	26.8	3.1	29.4	41.1		42.3	53.6	8.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	63.2	23.2		57.7	26.8	3.1	29.4	41.1		42.3	53.6	8.2
LOS	E	C		E	C	A	C	D		D	D	A
Approach Delay		32.5			23.2			38.4			35.4	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	178	282		58	159	17	50	96		175	180	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	235	383		m76	m252	m48	82	135		208	261	74
Internal Link Dist (ft)		1237			1396			610			1372	
Turn Bay Length (ft)	400			250		500	150			300		
Base Capacity (vph)	621	2258		169	1756	1033	375	722		689	394	586
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.72	0.66		0.51	0.62	0.33	0.26	0.45		0.84	0.65	0.54

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 30.8 Intersection LOS: C
Intersection Capacity Utilization 77.1% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 11: Kingston Pk & Cedar Bluff Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	969	751	242	993	342	365	415	158	282	323	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	125		150	425		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	0.95
Frt			0.850			0.850			0.850		0.970	
Flt Protected	0.950			0.950			0.950	0.989		0.950	0.995	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1610	3353	1583	1610	3272	0
Flt Permitted	0.114			0.096			0.950	0.989		0.950	0.995	
Satd. Flow (perm)	212	3539	1583	179	3539	1583	1610	3353	1583	1610	3272	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76			120			38		22	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1476			692			644			1688	
Travel Time (s)		22.4			10.5			14.6			38.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	113	1020	791	255	1045	360	384	437	166	297	340	100
Shared Lane Traffic (%)							31%			18%		
Lane Group Flow (vph)	113	1020	791	255	1045	360	265	556	166	244	493	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	8	1	6	4	8	8	1	4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	8	1	6	4	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	8.0	8.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.5	22.0	14.0	13.5	22.0	14.0	14.0	14.0	13.5	14.0	14.0	
Total Split (s)	13.5	42.6	30.0	18.4	47.5	24.0	30.0	30.0	18.4	24.0	24.0	0.0
Total Split (%)	11.7%	37.0%	26.1%	16.0%	41.3%	20.9%	26.1%	26.1%	16.0%	20.9%	20.9%	0.0%
Maximum Green (s)	8.0	36.6	24.0	12.9	41.5	18.0	24.0	24.0	12.9	18.0	18.0	
Yellow Time (s)	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	2.0	1.5	1.5	2.0	2.0	2.0	1.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	None	None	None	None	None	None	None	None	None	
Act Effct Green (s)	45.1	36.6	60.6	54.9	41.5	65.5	24.0	24.0	42.9	18.0	18.0	
Actuated g/C Ratio	0.39	0.32	0.53	0.48	0.36	0.57	0.21	0.21	0.37	0.16	0.16	
v/c Ratio	0.59	0.91	0.91	0.97	0.82	0.38	0.79	0.79	0.27	0.97	0.93	
Control Delay	37.6	47.9	30.9	77.5	39.7	9.9	61.0	52.6	20.5	98.2	71.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.6	47.9	30.9	77.5	39.7	9.9	61.0	52.6	20.5	98.2	71.0	
LOS	D	D	C	E	D	A	E	D	C	F	E	
Approach Delay		40.3			39.0			49.5			80.0	
Approach LOS		D			D			D			F	
Queue Length 50th (ft)	54	254	338	138	365	88	205	215	64	200	191	

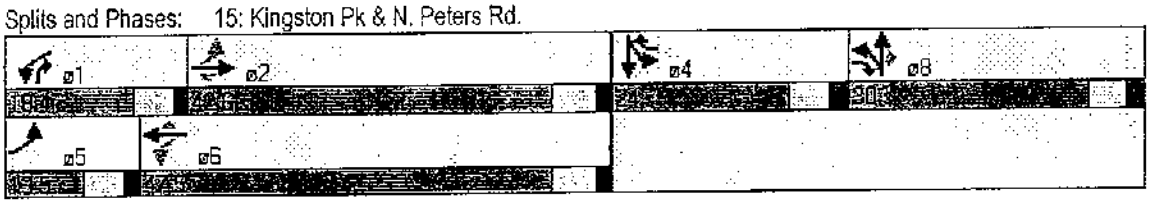
Lane Groups	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m96	#487	m#612	#305	453	150	#349	285	118	#378	#300	
Internal Link Dist (ft)		1396			612			564			1608	
Turn Bay Length (ft)	225			125		150	425		300	200		
Base Capacity (vph)	192	1126	870	264	1277	953	336	700	614	252	531	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.59	0.91	0.91	0.97	0.82	0.38	0.79	0.79	0.27	0.97	0.93	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 47.1 Intersection LOS: D
Intersection Capacity Utilization 87.9% ICU Level of Service E
Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kingston Pk & N. Peters Rd.



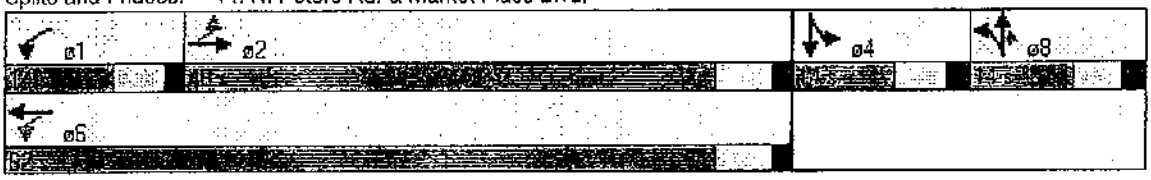
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↰	↔			↑	↱		↔	
Volume (vph)	21	1190	90	213	1027	70	89	5	144	24	3	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.990				0.850		0.949	
Flt Protected		0.999		0.950				0.955			0.973	
Satd. Flow (prot)	0	3500	0	1770	3504	0	0	1779	1583	0	1720	0
Flt Permitted		0.919		0.084				0.955			0.973	
Satd. Flow (perm)	0	3220	0	156	3504	0	0	1779	1583	0	1720	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			15				152		17	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		863			1366			1450			170	
Travel Time (s)		19.6			31.0			33.0			3.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	1253	95	224	1081	74	94	5	152	25	3	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1370	0	224	1155	0	0	99	152	0	45	0
Turn Type	Perm			pm+pt			Split		Perm	Split		
Protected Phases		2		1	6		8	8		4	4	
Permitted Phases	2			6					8			
Detector Phase	2	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		8.0	10.0		8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	22.0	22.0		13.5	22.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	48.0	48.0	0.0	14.0	62.0	0.0	14.0	14.0	14.0	14.0	14.0	0.0
Total Split (%)	53.3%	53.3%	0.0%	15.6%	68.9%	0.0%	15.6%	15.6%	15.6%	15.6%	15.6%	0.0%
Maximum Green (s)	42.0	42.0		8.5	56.0		8.0	8.0	8.0	8.0	8.0	
Yellow Time (s)	4.5	4.5		4.0	4.5		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	5.5	6.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		None	Max		None	None	None	None	None	
Act Effct Green (s)		42.3		56.9	56.4			8.1	8.1		8.1	
Actuated g/C Ratio		0.50		0.67	0.67			0.10	0.10		0.10	
v/c Ratio		0.85		0.84	0.49			0.58	0.53		0.25	
Control Delay		25.9		45.4	8.6			53.8	14.2		30.6	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		25.9		45.4	8.6			53.8	14.2		30.6	
LOS		C		D	A			D	B		C	
Approach Delay		25.9			14.6			29.8			30.6	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)		362		75	174			55	0		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		#518	#210	223				#124	56		48	
Internal Link Dist (ft)		783		1286				1370			90	
Turn Bay Length (ft)			100									
Base Capacity (vph)		1619	268	2346				170	289		179	
Starvation Cap Reductn		0	0	0				0	0		0	
Spillback Cap Reductn		0	0	0				0	0		0	
Storage Cap Reductn		0	0	0				0	0		0	
Reduced v/c Ratio		0.85	0.84	0.49				0.58	0.53		0.25	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 84.4
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 21.2 Intersection LOS: C
Intersection Capacity Utilization 91.1% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 14: N. Peters Rd. & Market Place Blvd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1063	348	29	37	287	748	65	757	82	693	777	1100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	120		300	275		0	350		500
Storage Lanes	1		0	1		1	1		0	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.91	0.91	1.00	1.00	0.91	0.91	1.00	0.91	0.91	0.97	0.91	1.00
Frt		0.994			0.915	0.850		0.985				0.850
Flt Protected	0.950	0.978		0.950			0.950			0.950		
Satd. Flow (prot)	3221	1648	0	1770	3102	1441	1770	5009	0	3433	5085	1583
Flt Permitted	0.950	0.978		0.950			0.950			0.950		
Satd. Flow (perm)	3221	1648	0	1770	3102	1441	1770	5009	0	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			220	294		14				756
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1366			378			1452			835	
Travel Time (s)		31.0			8.6			33.0			19.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1131	370	31	39	305	796	69	805	87	737	827	1170
Shared Lane Traffic (%)	67108894%					50%						
Lane Group Flow (vph)	792	740	0	39	703	398	69	892	0	737	827	1170
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8						6
Detector Phase	4	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	10.0		8.0	10.0	10.0
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	13.5	22.0		13.5	22.0	22.0
Total Split (s)	45.0	45.0	0.0	19.0	19.0	19.0	13.5	30.0	0.0	26.0	42.5	42.5
Total Split (%)	37.5%	37.5%	0.0%	15.8%	15.8%	15.8%	11.3%	25.0%	0.0%	21.7%	35.4%	35.4%
Maximum Green (s)	39.0	39.0		13.0	13.0	13.0	8.0	24.0		20.5	36.5	36.5
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.5
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	5.5	6.0	4.0	5.5	6.0	6.0
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		None	Max	Max
Act Effct Green (s)	39.0	39.0		13.0	13.0	13.0	8.0	24.0		20.5	39.2	39.2
Actuated g/C Ratio	0.32	0.32		0.11	0.11	0.11	0.07	0.20		0.17	0.33	0.33
v/c Ratio	0.76	1.38		0.20	1.32	0.95	0.58	0.88		1.26	0.50	1.14
Control Delay	41.8	214.8		51.8	186.4	48.8	74.6	57.0		170.6	34.5	89.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	41.8	214.8		51.8	186.4	48.8	74.6	57.0		170.6	34.5	89.9
LOS	D	F		D	F	D	E	E		F	C	F
Approach Delay		125.3			133.8			58.3			94.9	
Approach LOS		F			F			E			F	
Queue Length 50th (ft)	301	~839		28	~299	92	53	244		~368	194	~640

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	380	#1104		63	#430	#313	#114	#315		#490	238	#902
Internal Link Dist (ft)		1286			298			1372			755	
Turn Bay Length (ft)	275			120		300	275			350		500
Base Capacity (vph)	1047	537		192	532	418	118	1013		586	1661	1027
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.76	1.38		0.20	1.32	0.95	0.58	0.88		1.26	0.50	1.14

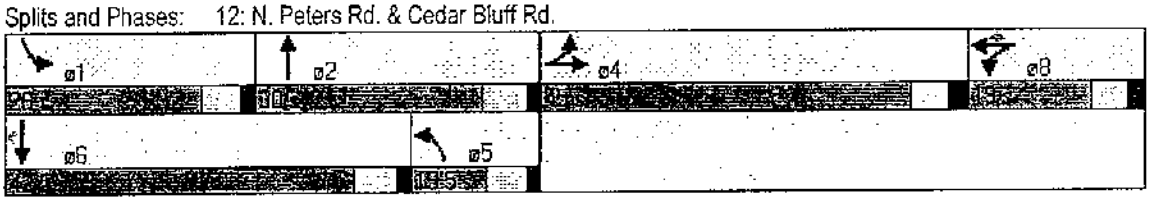
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 140
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.38
Intersection Signal Delay: 103.6 Intersection LOS: F
Intersection Capacity Utilization 105.3% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: N. Peters Rd. & Cedar Bluff Rd.



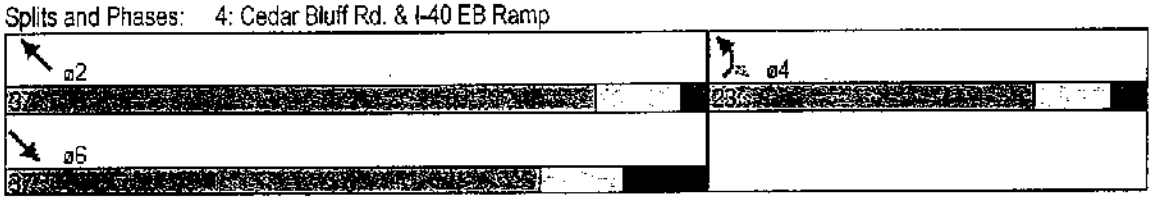
Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↑↑↑			↑↑↑	↰↑	↱
Volume (vph)	2283	0	0	1780	671	633
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	0.91
Frt					0.963	0.850
Flt Protected					0.964	
Satd. Flow (prot)	5085	0	0	5085	3355	1441
Flt Permitted					0.964	
Satd. Flow (perm)	5085	0	0	5085	3355	1441
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					1	1
Link Speed (mph)	30			30	30	
Link Distance (ft)	559			835	373	
Travel Time (s)	12.7			19.0	8.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	2354	0	0	1835	692	653
Shared Lane Traffic (%)						35%
Lane Group Flow (vph)	2354	0	0	1835	921	424
Turn Type						Perm
Protected Phases	6			2	4	
Permitted Phases						4
Detector Phase	6			2	4	4
Switch Phase						
Minimum Initial (s)	10.0			10.0	8.0	8.0
Minimum Split (s)	25.0			22.0	22.0	22.0
Total Split (s)	37.0	0.0	0.0	37.0	23.0	23.0
Total Split (%)	61.7%	0.0%	0.0%	61.7%	38.3%	38.3%
Maximum Green (s)	28.0			31.0	17.0	17.0
Yellow Time (s)	4.5			4.5	4.0	4.0
All-Red Time (s)	4.5			1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	9.0	4.0	4.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Min			C-Min	None	None
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	28.0			31.0	17.0	17.0
Actuated g/C Ratio	0.47			0.52	0.28	0.28
v/c Ratio	0.99			0.70	0.97	1.04
Control Delay	27.3			12.8	46.4	80.3
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	27.3			12.8	46.4	80.3
LOS	C			B	D	F
Approach Delay	27.3			12.8	57.1	
Approach LOS	C			B	E	
Queue Length 50th (ft)	194			168	168	~179

Lane Group	SET	SER	NWT	NWR	NEL	NER
Queue Length 95th (ft)	#415		217	#284	#359	
Internal Link Dist (ft)	479		755	293		
Turn Bay Length (ft)						
Base Capacity (vph)	2373		2627	951	409	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.99		0.70	0.97	1.04	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 0 (0%), Referenced to phase 2:NWT and 6:SET, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 29.7 Intersection LOS: C
Intersection Capacity Utilization 82.7% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Cedar Bluff Rd. & I-40 EB Ramp



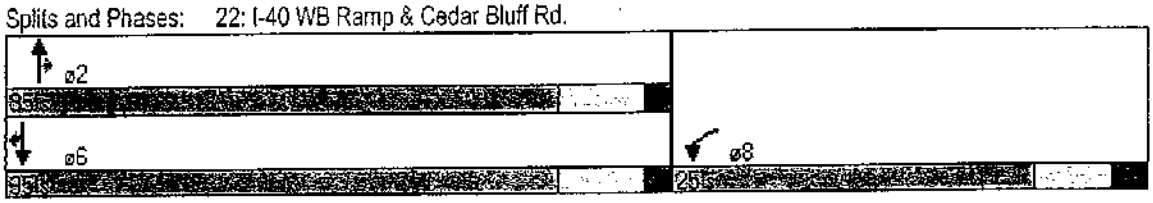
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	823	0	0	0	1933	274	0	1871	756
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt									0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3433	0	0	0	5085	1583	0	5085	1583
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3433	0	0	0	5085	1583	0	5085	1583
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												796
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		151			240			559			476	
Travel Time (s)		3.4			5.5			12.7			10.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	866	0	0	0	2035	288	0	1969	796
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	866	0	0	0	2035	288	0	1969	796
Turn Type				Prot					Perm			Prot
Protected Phases				8				2			6	6
Permitted Phases									2			
Detector Phase				8				2	2		6	6
Switch Phase												
Minimum Initial (s)				8.0				10.0	10.0		10.0	10.0
Minimum Split (s)				22.0				22.0	22.0		22.0	22.0
Total Split (s)	0.0	0.0	0.0	25.0	0.0	0.0	0.0	35.0	35.0	0.0	35.0	35.0
Total Split (%)	0.0%	0.0%	0.0%	41.7%	0.0%	0.0%	0.0%	58.3%	58.3%	0.0%	58.3%	58.3%
Maximum Green (s)				19.0				29.0	29.0		29.0	29.0
Yellow Time (s)				4.0				4.5	4.5		4.5	4.5
All-Red Time (s)				2.0				1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	6.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0				3.0	3.0		3.0	3.0
Recall Mode				None				C-Max	C-Max		C-Max	C-Max
Walk Time (s)				5.0				5.0	5.0		5.0	5.0
Flash Dont Walk (s)				11.0				11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)				0				0	0		0	0
Act Effct Green (s)				18.3				29.7	29.7		29.7	29.7
Actuated g/C Ratio				0.30				0.50	0.50		0.50	0.50
v/c Ratio				0.83				0.81	0.37		0.78	0.67
Control Delay				27.6				10.8	8.5		15.5	4.2
Queue Delay				0.0				0.0	0.0		0.0	0.0
Total Delay				27.6				10.8	8.5		15.5	4.2
LOS				C				B	A		B	A
Approach Delay								10.5			12.2	
Approach LOS								B			B	
Queue Length 50th (ft)				145				129	37		204	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)				#215				m193	m73		263	50
Internal Link Dist (ft)		71			160			479			396	
Turn Bay Length (ft)												
Base Capacity (vph)				1087				2519	784		2519	1186
Starvation Cap Reductn				0				0	0		0	0
Spillback Cap Reductn				0				0	0		0	0
Storage Cap Reductn				0				0	0		0	0
Reduced v/c Ratio				0.80				0.81	0.37		0.78	0.67

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 13.8 Intersection LOS: B
Intersection Capacity Utilization 69.2% ICU Level of Service C
Analysis Period (min): 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: I-40 WB Ramp & Cedar Bluff Rd.



CAPACITY ANALYSES

2012 COMBINED CONDITIONS

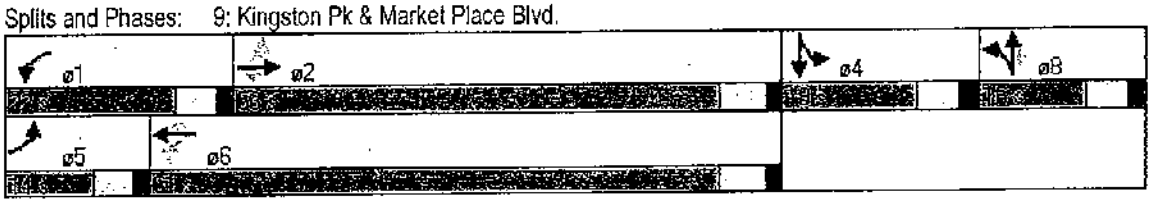
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	896	128	205	982	196	103	44	125	57	91	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		300	0		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950	0.980		0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1681	1734	1583	1770	1798	0
Flt Permitted	0.232			0.199			0.950	0.980		0.950		
Satd. Flow (perm)	432	3539	1583	371	3539	1583	1681	1734	1583	1770	1798	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			206			132		11	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			429			1450	
Travel Time (s)		20.8			20.0			9.8			33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	36	943	135	216	1034	206	108	46	132	60	96	29
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	36	943	135	216	1034	206	76	78	132	60	125	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	14.0	22.0	22.0	14.0	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	14.0	53.0	53.0	22.0	61.0	61.0	16.0	16.0	16.0	19.0	19.0	0.0
Total Split (%)	12.7%	48.2%	48.2%	20.0%	55.5%	55.5%	14.5%	14.5%	14.5%	17.3%	17.3%	0.0%
Maximum Green (s)	8.5	47.0	47.0	16.5	55.0	55.0	10.0	10.0	10.0	13.0	13.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	63.1	54.6	54.6	71.1	63.2	63.2	9.4	9.4	9.4	11.3	11.3	
Actuated g/C Ratio	0.57	0.50	0.50	0.65	0.57	0.57	0.09	0.09	0.09	0.10	0.10	
v/c Ratio	0.10	0.54	0.16	0.57	0.51	0.21	0.53	0.53	0.52	0.33	0.64	
Control Delay	10.7	19.6	5.5	10.5	14.5	3.4	61.9	61.3	15.9	50.2	58.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.7	19.6	5.5	10.5	14.5	3.4	61.9	61.3	15.9	50.2	58.2	
LOS	B	B	A	B	B	A	E	E	B	D	E	
Approach Delay		17.6			12.3			40.5			55.6	
Approach LOS		B			B			D			E	
Queue Length 50th (ft)	7	189	0	47	348	31	54	55	0	40	78	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	32	248	54	35	391	41	106	108	58	81	139	
Internal Link Dist (ft)		1291			1237			349			1370	
Turn Bay Length (ft)	250		300	300			300		300			
Base Capacity (vph)	353	1757	854	452	2034	997	154	159	265	209	222	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.10	0.54	0.16	0.48	0.51	0.21	0.49	0.49	0.50	0.29	0.56	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 32 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 19.6 Intersection LOS: B
Intersection Capacity Utilization 61.4% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1338	238	382	1272	243	285	122	346	268	151	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		300	0		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.951	
Flt Protected	0.950			0.950			0.950	0.980		0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1681	1734	1583	1770	1771	0
Flt Permitted	0.109			0.075			0.950	0.980		0.950		
Satd. Flow (perm)	203	3539	1583	140	3539	1583	1681	1734	1583	1770	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			220			228			194		17	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			429			1450	
Travel Time (s)		20.8			20.0			9.8			33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	1408	251	402	1339	256	300	128	364	282	159	76
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	68	1408	251	402	1339	256	210	218	364	282	235	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	14.0	22.0	22.0	14.0	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	14.0	54.0	54.0	23.0	63.0	63.0	19.0	19.0	19.0	24.0	24.0	0.0
Total Split (%)	11.7%	45.0%	45.0%	19.2%	52.5%	52.5%	15.8%	15.8%	15.8%	20.0%	20.0%	0.0%
Maximum Green (s)	8.5	48.0	48.0	17.5	57.0	57.0	13.0	13.0	13.0	18.0	18.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	56.6	48.0	48.0	71.5	60.1	60.1	13.0	13.0	13.0	18.0	18.0	
Actuated g/C Ratio	0.47	0.40	0.40	0.60	0.50	0.50	0.11	0.11	0.11	0.15	0.15	
v/c Ratio	0.34	0.99	0.33	1.25	0.76	0.28	1.15	1.16	1.06	1.06	0.84	
Control Delay	19.0	58.0	10.6	156.3	22.9	4.1	161.5	162.3	89.0	120.8	71.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.0	58.0	10.6	156.3	22.9	4.1	161.5	162.3	89.0	120.8	71.6	
LOS	B	E	B	F	C	A	F	F	F	F	E	
Approach Delay		49.6			47.3			128.4			98.4	
Approach LOS		D			D			F			F	
Queue Length 50th (ft)	28	615	49	~319	518	50	~202	~210	~166	~241	167	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m47	#719	97	m#506	581	m57	#366	#376	#359	#415	#305	
Internal Link Dist (ft)		1291			1237			349			1370	
Turn Bay Length (ft)	250		300	300			300		300			
Base Capacity (vph)	207	1416	765	321	1772	906	182	188	344	266	280	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.33	0.99	0.33	1.25	0.76	0.28	1.15	1.16	1.06	1.06	0.84	

Intersection Summary

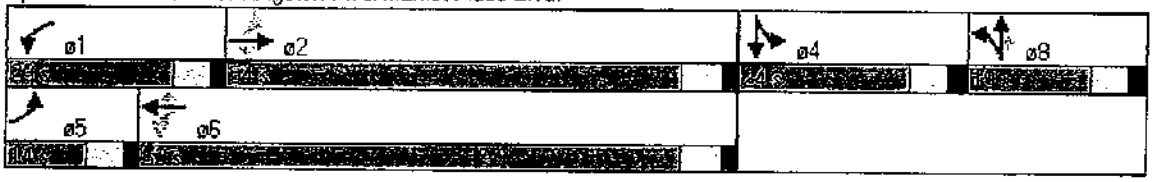
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 70 (58%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.25
Intersection Signal Delay: 66.1 Intersection LOS: E
Intersection Capacity Utilization 103.7% ICU Level of Service G
Analysis Period (min) 15

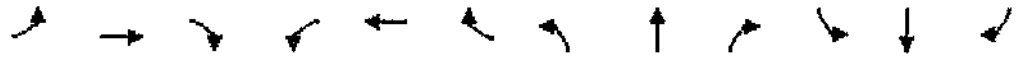
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1447	201	322	1171	207	315	135	382	318	143	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		0	0		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.951	
Flt Protected	0.950			0.950			0.950	0.980		0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1681	1734	1583	1770	1771	0
Flt Permitted	0.126			0.073			0.950	0.980		0.950		
Satd. Flow (perm)	235	3539	1583	136	3539	1583	1681	1734	1583	1770	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			174			203			158		17	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			548			1450	
Travel Time (s)		20.8			20.0			12.5			33.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	47	1556	216	346	1259	223	339	145	411	340	154	75
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	47	1556	216	346	1259	223	237	247	411	340	229	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	15.5	22.0	22.0	13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	15.5	55.0	55.0	21.0	60.5	60.5	19.0	19.0	19.0	25.0	25.0	0.0
Total Split (%)	12.9%	45.8%	45.8%	17.5%	50.4%	50.4%	15.8%	15.8%	15.8%	20.8%	20.8%	0.0%
Maximum Green (s)	10.0	49.0	49.0	15.5	54.5	54.5	13.0	13.0	13.0	19.0	19.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	57.6	49.0	49.0	70.5	59.1	59.1	13.0	13.0	13.0	19.0	19.0	
Actuated g/C Ratio	0.48	0.41	0.41	0.59	0.49	0.49	0.11	0.11	0.11	0.16	0.16	
v/c Ratio	0.22	1.08	0.29	1.19	0.72	0.25	1.30	1.31	1.32	1.21	0.78	
Control Delay	16.2	76.6	8.9	128.4	24.5	6.3	212.4	215.8	189.9	167.6	63.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.2	76.6	8.9	128.4	24.5	6.3	212.4	215.8	189.9	167.6	63.5	
LOS	B	E	A	F	C	A	F	F	F	F	E	
Approach Delay		67.0			42.0			203.0			125.7	
Approach LOS		E			D			F			F	
Queue Length 50th (ft)	15	~688	22	~253	501	72	~247	~260	~296	~322	160	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m28	#833	m80	m#439	542	m94	#418	#434	#499	#508	#282	
Internal Link Dist (ft)		1291			1237			468			1370	
Turn Bay Length (ft)	250		300	300			300					
Base Capacity (vph)	244	1445	749	291	1744	883	182	188	312	280	295	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.19	1.08	0.29	1.19	0.72	0.25	1.30	1.31	1.32	1.21	0.78	

Intersection Summary

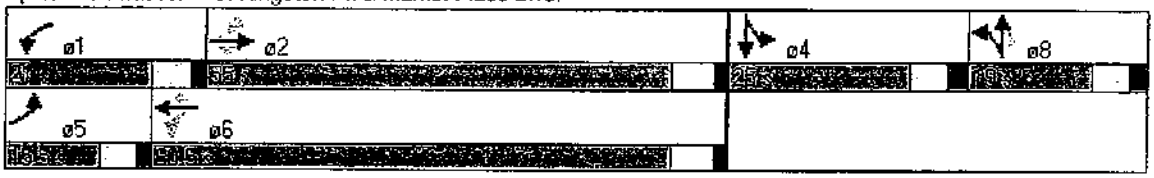
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.32
Intersection Signal Delay: 88.4 Intersection LOS: F
Intersection Capacity Utilization 107.2% ICU Level of Service G
Analysis Period (min) 15

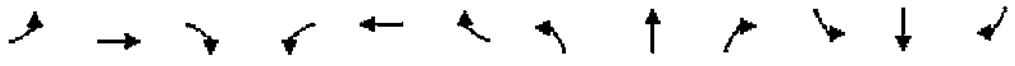
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.





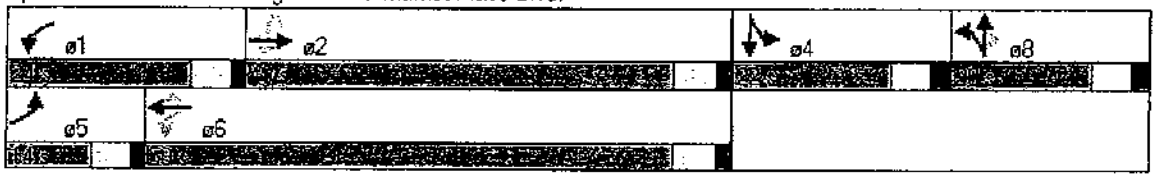
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	896	128	205	982	196	103	44	125	57	91	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		300	0		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950	0.980		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	3539	1583	1681	1734	1583	1770	1798	0
Flt Permitted	0.218			0.218			0.950	0.980		0.950		
Satd. Flow (perm)	406	5085	1583	406	3539	1583	1681	1734	1583	1770	1798	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			139			213			136		11	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			429			1450	
Travel Time (s)		20.8			20.0			9.8			33.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	974	139	223	1067	213	112	48	136	62	99	30
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	37	974	139	223	1067	213	78	82	136	62	129	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	14.0	22.0	22.0	14.0	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	14.0	49.0	49.0	24.0	59.0	59.0	20.0	20.0	20.0	22.0	22.0	0.0
Total Split (%)	12.2%	42.6%	42.6%	20.9%	51.3%	51.3%	17.4%	17.4%	17.4%	19.1%	19.1%	0.0%
Maximum Green (s)	8.5	43.0	43.0	18.5	53.0	53.0	14.0	14.0	14.0	16.0	16.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	64.9	56.4	56.4	73.7	65.5	65.5	10.9	10.9	10.9	12.5	12.5	
Actuated g/C Ratio	0.56	0.49	0.49	0.64	0.57	0.57	0.09	0.09	0.09	0.11	0.11	
v/c Ratio	0.11	0.39	0.16	0.56	0.53	0.21	0.49	0.50	0.50	0.32	0.63	
Control Delay	10.3	16.1	3.6	24.3	20.0	5.6	59.4	59.6	14.5	50.7	57.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.3	16.1	3.6	24.3	20.0	5.6	59.4	59.6	14.5	50.7	57.9	
LOS	B	B	A	C	B	A	E	E	B	D	E	
Approach Delay		14.4			18.6			38.9			55.6	
Approach LOS		B			B			D			E	
Queue Length 50th (ft)	7	73	0	67	210	11	58	62	0	43	84	

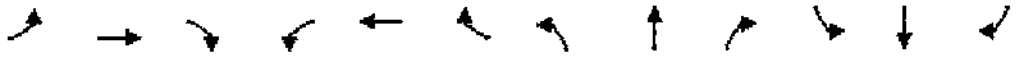
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	26	137	36	193	321	52	108	112	58	84	146	
Internal Link Dist (ft)		1291			1237			349			1370	
Turn Bay Length (ft)	250		300	300			300		300			
Base Capacity (vph)	332	2493	847	481	2016	993	205	211	312	246	260	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.11	0.39	0.16	0.46	0.53	0.21	0.38	0.39	0.44	0.25	0.50	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 21.2 Intersection LOS: C
Intersection Capacity Utilization 59.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 9: Kingston Pk & Market Place Blvd.





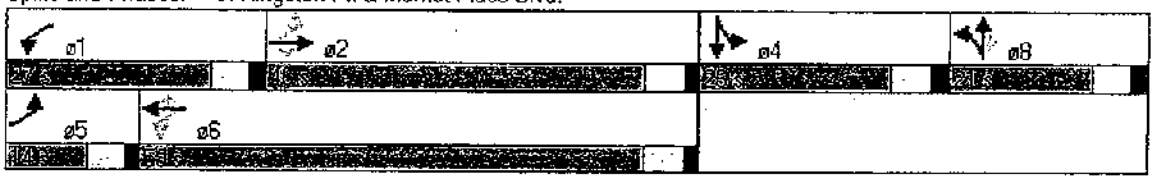
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1338	238	382	1272	243	285	122	346	268	151	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		300	0		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.952	
Flt Protected	0.950			0.950			0.950	0.980		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	3539	1583	1681	1734	1583	1770	1773	0
Flt Permitted	0.100			0.088			0.950	0.980		0.950		
Satd. Flow (perm)	186	5085	1583	164	3539	1583	1681	1734	1583	1770	1773	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			259			214			259		17	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			429			1450	
Travel Time (s)		20.8			20.0			9.8			33.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	1454	259	415	1383	264	310	133	376	291	164	78
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	71	1454	259	415	1383	264	217	226	376	291	242	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	14.0	22.0	22.0	14.0	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	14.0	46.0	46.0	27.0	59.0	59.0	21.0	21.0	21.0	26.0	26.0	0.0
Total Split (%)	11.7%	38.3%	38.3%	22.5%	49.2%	49.2%	17.5%	17.5%	17.5%	21.7%	21.7%	0.0%
Maximum Green (s)	8.5	40.0	40.0	21.5	53.0	53.0	15.0	15.0	15.0	20.0	20.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	48.7	40.0	40.0	67.5	56.0	56.0	15.0	15.0	15.0	20.0	20.0	
Actuated g/C Ratio	0.41	0.33	0.33	0.56	0.47	0.47	0.12	0.12	0.12	0.17	0.17	
v/c Ratio	0.39	0.86	0.37	1.09	0.84	0.31	1.03	1.04	0.88	0.99	0.78	
Control Delay	24.1	45.0	10.0	83.6	29.3	7.4	122.4	123.4	39.6	99.4	62.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	24.1	45.0	10.0	83.6	29.3	7.4	122.4	123.4	39.6	99.4	62.7	
LOS	C	D	B	F	C	A	F	F	D	F	E	
Approach Delay		39.1			37.4			84.7			82.8	
Approach LOS		D			D			F			F	
Queue Length 50th (ft)	31	441	38	~292	542	88	~189	~200	91	227	169	

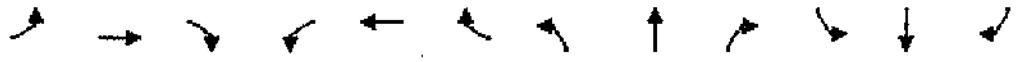
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m52	381	98	m#448	618	m112	#355	#367	#271	#409	#294	
Internal Link Dist (ft)		1291			1237			349			1370	
Turn Bay Length (ft)	250		300	300			300		300			
Base Capacity (vph)	188	1695	700	380	1652	853	210	217	425	295	310	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.38	0.86	0.37	1.09	0.84	0.31	1.03	1.04	0.88	0.99	0.78	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 72 (60%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 50.1 Intersection LOS: D
Intersection Capacity Utilization 92.5% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.





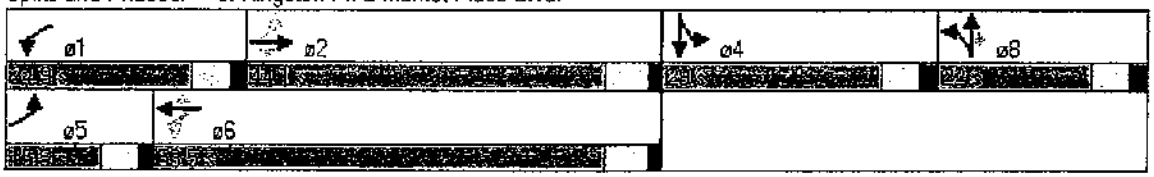
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1447	201	322	1171	207	315	135	382	316	143	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		0	0		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.951	
Flt Protected	0.950			0.950			0.950	0.980		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	3539	1583	1681	1734	1583	1770	1771	0
Flt Permitted	0.105			0.092			0.950	0.980		0.950		
Satd. Flow (perm)	196	5085	1583	171	3539	1583	1681	1734	1583	1770	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			216			183			234		18	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			548			1450	
Travel Time (s)		20.8			20.0			12.5			33.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	1573	218	350	1273	225	342	147	415	343	155	76
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	48	1573	218	350	1273	225	239	250	415	343	231	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	15.5	22.0	22.0	13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	15.5	44.1	44.1	24.9	53.5	53.5	22.0	22.0	22.0	29.0	29.0	0.0
Total Split (%)	12.9%	36.8%	36.8%	20.8%	44.6%	44.6%	18.3%	18.3%	18.3%	24.2%	24.2%	0.0%
Maximum Green (s)	10.0	38.1	38.1	19.4	47.5	47.5	16.0	16.0	16.0	23.0	23.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	46.7	38.1	38.1	63.5	52.1	52.1	16.0	16.0	16.0	23.0	23.0	
Actuated g/C Ratio	0.39	0.32	0.32	0.53	0.43	0.43	0.13	0.13	0.13	0.19	0.19	
v/c Ratio	0.26	0.97	0.34	1.00	0.83	0.28	1.07	1.08	1.00	1.01	0.65	
Control Delay	21.9	54.4	10.4	57.4	32.5	9.4	128.5	131.7	68.0	100.3	50.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.9	54.4	10.4	57.4	32.5	9.4	128.5	131.7	68.0	100.3	50.9	
LOS	C	D	B	E	C	A	F	F	E	F	D	
Approach Delay		48.3			34.4			101.6			80.5	
Approach LOS		D			C			F			F	
Queue Length 50th (ft)	23	431	41	~196	534	95	~215	~228	~155	~273	154	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m34	#538	m81	m#387	587	m136	#386	#403	#370	#466	242	
Internal Link Dist (ft)		1291			1237			468			1370	
Turn Bay Length (ft)	250		300	300			300					
Base Capacity (vph)	211	1614	650	349	1535	791	224	231	414	339	354	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.23	0.97	0.34	1.00	0.83	0.28	1.07	1.08	1.00	1.01	0.65	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 58 (48%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 56.2 Intersection LOS: E
Intersection Capacity Utilization 95.2% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



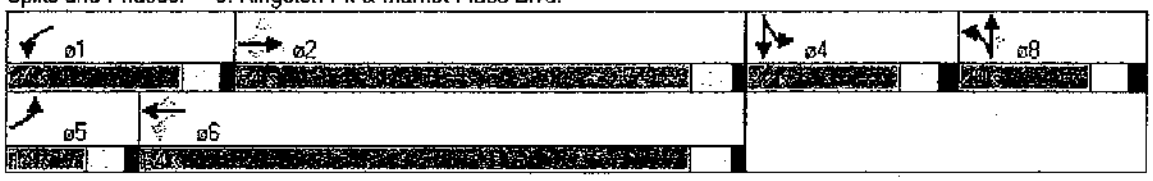
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	896	128	205	982	196	103	44	125	57	91	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950	0.980		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	3539	1583	1681	1734	1583	3433	1798	0
Flt Permitted	0.221			0.222			0.950	0.980		0.950		
Satd. Flow (perm)	412	5085	1583	414	3539	1583	1681	1734	1583	3433	1798	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			139			213			136		10	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			429			1450	
Travel Time (s)		20.8			20.0			9.8			33.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	974	139	223	1067	213	112	48	136	62	99	30
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	37	974	139	223	1067	213	78	82	136	62	129	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	14.0	22.0	22.0	14.0	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	14.0	54.0	54.0	24.0	64.0	64.0	20.0	20.0	20.0	22.0	22.0	0.0
Total Split (%)	11.7%	45.0%	45.0%	20.0%	53.3%	53.3%	16.7%	16.7%	16.7%	18.3%	18.3%	0.0%
Maximum Green (s)	8.5	48.0	48.0	18.5	58.0	58.0	14.0	14.0	14.0	16.0	16.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	69.5	61.0	61.0	78.4	70.2	70.2	11.0	11.0	11.0	12.8	12.8	
Actuated g/C Ratio	0.58	0.51	0.51	0.65	0.58	0.58	0.09	0.09	0.09	0.11	0.11	
v/c Ratio	0.11	0.38	0.16	0.55	0.52	0.21	0.51	0.52	0.51	0.17	0.64	
Control Delay	12.6	19.1	6.5	16.0	24.8	9.2	63.0	63.1	15.1	48.5	61.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.6	19.1	6.5	16.0	24.8	9.2	63.0	63.1	15.1	48.5	61.9	
LOS	B	B	A	B	C	A	E	E	B	D	E	
Approach Delay		17.4			21.3			41.0			57.6	
Approach LOS		B			C			D			E	
Queue Length 50th (ft)	7	82	0	91	401	40	62	65	0	22	89	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	38	202	67	150	456	129	113	117	59	43	152	
Internal Link Dist (ft)		1291			1237			349			1370	
Turn Bay Length (ft)	250		300	300			300		300	200		
Base Capacity (vph)	336	2583	872	481	2069	1014	196	202	305	458	248	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.11	0.38	0.16	0.46	0.52	0.21	0.40	0.41	0.45	0.14	0.52	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 23.9 Intersection LOS: C
Intersection Capacity Utilization 59.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



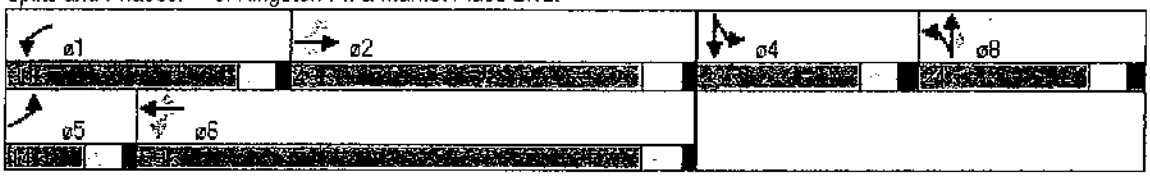
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1338	238	382	1272	243	285	122	346	268	151	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850		0.952	
Flt Protected	0.950			0.950			0.950	0.980		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	3539	1583	1681	1734	1583	3433	1773	0
Flt Permitted	0.107			0.093			0.950	0.980		0.950		
Satd. Flow (perm)	199	5085	1583	173	3539	1583	1681	1734	1583	3433	1773	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			259			214			301		17	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			429			1450	
Travel Time (s)		20.8			20.0			9.8			33.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	1454	259	415	1383	264	310	133	376	291	164	78
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	71	1454	259	415	1383	264	217	226	376	291	242	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	14.0	22.0	22.0	14.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	
Total Split (s)	14.0	43.0	43.0	30.0	59.0	59.0	24.0	24.0	24.0	23.0	23.0	0.0
Total Split (%)	11.7%	35.8%	35.8%	25.0%	49.2%	49.2%	20.0%	20.0%	20.0%	19.2%	19.2%	0.0%
Maximum Green (s)	8.5	37.0	37.0	24.5	53.0	53.0	18.0	18.0	18.0	17.0	17.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	
Act Effct Green (s)	46.1	37.4	37.4	68.2	56.7	56.7	17.5	17.5	17.5	16.8	16.8	
Actuated g/C Ratio	0.38	0.31	0.31	0.57	0.47	0.47	0.15	0.15	0.15	0.14	0.14	
v/c Ratio	0.39	0.92	0.39	0.97	0.83	0.31	0.89	0.89	0.77	0.61	0.92	
Control Delay	23.7	51.2	10.9	43.0	28.2	6.3	85.0	85.6	22.7	54.4	86.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	23.7	51.2	10.9	43.0	28.2	6.3	85.0	85.6	22.7	54.4	86.0	
LOS	C	D	B	D	C	A	F	F	C	D	F	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		44.3			28.4			56.6			68.7	
Approach LOS		D			C			E			E	
Queue Length 50th (ft)	29	441	39	170	541	75	174	182	53	110	175	
Queue Length 95th (ft)	m53	#482	102	m#377	636	m99	#321	#330	#175	157	#330	
Internal Link Dist (ft)		1291			1237			349			1370	
Turn Bay Length (ft)	250		300	300			300		300	200		
Base Capacity (vph)	189	1586	672	428	1673	861	252	260	493	486	266	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.38	0.92	0.39	0.97	0.83	0.31	0.86	0.87	0.76	0.60	0.91	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 42.4 Intersection LOS: D
Intersection Capacity Utilization 90.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1447	201	322	1171	207	315	135	382	316	143	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		0	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850		0.951	
Flt Protected	0.950			0.950			0.950	0.980		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	3539	1583	1681	1734	1583	3433	1771	0
Flt Permitted	0.135			0.085			0.950	0.980		0.950		
Satd. Flow (perm)	251	5085	1583	158	3539	1583	1681	1734	1583	3433	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218			200			290		17	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			548			1450	
Travel Time (s)		20.8			20.0			12.5			33.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	1573	218	350	1273	225	342	147	415	343	155	76
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	48	1573	218	350	1273	225	239	250	415	343	231	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	15.5	22.0	22.0	13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	15.5	45.0	45.0	30.0	59.5	59.5	24.0	24.0	24.0	21.0	21.0	0.0
Total Split (%)	12.9%	37.5%	37.5%	25.0%	49.6%	49.6%	20.0%	20.0%	20.0%	17.5%	17.5%	0.0%
Maximum Green (s)	10.0	39.0	39.0	24.5	53.5	53.5	18.0	18.0	18.0	15.0	15.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	50.0	41.4	41.4	69.5	58.1	58.1	18.0	18.0	18.0	15.0	15.0	
Actuated g/C Ratio	0.42	0.34	0.34	0.58	0.48	0.48	0.15	0.15	0.15	0.12	0.12	
v/c Ratio	0.23	0.90	0.32	0.90	0.74	0.26	0.95	0.96	0.86	0.80	0.98	
Control Delay	18.6	44.1	9.8	36.9	21.5	3.7	95.9	97.9	33.3	65.8	102.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.6	44.1	9.8	36.9	21.5	3.7	95.9	97.9	33.3	65.8	102.3	
LOS	B	D	A	D	C	A	F	F	C	E	F	
Approach Delay		39.3			22.3			67.7			80.5	
Approach LOS		D			C			E			F	
Queue Length 50th (ft)	19	346	22	88	504	47	195	205	97	135	168	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m32	#526	m79	m#252	585	m53	#363	#377	#275	#203	#333	
Internal Link Dist (ft)		1291			1237			468			1370	
Turn Bay Length (ft)	250		300	300			300			200		
Base Capacity (vph)	235	1754	689	421	1714	870	252	260	484	429	236	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.20	0.90	0.32	0.83	0.74	0.26	0.95	0.96	0.86	0.80	0.98	

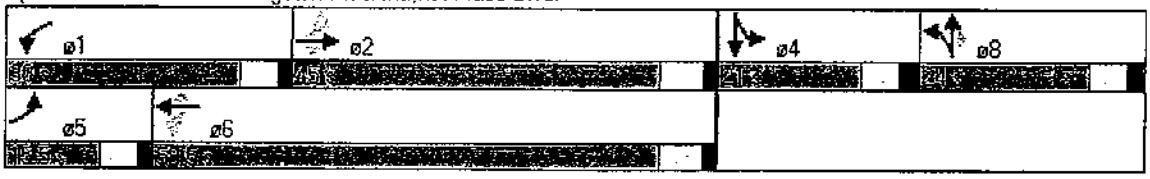
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 44 (37%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 42.8 Intersection LOS: D
Intersection Capacity Utilization 89.4% ICU Level of Service E
Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



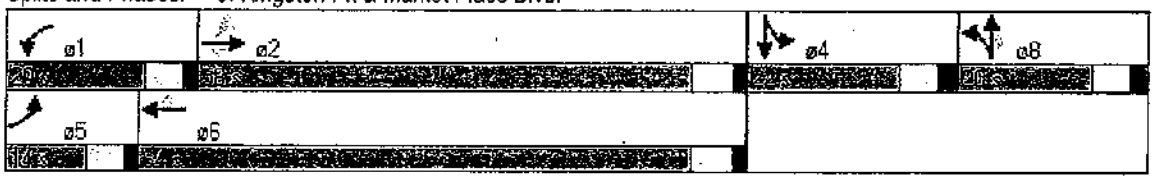
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	896	128	205	982	196	103	44	125	57	91	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		300	0		0
Storage Lanes	1		1	2		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950	0.980		0.950		
Satd. Flow (prot)	1770	5085	1583	3433	3539	1583	1681	1734	1583	1770	1798	0
Flt Permitted	0.224			0.950			0.950	0.980		0.950		
Satd. Flow (perm)	417	5085	1583	3433	3539	1583	1681	1734	1583	1770	1798	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			139			213			136		10	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			429			1450	
Travel Time (s)		20.8			20.0			9.8			33.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	974	139	223	1067	213	112	48	136	62	99	30
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	37	974	139	223	1067	213	78	82	136	62	129	0
Turn Type	pm+pt		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2			6			8			
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	14.0	22.0	22.0	14.0	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	14.0	58.0	58.0	20.0	64.0	64.0	20.0	20.0	20.0	22.0	22.0	0.0
Total Split (%)	11.7%	48.3%	48.3%	16.7%	53.3%	53.3%	16.7%	16.7%	16.7%	18.3%	18.3%	0.0%
Maximum Green (s)	8.5	52.0	52.0	14.5	58.0	58.0	14.0	14.0	14.0	16.0	16.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	68.6	60.1	60.1	12.6	70.2	70.2	11.0	11.0	11.0	12.8	12.8	
Actuated g/C Ratio	0.57	0.50	0.50	0.10	0.58	0.58	0.09	0.09	0.09	0.11	0.11	
v/c Ratio	0.11	0.38	0.16	0.62	0.52	0.21	0.51	0.52	0.51	0.33	0.64	
Control Delay	13.6	22.7	8.6	43.3	28.6	11.4	63.0	63.1	15.1	53.3	61.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	13.6	22.7	8.6	43.3	28.6	11.4	63.0	63.1	15.1	53.3	61.9	
LOS	B	C	A	D	C	B	E	E	B	D	E	
Approach Delay		20.7			28.4			41.0			59.1	
Approach LOS		C			C			D			E	
Queue Length 50th (ft)	10	123	0	83	401	58	62	65	0	45	89	

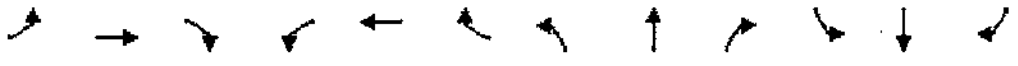
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	43	230	77	124	473	125	113	117	59	88	152	
Internal Link Dist (ft)		1291			1237			349			1370	
Turn Bay Length (ft)	250		300	300			300		300			
Base Capacity (vph)	336	2548	862	415	2069	1014	196	202	305	236	248	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.11	0.38	0.16	0.54	0.52	0.21	0.40	0.41	0.45	0.26	0.52	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 28.6 Intersection LOS: C
Intersection Capacity Utilization 59.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 9: Kingston Pk & Market Place Blvd.





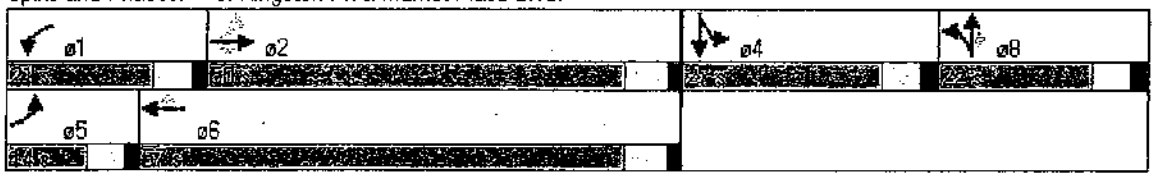
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1338	238	382	1272	243	285	122	346	268	151	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		300	0		0
Storage Lanes	1		1	2		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.952	
Flt Protected	0.950			0.950			0.950	0.980		0.950		
Satd. Flow (prot)	1770	5085	1583	3433	3539	1583	1681	1734	1583	1770	1773	0
Flt Permitted	0.091			0.950			0.950	0.980		0.950		
Satd. Flow (perm)	170	5085	1583	3433	3539	1583	1681	1734	1583	1770	1773	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			259			208			182		17	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			429			1450	
Travel Time (s)		20.8			20.0			9.8			33.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	1454	259	415	1383	264	310	133	376	291	164	78
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	71	1454	259	415	1383	264	217	226	376	291	242	0
Turn Type	pm+pt		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2			6			8			
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	14.0	22.0	22.0	14.0	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	14.0	50.0	50.0	21.0	57.0	57.0	22.0	22.0	22.0	27.0	27.0	0.0
Total Split (%)	11.7%	41.7%	41.7%	17.5%	47.5%	47.5%	18.3%	18.3%	18.3%	22.5%	22.5%	0.0%
Maximum Green (s)	8.5	44.0	44.0	15.5	51.0	51.0	16.0	16.0	16.0	21.0	21.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	52.7	44.0	44.0	15.5	54.0	54.0	16.1	16.1	16.1	20.9	20.9	
Actuated g/C Ratio	0.44	0.37	0.37	0.13	0.45	0.45	0.13	0.13	0.13	0.17	0.17	
v/c Ratio	0.39	0.78	0.35	0.94	0.87	0.32	0.96	0.97	1.02	0.94	0.75	
Control Delay	25.7	39.4	9.4	56.0	33.7	9.8	103.4	104.8	78.1	87.9	59.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	25.7	39.4	9.4	56.0	33.7	9.8	103.4	104.8	78.1	87.9	59.1	
LOS	C	D	A	E	C	A	F	F	E	F	E	
Approach Delay		34.5			35.1			92.2			74.8	
Approach LOS		C			D			F			E	
Queue Length 50th (ft)	32	440	40	137	562	113	178	186	~178	225	168	

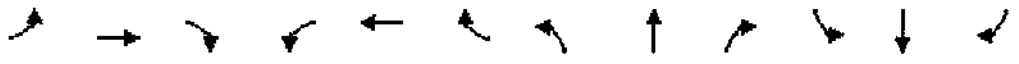
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m53	324	95	m#230	#679	m151	#344	#355	#374	#397	#282	
Internal Link Dist (ft)		1291			1237			349			1370	
Turn Bay Length (ft)	250		300	300			300		300			
Base Capacity (vph)	188	1865	744	443	1593	827	225	232	370	310	324	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.38	0.78	0.35	0.94	0.87	0.32	0.96	0.97	1.02	0.94	0.75	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 48.0 Intersection LOS: D
Intersection Capacity Utilization 87.4% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1447	201	322	1171	207	315	135	382	316	143	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		0	0		0
Storage Lanes	1		1	2		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.951	
Flt Protected	0.950			0.950			0.950	0.980		0.950		
Satd. Flow (prot)	1770	5085	1583	3433	3539	1583	1681	1734	1583	1770	1771	0
Flt Permitted	0.104			0.950			0.950	0.980		0.950		
Satd. Flow (perm)	194	5085	1583	3433	3539	1583	1681	1734	1583	1770	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218			187			178		19	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			548			1450	
Travel Time (s)		20.8			20.0			12.5			33.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	1573	218	350	1273	225	342	147	415	343	155	76
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	48	1573	218	350	1273	225	239	250	415	343	231	0
Turn Type	pm+pt		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2			6			8			
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	15.5	22.0	22.0	13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	14.0	44.0	44.0	20.0	50.0	50.0	22.0	22.0	22.0	29.0	29.0	0.0
Total Split (%)	12.2%	38.3%	38.3%	17.4%	43.5%	43.5%	19.1%	19.1%	19.1%	25.2%	25.2%	0.0%
Maximum Green (s)	8.5	38.0	38.0	14.5	44.0	44.0	16.0	16.0	16.0	23.0	23.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	46.9	38.3	38.3	14.2	47.1	47.1	16.0	16.0	16.0	23.0	23.0	
Actuated g/C Ratio	0.41	0.33	0.33	0.12	0.41	0.41	0.14	0.14	0.14	0.20	0.20	
v/c Ratio	0.25	0.93	0.32	0.83	0.88	0.30	1.02	1.04	1.11	0.97	0.63	
Control Delay	24.4	49.0	13.1	57.5	62.7	27.8	113.8	116.7	107.3	87.0	47.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	24.4	49.0	13.1	57.5	62.7	27.8	113.8	116.7	107.3	87.0	47.0	
LOS	C	D	B	E	E	C	F	F	F	F	D	
Approach Delay		44.1			57.5			111.6			70.9	
Approach LOS		D			E			F			E	
Queue Length 50th (ft)	27	381	48	139	524	93	~197	~210	~231	254	145	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m36	#498	m91	m#176	#638	m125	#367	#382	#430	#440	231	
Internal Link Dist (ft)		1291			1237			468			1370	
Turn Bay Length (ft)	250		300	300			300					
Base Capacity (vph)	196	1694	673	433	1449	759	234	241	373	354	369	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.24	0.93	0.32	0.81	0.88	0.30	1.02	1.04	1.11	0.97	0.63	

Intersection Summary

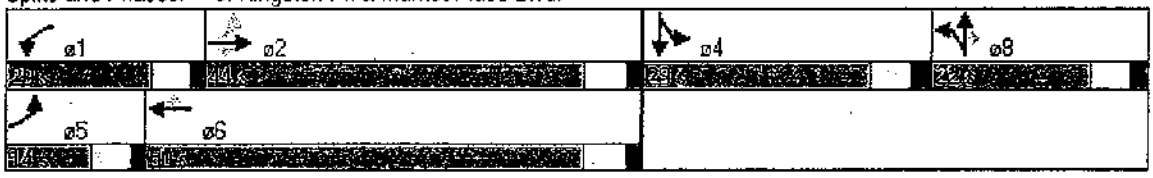
Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 112.3 (98%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 63.7 Intersection LOS: E
Intersection Capacity Utilization 88.4% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



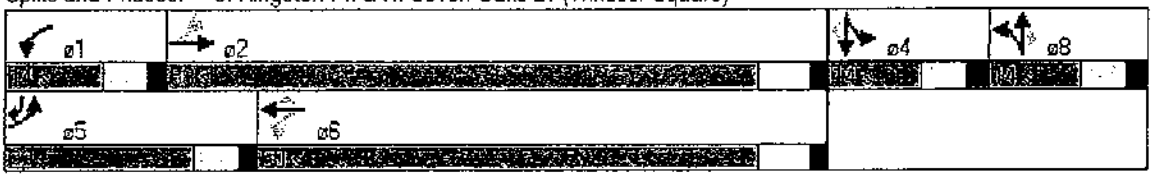
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	936	7	11	966	171	13	9	55	62	6	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	150		0	0		0	100		0
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.999				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.970		0.950	0.960	
Satd. Flow (prot)	1770	3536	0	1770	3539	1583	0	1807	1583	1681	1699	1583
Flt Permitted	0.193			0.280				0.970		0.950	0.960	
Satd. Flow (perm)	360	3536	0	522	3539	1583	0	1807	1583	1681	1699	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				180			58			87
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1185			1095			456			868	
Travel Time (s)		18.0			16.6			10.4			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	172	985	7	12	1017	180	14	9	58	65	6	87
Shared Lane Traffic (%)										46%		
Lane Group Flow (vph)	172	992	0	12	1017	180	0	23	58	35	36	87
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	21.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	21.5
Total Split (s)	22.0	58.0	0.0	14.0	50.0	50.0	14.0	14.0	14.0	14.0	14.0	22.0
Total Split (%)	22.0%	58.0%	0.0%	14.0%	50.0%	50.0%	14.0%	14.0%	14.0%	14.0%	14.0%	22.0%
Maximum Green (s)	16.5	52.0		8.5	44.0	44.0	8.0	8.0	8.0	8.0	8.0	16.5
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	71.8	70.1		65.1	56.6	56.6		8.0	8.0	8.0	8.0	16.3
Actuated g/C Ratio	0.72	0.70		0.65	0.57	0.57		0.08	0.08	0.08	0.08	0.16
v/c Ratio	0.44	0.40		0.03	0.51	0.18		0.16	0.32	0.26	0.26	0.26
Control Delay	9.4	9.6		2.0	19.2	5.5		45.7	17.1	48.5	48.5	6.8
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	9.6		2.0	19.2	5.5		45.7	17.1	48.5	48.5	6.8
LOS	A	A		A	B	A		D	B	D	D	A
Approach Delay		9.6			17.0			25.2			25.6	
Approach LOS		A			B			C			C	
Queue Length 50th (ft)	37	141		1	351	49		14	0	22	23	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	61	266		m2	421	56		39	39	55	56	29
Internal Link Dist (ft)		1105			1015			376			788	
Turn Bay Length (ft)	200			150						100		
Base Capacity (vph)	492	2479		449	2004	975		145	180	134	136	436
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.35	0.40		0.03	0.51	0.18		0.16	0.32	0.26	0.26	0.20

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.51
Intersection Signal Delay: 14.5 Intersection LOS: B
Intersection Capacity Utilization 58.9% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Kingston Pk & N. Seven Oaks Dr (Windsor Square)



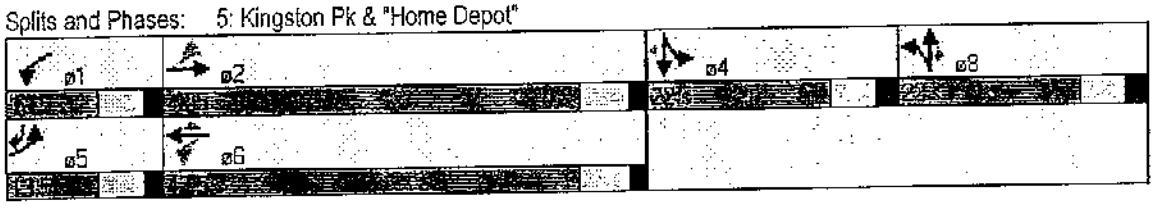
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	969	0	12	1075	38	8	1	35	22	0	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		300	0		0	100		100
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected	0.950			0.950				0.957		0.950	0.950	
Satd. Flow (prot)	1770	3539	0	1770	3539	1583	0	1783	1583	1681	1681	1583
Flt Permitted	0.178			0.274				0.957		0.950	0.950	
Satd. Flow (perm)	332	3539	0	510	3539	1583	0	1783	1583	1681	1681	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						40			37			82
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1095			1371			223			454	
Travel Time (s)		16.6			20.8			5.1			10.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	104	1020	0	13	1132	40	8	1	37	23	0	82
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	104	1020	0	13	1132	40	0	9	37	11	12	82
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	13.5	42.5	0.0	13.5	42.5	42.5	22.0	22.0	22.0	22.0	22.0	13.5
Total Split (%)	13.5%	42.5%	0.0%	13.5%	42.5%	42.5%	22.0%	22.0%	22.0%	22.0%	22.0%	13.5%
Maximum Green (s)	8.0	36.5		8.0	36.5	36.5	16.0	16.0	16.0	16.0	16.0	8.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	79.6	79.6		74.6	66.1	66.1		8.1	8.1	8.0	8.0	11.7
Actuated g/C Ratio	0.80	0.80		0.75	0.66	0.66		0.08	0.08	0.08	0.08	0.12
v/c Ratio	0.27	0.36		0.03	0.48	0.04		0.06	0.23	0.08	0.09	0.32
Control Delay	6.1	7.2		0.9	2.5	0.5		43.6	17.9	44.2	44.4	8.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	6.1	7.2		0.9	2.5	0.5		43.6	17.9	44.2	44.4	8.7
LOS	A	A		A	A	A		D	B	D	D	A
Approach Delay		7.1			2.4			22.9			16.5	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)	10	73		0	48	0		5	0	7	7	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	40	279		m1	58	m0		21	31	25	26	30
Internal Link Dist (ft)		1015			1291			143			374	
Turn Bay Length (ft)	250			150		300				100		100
Base Capacity (vph)	384	2818		481	2340	1060		285	284	269	269	258
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.27	0.36		0.03	0.48	0.04		0.03	0.13	0.04	0.04	0.32

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 84 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.48
Intersection Signal Delay: 5.5 Intersection LOS: A
Intersection Capacity Utilization 58.2% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Kingston Pk & "Home Depot"



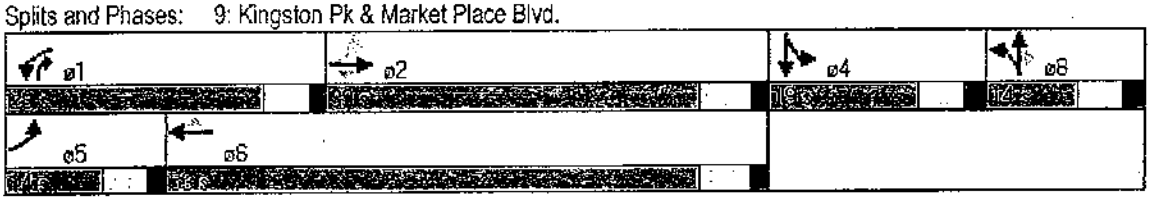
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	896	128	205	982	196	103	44	125	57	91	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	3539	1583	3433	1863	1583	3433	1798	0
Flt Permitted	0.262			0.950			0.950			0.950		
Satd. Flow (perm)	488	5085	1583	1770	3539	1583	3433	1863	1583	3433	1798	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			206			132		12	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			429			1450	
Travel Time (s)		20.8			20.0			9.8			33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	36	943	135	216	1034	206	108	46	132	60	96	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	943	135	216	1034	206	108	46	132	60	125	0
Turn Type	pm+pt		Perm	Prot		Perm	Split		pm+ov	Split		
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases	2		2			6			8			
Detector Phase	5	2	2	1	6	6	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	14.0	22.0	22.0	14.0	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	14.0	39.0	39.0	28.0	53.0	53.0	14.0	14.0	28.0	19.0	19.0	0.0
Total Split (%)	14.0%	39.0%	39.0%	28.0%	53.0%	53.0%	14.0%	14.0%	28.0%	19.0%	19.0%	0.0%
Maximum Green (s)	8.5	33.0	33.0	22.5	47.0	47.0	8.0	8.0	22.5	13.0	13.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	1.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag			Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	48.7	40.2	40.2	17.2	54.7	54.7	8.1	8.1	31.3	11.1	11.1	
Actuated g/C Ratio	0.49	0.40	0.40	0.17	0.55	0.55	0.08	0.08	0.31	0.11	0.11	
v/c Ratio	0.11	0.46	0.19	0.71	0.53	0.21	0.39	0.30	0.23	0.16	0.60	
Control Delay	12.4	26.8	14.7	37.1	18.3	6.2	48.0	49.1	5.0	40.3	50.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.4	26.8	14.7	37.1	18.3	6.2	48.0	49.1	5.0	40.3	50.0	
LOS	B	C	B	D	B	A	D	D	A	D	D	
Approach Delay		24.9			19.4			28.3			46.8	
Approach LOS		C			B			C			D	
Queue Length 50th (ft)	2	134	16	121	335	36	34	28	0	18	69	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	47	276	97	129	377	114	61	65	38	36	127	
Internal Link Dist (ft)		1291			1237			349			1370	
Turn Bay Length (ft)	250		300	300			300		300	200		
Base Capacity (vph)	349	2043	717	398	1937	960	278	151	663	446	244	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.10	0.46	0.19	0.54	0.53	0.21	0.39	0.30	0.20	0.13	0.51	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 57 (57%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 23.9 Intersection LOS: C
Intersection Capacity Utilization 58.0% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



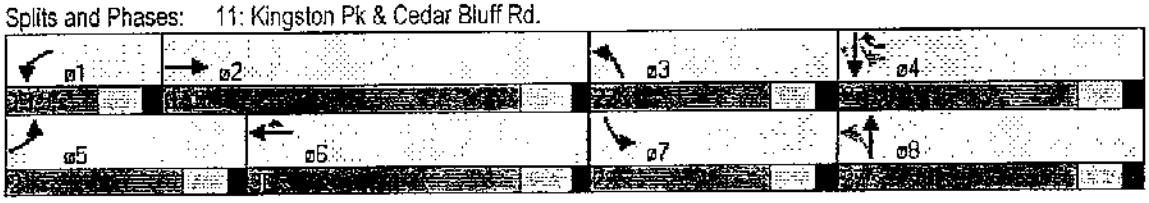
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	330	660	23	48	840	349	84	241	73	348	152	411
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	250		500	150		0	300		0
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	1.00
Frt		0.995				0.850		0.965				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5060	0	1770	5085	1583	1770	3415	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.656			0.317		
Satd. Flow (perm)	3433	5060	0	1770	5085	1583	1222	3415	0	1146	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				367		36				433
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1317			1476			690			1452	
Travel Time (s)		20.0			22.4			15.7			33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	347	695	24	51	884	367	88	254	77	366	160	433
Shared Lane Traffic (%)												
Lane Group Flow (vph)	347	719	0	51	884	367	88	331	0	366	160	433
Turn Type	Prot			Prot		custom	pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6	4!	3	8!		7	4	
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	4	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	14.0	14.0	14.0		14.0	14.0	14.0
Total Split (s)	21.0	37.5	0.0	13.5	30.0	27.0	22.0	27.0	0.0	22.0	27.0	27.0
Total Split (%)	21.0%	37.5%	0.0%	13.5%	30.0%	27.0%	22.0%	27.0%	0.0%	22.0%	27.0%	27.0%
Maximum Green (s)	15.5	31.5		8.0	24.0	21.0	16.0	21.0		16.0	21.0	21.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None		None	None	None
Act Effct Green (s)	15.0	42.6		8.8	33.7	56.2	23.4	14.1		32.7	21.3	21.3
Actuated g/C Ratio	0.15	0.43		0.09	0.34	0.56	0.23	0.14		0.33	0.21	0.21
v/c Ratio	0.67	0.33		0.32	0.52	0.35	0.26	0.65		0.53	0.40	0.64
Control Delay	37.9	10.1		38.0	27.8	2.9	24.2	41.8		26.8	37.8	8.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	37.9	10.1		38.0	27.8	2.9	24.2	41.8		26.8	37.8	8.1
LOS	D	B		D	C	A	C	D		C	D	A
Approach Delay		19.1			21.2			38.1			20.2	
Approach LOS		B			C			D			C	
Queue Length 50th (ft)	47	124		29	149	9	39	94		88	92	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	121	155		m50	208	m21	67	134		112	147	81
Internal Link Dist (ft)		1237			1396			610			1372	
Turn Bay Length (ft)	400			250		500	150			300		
Base Capacity (vph)	559	2156		157	1713	1068	455	746		750	424	695
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.62	0.33		0.32	0.52	0.34	0.19	0.44		0.49	0.38	0.62

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 98 (98%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 22.2 Intersection LOS: C
Intersection Capacity Utilization 64.1% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 11: Kingston Pk & Cedar Bluff Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	710	396	159	627	233	558	518	296	133	137	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	125		150	425		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	0.95
Frt			0.850			0.850			0.850		0.968	
Flt Protected	0.950			0.950			0.950	0.986		0.950	0.993	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1610	3343	1583	1610	3259	0
Flt Permitted	0.309			0.184			0.950	0.986		0.950	0.993	
Satd. Flow (perm)	576	3539	1583	343	3539	1583	1610	3343	1583	1610	3259	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			216			199			69		25	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1476			692			644			1688	
Travel Time (s)		22.4			10.5			14.6			38.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	79	747	417	167	660	245	587	545	312	140	144	47
Shared Lane Traffic (%)							37%			21%		
Lane Group Flow (vph)	79	747	417	167	660	245	370	762	312	111	220	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	8	1	6	4	8	8	1	4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	8	1	6	4	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	8.0	8.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.5	22.0	14.0	13.5	22.0	14.0	14.0	14.0	13.5	14.0	14.0	
Total Split (s)	13.5	34.6	34.0	15.4	36.5	16.0	34.0	34.0	15.4	16.0	16.0	0.0
Total Split (%)	13.5%	34.6%	34.0%	15.4%	36.5%	16.0%	34.0%	34.0%	15.4%	16.0%	16.0%	0.0%
Maximum Green (s)	8.0	28.6	28.0	9.9	30.5	10.0	28.0	28.0	9.9	10.0	10.0	
Yellow Time (s)	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	2.0	1.5	1.5	2.0	2.0	2.0	1.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	None	None	None	None	None	None	None	None	None	
Act Effct Green (s)	38.7	30.2	57.4	42.7	34.3	49.9	27.3	27.3	42.7	9.6	9.6	
Actuated g/C Ratio	0.39	0.30	0.57	0.43	0.34	0.50	0.27	0.27	0.43	0.10	0.10	
v/c Ratio	0.25	0.70	0.42	0.59	0.54	0.27	0.84	0.84	0.44	0.72	0.66	
Control Delay	11.8	28.9	6.4	26.1	29.9	4.7	52.9	43.6	17.3	69.7	48.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	11.8	28.9	6.4	26.1	29.9	4.7	52.9	43.6	17.3	69.7	48.4	
LOS	B	C	A	C	C	A	D	D	B	E	D	
Approach Delay		20.3			23.6			40.3			55.5	
Approach LOS		C			C			D			E	
Queue Length 50th (ft)	31	205	43	63	188	16	241	248	102	76	66	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	20	260	197	108	248	59	#408	324	173	#165	107	
Internal Link Dist (ft)		1396			612			564			1608	
Turn Bay Length (ft)	225			125		150	425		300	200		
Base Capacity (vph)	318	1067	1011	288	1215	896	451	936	723	161	348	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.25	0.70	0.41	0.58	0.54	0.27	0.82	0.81	0.43	0.69	0.63	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 40 (40%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 31.1 Intersection LOS: C
Intersection Capacity Utilization 75.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 15: Kingston Pk & N. Peters Rd.

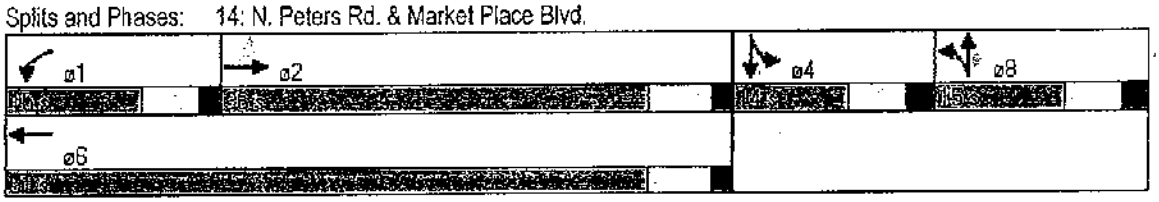
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	466	69	183	1229	28	97	1	85	27	10	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	0		0	2		0	0		1	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.95	0.95	0.95	0.97	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981			0.997				0.850		0.957	
Flt Protected				0.950				0.953			0.976	
Satd. Flow (prot)	0	3472	0	3433	3529	0	0	1775	1583	0	1740	0
Flt Permitted		0.951		0.950				0.953			0.976	
Satd. Flow (perm)	0	3302	0	3433	3529	0	0	1775	1583	0	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			4				89		18	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		863			1366			1450			170	
Travel Time (s)		19.6			31.0			33.0			3.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2	491	73	193	1294	29	102	1	89	28	11	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	566	0	193	1323	0	0	103	89	0	57	0
Turn Type	Perm			Prot			Split		Perm	Split		
Protected Phases		2		1	6		8	8		4	4	
Permitted Phases	2								8			
Detector Phase	2	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		8.0	10.0		8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	22.0	22.0		13.5	22.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	36.0	36.0	0.0	15.0	51.0	0.0	15.0	15.0	15.0	14.0	14.0	0.0
Total Split (%)	45.0%	45.0%	0.0%	18.8%	63.8%	0.0%	18.8%	18.8%	18.8%	17.5%	17.5%	0.0%
Maximum Green (s)	30.0	30.0		9.5	45.0		9.0	9.0	9.0	8.0	8.0	
Yellow Time (s)	4.5	4.5		4.0	4.5		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	5.5	6.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None	None	None	None	
Act Effct Green (s)		39.2		9.0	54.9			8.7	8.7		8.0	
Actuated g/C Ratio		0.49		0.11	0.69			0.11	0.11		0.10	
v/c Ratio		0.35		0.50	0.55			0.53	0.35		0.30	
Control Delay		15.5		40.6	9.1			44.5	12.3		29.6	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		15.5		40.6	9.1			44.5	12.3		29.6	
LOS		B		D	A			D	B		C	
Approach Delay		15.5			13.1			29.6			29.6	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)		104		50	127			49	0		18	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	149		81	253			98	41		53		
Internal Link Dist (ft)	783			1286			1370			90		
Turn Bay Length (ft)			100									
Base Capacity (vph)	1629		408	2424			200	257		190		
Starvation Cap Reductn	0		0	0			0	0		0		
Spillback Cap Reductn	0		0	0			0	0		0		
Storage Cap Reductn	0		0	0			0	0		0		
Reduced v/c Ratio	0.35		0.47	0.55			0.52	0.35		0.30		

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 74 (93%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 15.5 Intersection LOS: B
Intersection Capacity Utilization 74.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 14: N. Peters Rd. & Market Place Blvd.



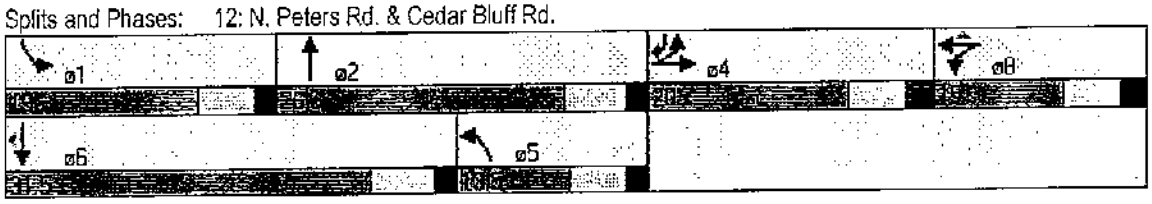
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	427	80	21	36	103	584	28	769	38	428	737	1193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	120		250	275		0	350		500
Storage Lanes	2		0	1		2	1		0	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.85	0.86	0.95	1.00	0.95	0.88	1.00	0.91	0.91	0.97	0.95	0.88
Frt		0.986				0.850		0.993				0.850
Flt Protected	0.950	0.973		0.950			0.950			0.950		
Satd. Flow (prot)	3044	3074	0	1770	3539	2787	1770	5050	0	3433	3539	2787
Flt Permitted	0.950	0.973		0.950			0.950			0.950		
Satd. Flow (perm)	3044	3074	0	1770	3539	2787	1770	5050	0	3433	3539	2787
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				615		9				905
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1366			378			1452			835	
Travel Time (s)		31.0			8.6			33.0			19.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	449	84	22	38	108	615	29	809	40	451	776	1256
Shared Lane Traffic (%)	67108894%											
Lane Group Flow (vph)	314	241	0	38	108	615	29	849	0	451	776	1256
Turn Type	Split			Split		Perm	Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases						8						6
Detector Phase	4	4		8	8	8	5	2		1	6	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	10.0		8.0	10.0	8.0
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	13.5	22.0		13.5	22.0	14.0
Total Split (s)	20.0	20.0	0.0	15.0	15.0	15.0	13.5	26.0	0.0	19.0	31.5	20.0
Total Split (%)	25.0%	25.0%	0.0%	18.8%	18.8%	18.8%	16.9%	32.5%	0.0%	23.8%	39.4%	25.0%
Maximum Green (s)	14.0	14.0		9.0	9.0	9.0	8.0	20.0		13.5	25.5	14.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.5	1.5		1.5	1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	5.5	6.0	4.0	5.5	6.0	6.0
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	None
Act Effct Green (s)	13.9	13.9		8.6	8.6	8.6	8.0	20.7		13.3	34.2	51.6
Actuated g/C Ratio	0.17	0.17		0.11	0.11	0.11	0.10	0.26		0.17	0.43	0.64
v/c Ratio	0.59	0.45		0.20	0.28	0.73	0.16	0.65		0.79	0.51	0.59
Control Delay	25.1	21.1		35.2	34.9	8.7	35.4	29.0		22.8	16.5	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	25.1	21.1		35.2	34.9	8.7	35.4	29.0		22.8	16.5	5.7
LOS	C	C		D	C	A	D	C		C	B	A
Approach Delay		23.4			13.8			29.2			12.2	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)	35	24		18	26	0	14	138		98	158	150

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	62	47		45	50	51	38	180		m88	m167	m96
Internal Link Dist (ft)		1286			298			1372			755	
Turn Bay Length (ft)	275			120		250	275			350		500
Base Capacity (vph)	533	546		199	398	859	177	1316		587	1512	2123
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.59	0.44		0.19	0.27	0.72	0.16	0.65		0.77	0.51	0.59

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 78 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 17.0 Intersection LOS: B
Intersection Capacity Utilization 69.7% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: N. Peters Rd. & Cedar Bluff Rd.



Lane Group	SEL	SER		NWL	NWT	NEL	NER
Lane Configurations	↑↑↑			↑↑↑	↑↑	↱	
Volume (vph)	2691	0	0	1673	1129	603	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	0.91	
Frt					0.992	0.850	
Flt Protected					0.955		
Satd. Flow (prot)	5085	0	0	5085	3423	1441	
Flt Permitted					0.955		
Satd. Flow (perm)	5085	0	0	5085	3423	1441	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)							
Link Speed (mph)	30			30	30		
Link Distance (ft)	559			835	373		
Travel Time (s)	12.7			19.0	8.5		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	2833	0	0	1761	1188	635	
Shared Lane Traffic (%)						11%	
Lane Group Flow (vph)	2833	0	0	1761	1258	565	
Turn Type						Perm	
Protected Phases	6			2	4		
Permitted Phases						4	
Detector Phase	6			2	4	4	
Switch Phase							
Minimum Initial (s)	10.0			10.0	8.0	8.0	
Minimum Split (s)	22.0			22.0	14.0	14.0	
Total Split (s)	47.0	0.0	0.0	47.0	33.0	33.0	
Total Split (%)	58.8%	0.0%	0.0%	58.8%	41.3%	41.3%	
Maximum Green (s)	41.0			41.0	27.0	27.0	
Yellow Time (s)	4.5			4.5	4.0	4.0	
All-Red Time (s)	1.5			1.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	4.0	4.0	6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0			3.0	3.0	3.0	
Recall Mode	C-Min			C-Min	None	None	
Act Effct Green (s)	41.0			41.0	27.0	27.0	
Actuated g/C Ratio	0.51			0.51	0.34	0.34	
v/c Ratio	1.09			0.68	1.09	1.16	
Control Delay	67.7			7.3	81.8	121.6	
Queue Delay	2.7			0.0	0.0	0.0	
Total Delay	70.4			7.3	81.8	121.6	
LOS	E			A	F	F	
Approach Delay	70.4			7.3	94.1		
Approach LOS	E			A	F		
Queue Length 50th (ft)	~591			58	~370	~373	
Queue Length 95th (ft)	#686			94	#493	#581	
Internal Link Dist (ft)	479			755	293		
Turn Bay Length (ft)							

Lane Group	SET	SER	NWT	NEL	NER
Base Capacity (vph)	2606		2606	1155	486
Starvation Cap Reductn	15		0	0	0
Spillback Cap Reductn	0		0	0	0
Storage Cap Reductn	0		0	0	0
Reduced v/c Ratio	1.09		0.68	1.09	1.16

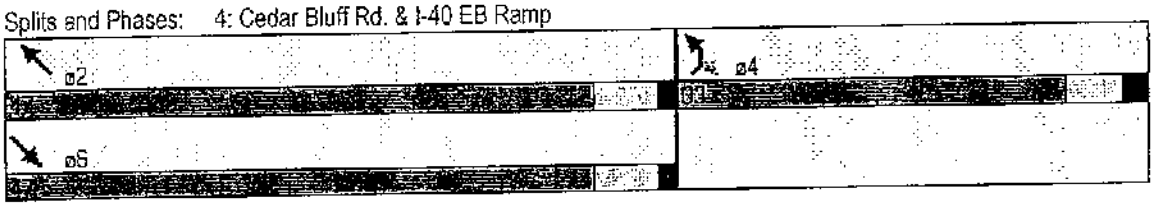
Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 14 (18%), Referenced to phase 2:NWT and 6:SET, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.16
Intersection Signal Delay: 59.8 Intersection LOS: E
Intersection Capacity Utilization 100.5% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Cedar Bluff Rd. & I-40 EB Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	1580	14	28	1635	266	13	8	30	220	7	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	150		0	0		0	100		0
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.999				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.969		0.950	0.955	
Satd. Flow (prot)	1770	3536	0	1770	3539	1583	0	1805	1583	1681	1690	1583
Flt Permitted	0.068			0.075				0.969		0.950	0.955	
Satd. Flow (perm)	127	3536	0	140	3539	1583	0	1805	1583	1681	1690	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				193			32			208
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1185			1095			456			868	
Travel Time (s)		18.0			16.6			10.4			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	1663	15	29	1721	280	14	8	32	232	7	208
Shared Lane Traffic (%)										49%		
Lane Group Flow (vph)	204	1678	0	29	1721	280	0	22	32	118	121	208
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	22.0	22.0	22.0	22.0	22.0	13.5
Total Split (s)	13.5	52.5	0.0	13.5	52.5	52.5	22.0	22.0	22.0	22.0	22.0	13.5
Total Split (%)	12.3%	47.7%	0.0%	12.3%	47.7%	47.7%	20.0%	20.0%	20.0%	20.0%	20.0%	12.3%
Maximum Green (s)	8.0	46.5		8.0	46.5	46.5	16.0	16.0	16.0	16.0	16.0	8.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	77.3	68.7		64.4	55.9	55.9		8.2	8.2	12.7	12.7	30.7
Actuated g/C Ratio	0.70	0.62		0.59	0.51	0.51		0.07	0.07	0.12	0.12	0.28
v/c Ratio	0.64	0.76		0.14	0.96	0.31		0.16	0.22	0.61	0.62	0.35
Control Delay	32.0	22.1		3.6	20.9	0.6		50.7	19.8	59.3	59.9	4.3
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	22.1		3.6	20.9	0.6		50.7	19.8	59.3	59.9	4.3
LOS	C	C		A	C	A		D	B	E	E	A
Approach Delay		23.2			17.9			32.4			33.9	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	86	543		1	~705	0		15	0	84	86	0

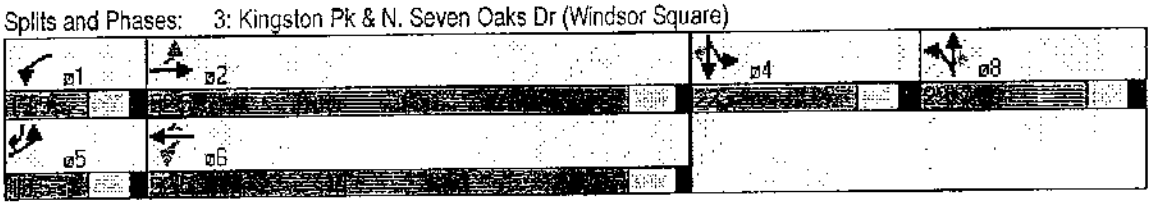
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	171	#772		m2	m#855	m0		40	31	144	148	39
Internal Link Dist (ft)		1105			1015			376			788	
Turn Bay Length (ft)	200			150						100		
Base Capacity (vph)	318	2208		201	1800	900		263	258	245	246	592
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.64	0.76		0.14	0.96	0.31		0.08	0.12	0.48	0.49	0.35

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 14 (13%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 21.9 Intersection LOS: C
Intersection Capacity Utilization 83.5% ICU Level of Service E
Analysis Period (min) 15

- Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Kingston Pk & N. Seven Oaks Dr (Windsor Square)



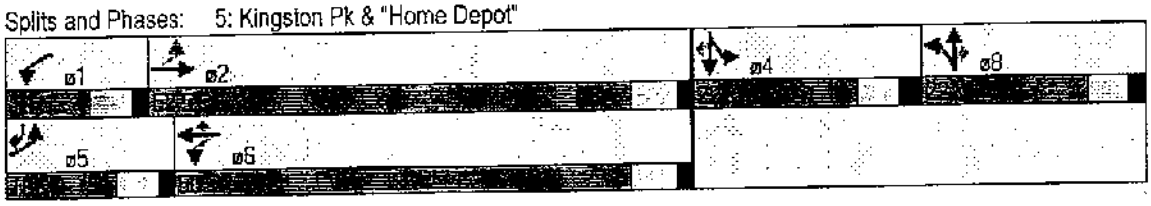
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	223	1631	3	13	1676	130	10	1	18	85	1	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		300	0		0	100		100
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected	0.950			0.950				0.956		0.950	0.953	
Satd. Flow (prot)	1770	3539	0	1770	3539	1583	0	1781	1583	1681	1686	1583
Flt Permitted	0.065			0.093				0.956		0.950	0.953	
Satd. Flow (perm)	121	3539	0	173	3539	1583	0	1781	1583	1681	1686	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						106			19			262
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1095			1371			223			454	
Travel Time (s)		16.6			20.8			5.1			10.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	235	1717	3	14	1764	137	11	1	19	89	1	301
Shared Lane Traffic (%)										49%		
Lane Group Flow (vph)	235	1720	0	14	1764	137	0	12	19	45	45	301
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	22.0	22.0	22.0	22.0	22.0	13.5
Total Split (s)	15.0	52.5	0.0	13.5	51.0	51.0	22.0	22.0	22.0	22.0	22.0	15.0
Total Split (%)	13.6%	47.7%	0.0%	12.3%	46.4%	46.4%	20.0%	20.0%	20.0%	20.0%	20.0%	13.6%
Maximum Green (s)	9.5	46.5		8.0	45.0	45.0	16.0	16.0	16.0	16.0	16.0	9.5
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	83.8	79.1		67.8	59.3	59.3		8.0	8.0	9.1	9.1	27.5
Actuated g/C Ratio	0.76	0.72		0.62	0.54	0.54		0.07	0.07	0.08	0.08	0.25
v/c Ratio	0.64	0.68		0.06	0.92	0.15		0.09	0.14	0.32	0.32	0.51
Control Delay	31.1	19.7		5.2	28.1	2.8		49.5	22.3	53.5	53.5	6.9
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	19.7		5.2	28.1	2.8		49.5	22.3	53.5	53.5	6.9
LOS	C	B		A	C	A		D	C	D	D	A
Approach Delay		21.1			26.1			32.8			17.6	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	136	418		0	~738	4		8	0	32	32	16

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		15.1			13.8			37.9			15.9	
Approach LOS		B			B			D			B	
Queue Length 50th (ft)	103	103		0	88	0		8	0	26	26	17
Queue Length 95th (ft)	230	439		m2	#703	m19		28	18	61	60	59
Internal Link Dist (ft)		1015			1291			143			374	
Turn Bay Length (ft)	250			150		300				100		100
Base Capacity (vph)	355	2734		307	2063	968		259	240	245	246	586
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.66	0.54		0.02	0.72	0.12		0.05	0.05	0.15	0.15	0.51

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 24 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 14.7 Intersection LOS: B
Intersection Capacity Utilization 78.1% ICU Level of Service D
Analysis Period (min) 15
#: 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m: Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Kingston Pk & "Home Depot"



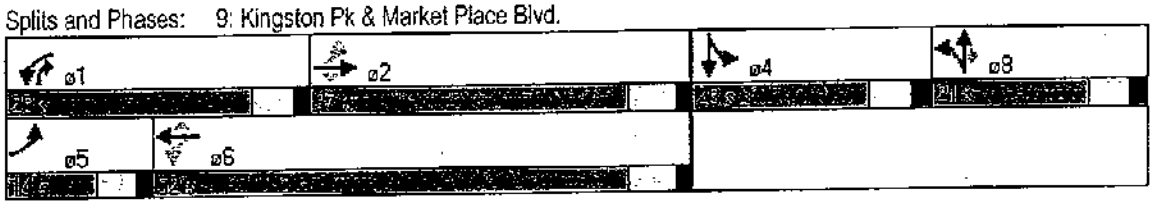
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1338	238	382	1272	243	285	122	346	268	151	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850		0.951	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	3539	1583	3433	1863	1583	3433	1771	0
Flt Permitted	0.118			0.102			0.950			0.950		
Satd. Flow (perm)	220	5085	1583	190	3539	1583	3433	1863	1583	3433	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			251			225			35		19	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			429			1450	
Travel Time (s)		20.8			20.0			9.8			33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	1408	251	402	1339	256	300	128	364	282	159	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	1408	251	402	1339	256	300	128	364	282	235	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Split		pm+ov	Split		
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	2	1	6	6	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	14.0	22.0	22.0	14.0	22.0	22.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	14.0	37.0	37.0	29.0	52.0	52.0	21.0	21.0	29.0	23.0	23.0	0.0
Total Split (%)	12.7%	33.6%	33.6%	26.4%	47.3%	47.3%	19.1%	19.1%	26.4%	20.9%	20.9%	0.0%
Maximum Green (s)	8.5	31.0	31.0	23.5	46.0	46.0	15.0	15.0	23.5	17.0	17.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	1.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag			Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	42.5	33.9	33.9	62.6	51.1	51.1	13.8	13.8	42.5	16.2	16.2	
Actuated g/C Ratio	0.39	0.31	0.31	0.57	0.46	0.46	0.13	0.13	0.39	0.15	0.15	
v/c Ratio	0.34	0.90	0.38	0.93	0.81	0.30	0.70	0.55	0.58	0.56	0.85	
Control Delay	22.7	51.4	15.1	32.4	25.9	6.5	55.1	54.2	27.6	48.0	69.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.7	51.4	15.1	32.4	25.9	6.5	55.1	54.2	27.6	48.0	69.0	
LOS	C	D	B	C	C	A	E	D	C	D	E	
Approach Delay		45.0			24.7			42.3			57.6	
Approach LOS		D			C			D			E	
Queue Length 50th (ft)	22	295	25	155	478	75	105	85	175	95	150	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m60	#457	136	m#318	#604	m98	151	147	270	139	#278	
Internal Link Dist (ft)		1291			1237			349			1370	
Turn Bay Length (ft)	250		300	300			300		300	200		
Base Capacity (vph)	206	1565	661	450	1645	856	468	254	648	531	290	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.33	0.90	0.38	0.89	0.81	0.30	0.64	0.50	0.56	0.53	0.81	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 92 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 37.8 Intersection LOS: D
Intersection Capacity Utilization 87.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



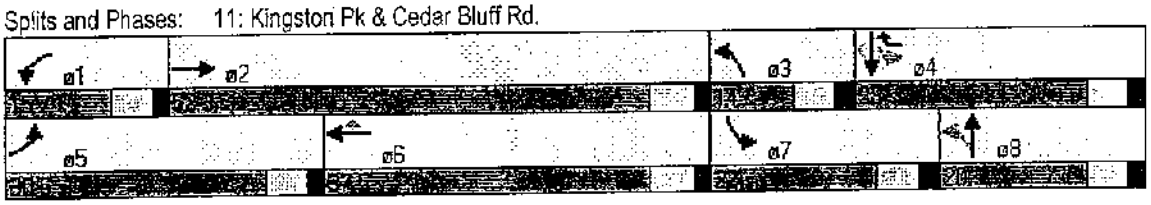
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	439	1158	53	71	1058	300	103	159	117	464	189	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	250		500	150		0	300		0
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	1.00
Frt		0.993				0.850		0.936				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5050	0	1770	5085	1583	1770	3313	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.633			0.296		
Satd. Flow (perm)	3433	5050	0	1770	5085	1583	1179	3313	0	1070	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				316		123				392
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1317			1476			690			1452	
Travel Time (s)		20.0			22.4			15.7			33.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	462	1219	56	75	1114	316	108	167	123	488	199	394
Shared Lane Traffic (%)												
Lane Group Flow (vph)	462	1275	0	75	1114	316	108	290	0	488	199	394
Turn Type	Prot			Prot		custom	pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6	4!	3	8!		7	4	
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	4	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	14.0	14.0	14.0		14.0	14.0	14.0
Total Split (s)	28.0	51.2	0.0	15.8	39.0	29.0	14.0	23.0	0.0	20.0	29.0	29.0
Total Split (%)	25.5%	46.5%	0.0%	14.4%	35.5%	26.4%	12.7%	20.9%	0.0%	18.2%	26.4%	26.4%
Maximum Green (s)	22.5	45.2		10.3	33.0	23.0	8.0	17.0		14.0	23.0	23.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None		None	None	None
Act Effct Green (s)	19.4	53.0		9.6	40.5	59.1	20.6	12.6		32.6	18.6	18.6
Actuated g/C Ratio	0.18	0.48		0.09	0.37	0.54	0.19	0.11		0.30	0.17	0.17
v/c Ratio	0.76	0.52		0.48	0.60	0.32	0.41	0.59		0.79	0.63	0.66
Control Delay	53.7	20.3		39.5	32.7	2.2	33.8	30.9		41.5	51.3	9.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	53.7	20.3		39.5	32.7	2.2	33.8	30.9		41.5	51.3	9.9
LOS	D	C		D	C	A	C	C		D	D	A
Approach Delay		29.2			26.7			31.7			31.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	162	163		51	235	6	57	58		145	132	1

Lane Groups	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#310	403		m50	m350	m47	112	102		186	203	#329
Internal Link Dist (ft)		1237			1396			610			1372	
Turn Bay Length (ft)	400			250		500	150			300		
Base Capacity (vph)	780	2397		164	1605	969	258	529		666	373	648
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.85	0.62		0.46	0.82	0.33	0.49	0.55		0.73	0.53	0.88

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 20 (18%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 30.8 Intersection LOS: C
Intersection Capacity Utilization 83.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
~ Phase conflict between lane groups.

Splits and Phases: 11: Kingston Pk & Cedar Bluff Rd.



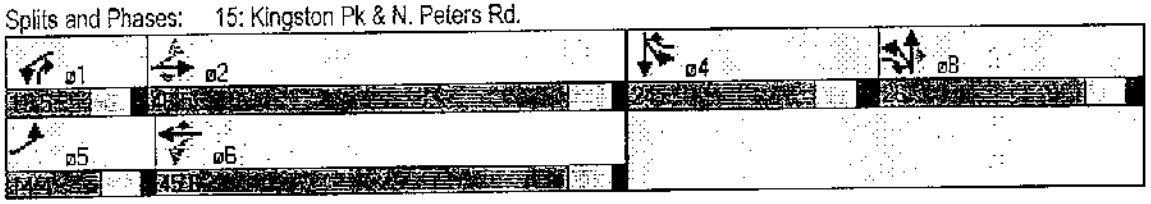
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	183	1192	474	153	1111	406	397	420	176	340	206	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	125		150	425		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	0.95
Frt			0.850			0.850			0.850		0.949	
Flt Protected	0.950			0.950			0.950	0.988		0.950	0.989	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1610	3350	1583	1610	3182	0
Flt Permitted	0.099			0.101			0.950	0.988		0.950	0.989	
Satd. Flow (perm)	184	3539	1583	188	3539	1583	1610	3350	1583	1610	3182	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			183			67			25		63	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1476			692			644			1688	
Travel Time (s)		22.4			10.5			14.6			38.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	193	1255	499	161	1169	427	418	442	185	358	217	166
Shared Lane Traffic (%)							33%			30%		
Lane Group Flow (vph)	193	1255	499	161	1169	427	280	580	185	251	490	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	8	1	6	4	8	8	1	4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	8	1	6	4	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	8.0	8.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.5	22.0	14.0	13.5	22.0	14.0	14.0	14.0	13.5	14.0	14.0	
Total Split (s)	14.4	46.5	26.0	13.5	45.6	24.0	26.0	26.0	13.5	24.0	24.0	0.0
Total Split (%)	13.1%	42.3%	23.6%	12.3%	41.5%	21.8%	23.6%	23.6%	12.3%	21.8%	21.8%	0.0%
Maximum Green (s)	8.9	40.5	20.0	8.0	39.6	18.0	20.0	20.0	8.0	18.0	18.0	
Yellow Time (s)	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	2.0	1.5	1.5	2.0	2.0	2.0	1.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	None	None	None	None	None	None	None	None	None	
Act Effct Green (s)	49.9	40.5	60.5	48.1	39.6	63.6	20.0	20.0	34.0	18.0	18.0	
Actuated g/C Ratio	0.45	0.37	0.55	0.44	0.36	0.58	0.18	0.18	0.31	0.16	0.16	
v/c Ratio	0.91	0.96	0.52	0.82	0.92	0.45	0.96	0.95	0.36	0.95	0.86	
Control Delay	58.8	43.1	8.8	52.7	46.1	12.7	88.1	71.6	27.9	91.6	54.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	58.8	43.1	8.8	52.7	46.1	12.7	88.1	71.6	27.9	91.6	54.5	
LOS	E	D	A	D	D	B	F	E	C	F	D	
Approach Delay		35.9			38.6			68.3			67.1	
Approach LOS		D			D			E			E	
Queue Length 50th (ft)	64	405	184	61	411	135	217	224	87	195	163	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m#205	#598	259	#175	#546	209	#398	#341	151	#369	#254	
Internal Link Dist (ft)		1396			612			564			1608	
Turn Bay Length (ft)	225			125		150	425		300	200		
Base Capacity (vph)	212	1303	953	197	1274	944	293	609	507	263	573	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.91	0.96	0.52	0.82	0.92	0.45	0.96	0.95	0.36	0.95	0.86	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 68 (62%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 47.1 Intersection LOS: D
Intersection Capacity Utilization 90.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kingston Pk & N. Peters Rd.



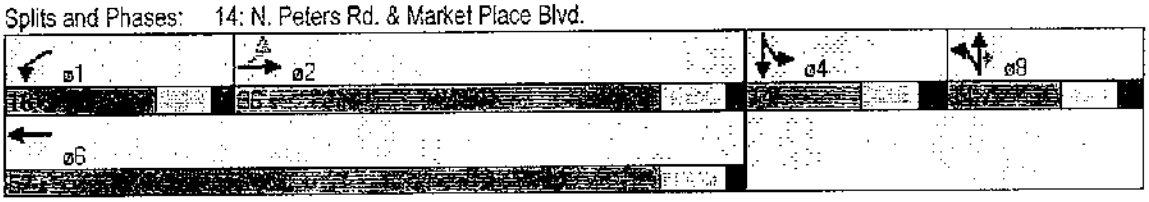
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↱		↰↰	↑↑↱			↰	↱		↔	
Volume (vph)	10	903	192	345	1111	75	141	6	233	46	10	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	0		0	2		0	0		1	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.95	0.95	0.95	0.97	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.974			0.991				0.850		0.962	
Flt Protected				0.950				0.954			0.972	
Satd. Flow (prot)	0	3447	0	3433	3507	0	0	1777	1583	0	1742	0
Flt Permitted		0.936		0.950				0.954			0.972	
Satd. Flow (perm)	0	3227	0	3433	3507	0	0	1777	1583	0	1742	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			14				245		19	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		863			1366			1450			170	
Travel Time (s)		19.6			31.0			33.0			3.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	951	202	363	1169	79	148	6	245	48	11	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1164	0	363	1248	0	0	154	245	0	82	0
Turn Type	Perm			Prot			Split		Perm	Split		
Protected Phases		2		1	6		8	8		4	4	
Permitted Phases	2								8			
Detector Phase	2	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		8.0	10.0		8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	22.0	22.0		13.5	22.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	36.0	36.0	0.0	16.0	52.0	0.0	14.0	14.0	14.0	14.0	14.0	0.0
Total Split (%)	45.0%	45.0%	0.0%	20.0%	65.0%	0.0%	17.5%	17.5%	17.5%	17.5%	17.5%	0.0%
Maximum Green (s)	30.0	30.0		10.5	46.0		8.0	8.0	8.0	8.0	8.0	
Yellow Time (s)	4.5	4.5		4.0	4.5		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	5.5	6.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None	None	None	None	
Act Effct Green (s)		32.6		10.5	48.5			8.3	8.3		8.0	
Actuated g/C Ratio		0.41		0.13	0.61			0.10	0.10		0.10	
v/c Ratio		0.87		0.81	0.59			0.84	0.64		0.43	
Control Delay		31.6		49.3	11.6			73.0	13.4		34.6	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		31.6		49.3	11.6			73.0	13.4		34.6	
LOS		C		D	B			E	B		C	
Approach Delay		31.6			20.1			36.4			34.6	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)		283		92	195			77	0		30	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#423		#158	257			#183	66			73	
Internal Link Dist (ft)	783			1286			1370				90	
Turn Bay Length (ft)			100									
Base Capacity (vph)	1334		451	2133			184	383			191	
Starvation Cap Reductn	0		0	0			0	0			0	
Spillback Cap Reductn	0		0	0			0	0			0	
Storage Cap Reductn	0		0	0			0	0			0	
Reduced v/c Ratio	0.87		0.80	0.59			0.84	0.64			0.43	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 26.6 Intersection LOS: C
Intersection Capacity Utilization 91.6% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 14: N. Peters Rd. & Market Place Blvd.



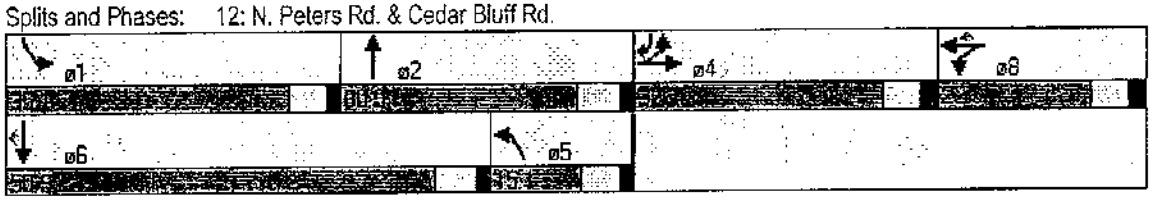
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	853	372	45	120	359	758	58	826	200	808	859	1093
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	120		250	275		0	350		500
Storage Lanes	2		0	1		2	1		0	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.86	0.86	0.95	1.00	0.95	0.88	1.00	0.91	0.91	0.97	0.95	0.88
Frt		0.990				0.850		0.971				0.850
Flt Protected	0.950	0.981		0.950			0.950			0.950		
Satd. Flow (prot)	3044	3112	0	1770	3539	2787	1770	4938	0	3433	3539	2787
Flt Permitted	0.950	0.981		0.950			0.950			0.950		
Satd. Flow (perm)	3044	3112	0	1770	3539	2787	1770	4938	0	3433	3539	2787
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				766		43				287
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1366			378			1452			835	
Travel Time (s)		31.0			8.6			33.0			19.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	898	392	47	126	378	798	61	869	211	851	904	1151
Shared Lane Traffic (%)	67108894%											
Lane Group Flow (vph)	629	708	0	126	378	798	61	1080	0	851	904	1151
Turn Type	Split			Split		Perm	Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases						8						6
Detector Phase	4	4		8	8	8	5	2		1	6	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	10.0		8.0	10.0	8.0
Minimum Split (s)	22.0	22.0		22.0	22.0	22.0	13.5	22.0		13.5	22.0	22.0
Total Split (s)	32.0	32.0	0.0	22.0	22.0	22.0	15.1	30.9	0.0	35.1	50.9	32.0
Total Split (%)	26.7%	26.7%	0.0%	18.3%	18.3%	18.3%	12.6%	25.8%	0.0%	29.3%	42.4%	26.7%
Maximum Green (s)	26.0	26.0		16.0	16.0	16.0	9.6	24.9		29.6	44.9	26.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.5	1.5		1.5	1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	5.5	6.0	4.0	5.5	6.0	6.0
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	None
Act Effct Green (s)	26.0	26.0		15.9	15.9	15.9	9.3	24.9		29.7	48.0	75.2
Actuated g/C Ratio	0.22	0.22		0.13	0.13	0.13	0.08	0.21		0.25	0.40	0.63
v/c Ratio	0.95	1.04		0.54	0.80	0.77	0.45	1.02		1.00	0.64	0.62
Control Delay	72.0	92.0		57.7	64.5	10.2	63.4	77.9		70.9	38.9	8.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	72.0	92.0		57.7	64.5	10.2	63.4	77.9		70.9	38.9	8.3
LOS	E	F		E	E	B	E	E		E	D	A
Approach Delay		82.6			30.6			77.1			36.1	
Approach LOS		F			C			E			D	
Queue Length 50th (ft)	281	~344		92	151	12	46	~315		~352	356	128

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#412	#482		157	#222	79	92	#409		#490	425	210
Internal Link Dist (ft)		1286			298			1372			755	
Turn Bay Length (ft)	275			120		250	275			350		500
Base Capacity (vph)	660	678		236	472	1035	142	1059		849	1415	1853
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.95	1.04		0.53	0.80	0.77	0.43	1.02		1.00	0.64	0.62

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 51.3 Intersection LOS: D
Intersection Capacity Utilization 91.2% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: N. Peters Rd. & Cedar Bluff Rd.



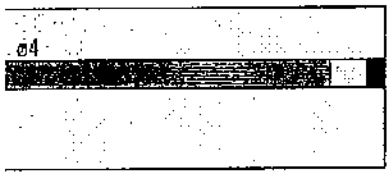
Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↑↑↑			↑↑↑	↰↑↑	↱
Volume (vph)	2445	0	0	1861	567	532
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	0.91
Frt					0.963	0.850
Flt Protected					0.964	
Satd. Flow (prot)	5085	0	0	5085	3355	1441
Flt Permitted					0.964	
Satd. Flow (perm)	5085	0	0	5085	3355	1441
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					2	2
Link Speed (mph)	30			30	30	
Link Distance (ft)	559			835	373	
Travel Time (s)	12.7			19.0	8.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2574	0	0	1959	597	560
Shared Lane Traffic (%)						35%
Lane Group Flow (vph)	2574	0	0	1959	793	364
Turn Type						Perm
Protected Phases	6			2	4	
Permitted Phases						4
Detector Phase	6			2	4	4
Switch Phase						
Minimum Initial (s)	10.0			10.0	8.0	8.0
Minimum Split (s)	22.0			22.0	14.0	14.0
Total Split (s)	75.0	0.0	0.0	75.0	45.0	45.0
Total Split (%)	62.5%	0.0%	0.0%	62.5%	37.5%	37.5%
Maximum Green (s)	69.0			69.0	39.0	39.0
Yellow Time (s)	4.5			4.5	4.0	4.0
All-Red Time (s)	1.5			1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Min			C-Min	None	None
Act Effct Green (s)	72.6			72.6	35.4	35.4
Actuated g/C Ratio	0.60			0.60	0.30	0.30
v/c Ratio	0.84			0.64	0.80	0.85
Control Delay	17.4			10.9	45.3	58.5
Queue Delay	7.3			0.0	0.0	0.0
Total Delay	24.7			10.9	45.3	58.5
LOS	C			B	D	E
Approach Delay	24.7			10.9	49.5	
Approach LOS	C			B	D	
Queue Length 50th (ft)	470			142	282	281
Queue Length 95th (ft)	617			m177	351	#437
Internal Link Dist (ft)	479			755	293	
Turn Bay Length (ft)						

Lane Group	SET	SER	NWL	NWT	NEL	NER
Base Capacity (vph)	3075		3075	1092	470	
Starvation Cap Reductn	483		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.99		0.64	0.73	0.77	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NWT and 6:SET, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 25.0 Intersection LOS: C
Intersection Capacity Utilization 79.2% ICU Level of Service D
Analysis Period (min) 15
#: 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m: Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Cedar Bluff Rd. & I-40 EB Ramp



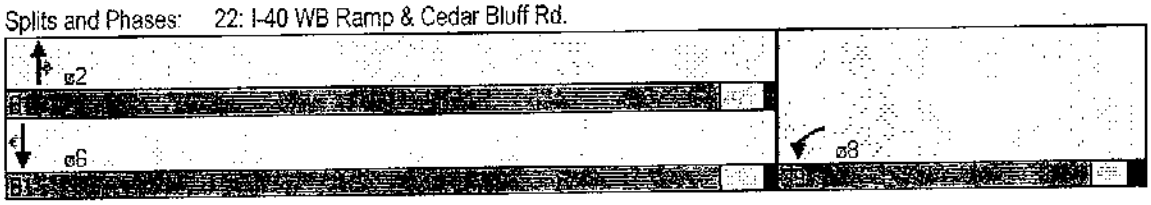
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	797	0	0	0	2022	319	0	1972	541
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt									0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3433	0	0	0	5085	1583	0	3539	1583
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3433	0	0	0	5085	1583	0	3539	1583
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												458
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		151			240			559			476	
Travel Time (s)		3.4			5.5			12.7			10.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	839	0	0	0	2128	336	0	2076	569
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	839	0	0	0	2128	336	0	2076	569
Turn Type				Prot					Perm			Perm
Protected Phases				8				2			6	
Permitted Phases									2			6
Detector Phase				8				2	2		6	6
Switch Phase												
Minimum Initial (s)				8.0				10.0	10.0		10.0	10.0
Minimum Split (s)				14.0				22.0	22.0		22.0	22.0
Total Split (s)	0.0	0.0	0.0	39.0	0.0	0.0	0.0	81.0	81.0	0.0	81.0	81.0
Total Split (%)	0.0%	0.0%	0.0%	32.5%	0.0%	0.0%	0.0%	67.5%	67.5%	0.0%	67.5%	67.5%
Maximum Green (s)				33.0				75.0	75.0		75.0	75.0
Yellow Time (s)				4.0				4.5	4.5		4.5	4.5
All-Red Time (s)				2.0				1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	6.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0				3.0	3.0		3.0	3.0
Recall Mode				None				C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				32.2				75.8	75.8		75.8	75.8
Actuated g/C Ratio				0.27				0.63	0.63		0.63	0.63
v/c Ratio				0.91				0.66	0.34		0.93	0.49
Control Delay				57.4				12.2	9.5		28.8	3.7
Queue Delay				0.0				0.1	0.0		1.6	0.0
Total Delay				57.4				12.3	9.5		30.4	3.7
LOS				E				B	A		C	A
Approach Delay								11.9			24.7	
Approach LOS								B			C	
Queue Length 50th (ft)				322				206	87		716	32
Queue Length 95th (ft)				#430				219	116		#897	87
Internal Link Dist (ft)		71			160			479			396	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)			944					3213	1000		2236	1169
Starvation Cap Reductn			0					247	0		0	0
Spillback Cap Reductn			0					0	0		66	0
Storage Cap Reductn			0					0	0		0	0
Reduced v/c Ratio			0.89					0.72	0.34		0.96	0.49

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 24.0 Intersection LOS: C
Intersection Capacity Utilization 85.6% ICU Level of Service E
Analysis Period (min) 15
#: 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 22: I-40 WB Ramp & Cedar Bluff Rd.



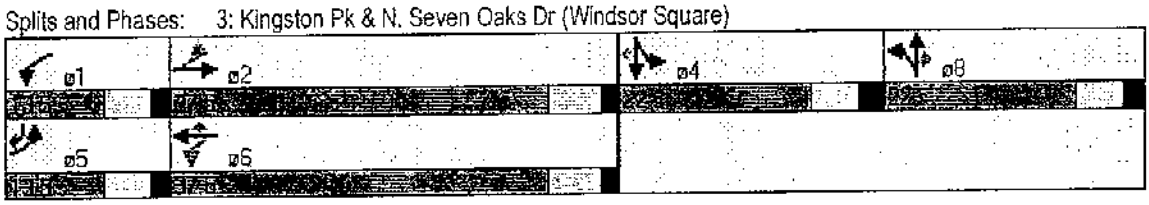
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1468	20	38	1534	179	13	8	24	155	15	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	150		0	0		0	100		0
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.998				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.969		0.950	0.961	
Satd. Flow (prot)	1770	3532	0	1770	3539	1583	0	1805	1583	1681	1701	1583
Flt Permitted	0.078			0.086				0.969		0.950	0.961	
Satd. Flow (perm)	145	3532	0	160	3539	1583	0	1805	1583	1681	1701	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				138			25			167
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1185			1095			456			868	
Travel Time (s)		18.0			16.6			10.4			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	144	1545	21	40	1615	188	14	8	25	163	16	167
Shared Lane Traffic (%)										45%		
Lane Group Flow (vph)	144	1566	0	40	1615	188	0	22	25	90	89	167
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	13.5	37.5	0.0	13.5	37.5	37.5	22.0	22.0	22.0	22.0	22.0	13.5
Total Split (%)	14.2%	39.5%	0.0%	14.2%	39.5%	39.5%	23.2%	23.2%	23.2%	23.2%	23.2%	14.2%
Maximum Green (s)	8.0	31.5		8.0	31.5	31.5	16.0	16.0	16.0	16.0	16.0	8.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	62.3	55.7		57.4	48.9	48.9		8.1	8.1	10.7	10.7	22.8
Actuated g/C Ratio	0.66	0.59		0.60	0.51	0.51		0.09	0.09	0.11	0.11	0.24
v/c Ratio	0.56	0.76		0.17	0.89	0.21		0.14	0.16	0.47	0.46	0.33
Control Delay	23.7	22.6		12.6	25.8	7.1		42.5	18.1	47.2	46.7	4.5
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	22.6		12.6	25.8	7.1		42.5	18.1	47.2	46.7	4.5
LOS	C	C		B	C	A		D	B	D	D	A
Approach Delay		22.7			23.6			29.5			26.4	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	37	451		9	233	20		13	0	54	53	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	100	#680		m15	#741	m35		36	25	101	101	31
Internal Link Dist (ft)		1105			1015			376			788	
Turn Bay Length (ft)	200			150						100		
Base Capacity (vph)	255	2070		232	1822	882		304	287	283	286	507
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.56	0.76		0.17	0.89	0.21		0.07	0.09	0.32	0.31	0.33

Intersection Summary

Area Type: Other
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 23.5 Intersection LOS: C
Intersection Capacity Utilization 75.9% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Kingston Pk & N. Seven Oaks Dr (Windsor Square)



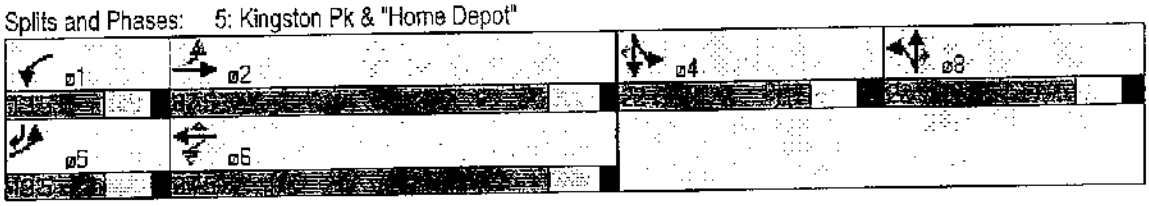
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	1690	5	36	1476	88	6	1	23	65	5	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		300	0		0	100		100
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected	0.950			0.950				0.959		0.950	0.959	
Satd. Flow (prot)	1770	3539	0	1770	3539	1583	0	1786	1583	1681	1697	1583
Flt Permitted	0.073			0.078				0.959		0.950	0.959	
Satd. Flow (perm)	136	3539	0	145	3539	1583	0	1786	1583	1681	1697	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						84			24			216
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1095			1371			223			454	
Travel Time (s)		16.6			20.8			5.1			10.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	121	1779	5	38	1554	93	6	1	24	68	5	216
Shared Lane Traffic (%)										46%		
Lane Group Flow (vph)	121	1784	0	38	1554	93	0	7	24	37	36	216
Turn Type	pm+pt			pm+pt		Perm	Split		Perm	Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2			6		6			8			4
Detector Phase	5	2		1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.5	22.0		13.5	22.0	22.0	14.0	14.0	14.0	14.0	14.0	13.5
Total Split (s)	13.5	37.5	0.0	13.5	37.5	37.5	22.0	22.0	22.0	22.0	22.0	13.5
Total Split (%)	14.2%	39.5%	0.0%	14.2%	39.5%	39.5%	23.2%	23.2%	23.2%	23.2%	23.2%	14.2%
Maximum Green (s)	8.0	31.5		8.0	31.5	31.5	16.0	16.0	16.0	16.0	16.0	8.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	66.7	62.0		63.3	54.8	54.8		8.0	8.0	8.5	8.5	17.0
Actuated g/C Ratio	0.70	0.65		0.67	0.58	0.58		0.08	0.08	0.09	0.09	0.18
v/c Ratio	0.50	0.77		0.16	0.76	0.10		0.05	0.15	0.25	0.24	0.47
Control Delay	27.0	18.6		11.7	18.4	6.5		40.9	18.7	44.1	43.9	6.3
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	27.0	18.6		11.7	18.4	6.5		40.9	18.7	44.1	43.9	6.3
LOS	C	B		B	B	A		D	B	D	D	A
Approach Delay		19.1			17.6			23.7			15.9	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	49	~261		8	308	7		4	0	22	22	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m84	#738		m12	#612	m13		18	25	54	52	41
Internal Link Dist (ft)		1015			1291			143			374	
Turn Bay Length (ft)	250			150		300				100		100
Base Capacity (vph)	244	2308		233	2040	948		301	287	283	286	461
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.50	0.77		0.16	0.76	0.10		0.02	0.08	0.13	0.13	0.47

Intersection Summary

Area Type: Other
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 18.3 Intersection LOS: B
Intersection Capacity Utilization 76.7% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Kingston Pk & "Home Depot"



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1447	201	322	1171	207	315	135	382	316	143	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	300		0	300		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850		0.951	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	3539	1583	3433	1863	1583	3433	1771	0
Flt Permitted	0.134			0.113			0.950			0.950		
Satd. Flow (perm)	250	5085	1583	210	3539	1583	3433	1863	1583	3433	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			216			222			17		22	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1371			1317			548			1450	
Travel Time (s)		20.8			20.0			12.5			33.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	47	1556	216	346	1259	223	339	145	411	340	154	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	1556	216	346	1259	223	339	145	411	340	229	0
Turn Type	pm+pt		pm+ov	pm+pt		Perm	Split		pm+ov	Split		
Protected Phases	5	2	8	1	6		8	8	1	4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	8	1	6	6	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	8.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	15.5	22.0	14.0	13.5	22.0	22.0	14.0	14.0	13.5	14.0	14.0	
Total Split (s)	15.5	34.5	18.5	22.0	41.0	41.0	18.5	18.5	22.0	20.0	20.0	0.0
Total Split (%)	16.3%	36.3%	19.5%	23.2%	43.2%	43.2%	19.5%	19.5%	23.2%	21.1%	21.1%	0.0%
Maximum Green (s)	10.0	28.5	12.5	16.5	35.0	35.0	12.5	12.5	16.5	14.0	14.0	
Yellow Time (s)	4.0	4.5	4.0	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	2.0	1.5	1.5	1.5	2.0	2.0	1.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag			Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	38.4	29.9	42.1	51.9	43.2	43.2	12.2	12.2	34.1	13.5	13.5	
Actuated g/C Ratio	0.40	0.31	0.44	0.55	0.45	0.45	0.13	0.13	0.36	0.14	0.14	
v/c Ratio	0.21	0.97	0.26	0.92	0.78	0.27	0.77	0.61	0.71	0.70	0.85	
Control Delay	17.2	45.3	4.2	52.2	48.5	20.4	52.8	50.6	32.7	47.1	63.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.2	45.3	4.2	52.2	48.5	20.4	52.8	50.6	32.7	47.1	63.8	
LOS	B	D	A	D	D	C	D	D	C	D	E	
Approach Delay		39.7			45.7			43.2			53.8	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	16	~294	28	204	426	71	103	84	199	101	123	

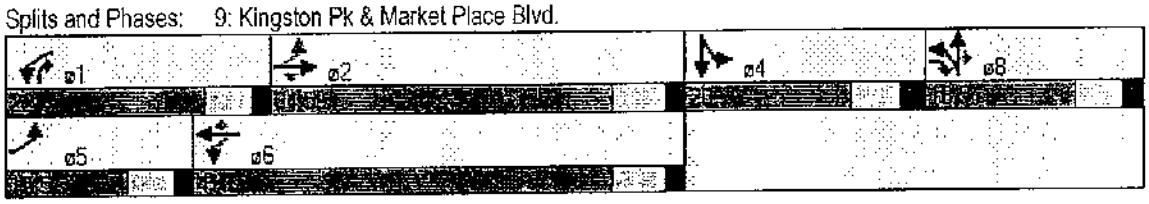
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m22	#446	m55	m#248	m#472	m88	#161	146	309	147	#248	
Internal Link Dist (ft)		1291			1237			468			1370	
Turn Bay Length (ft)	250		300	300			300		300	200		
Base Capacity (vph)	267	1602	826	386	1611	841	452	245	589	506	280	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.18	0.97	0.26	0.90	0.78	0.27	0.75	0.59	0.70	0.67	0.82	

Intersection Summary

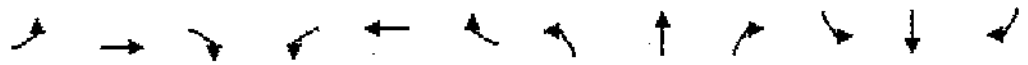
Area Type: Other
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 44.1 Intersection LOS: D
Intersection Capacity Utilization 86.2% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kingston Pk & Market Place Blvd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑↱		↰	↑↑↑	↱	↰	↑↱		↰↰	↑	↱
Volume (vph)	619	1533	72	81	1171	319	103	205	95	538	240	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	250		500	150		0	300		0
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	1.00
Frt		0.993				0.850		0.952				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5050	0	1770	5085	1583	1770	3369	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.566			0.334		
Satd. Flow (perm)	3433	5050	0	1770	5085	1583	1054	3369	0	1207	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				343		69				416
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1317			1476			690			1452	
Travel Time (s)		20.0			22.4			15.7			33.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	666	1648	77	87	1259	343	111	220	102	578	258	473
Shared Lane Traffic (%)												
Lane Group Flow (vph)	666	1725	0	87	1259	343	111	322	0	578	258	473
Turn Type	Prot			Prot		custom	pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6	4!	3	8!		7	4	
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	4	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	14.0	22.0		13.5	22.0	14.0	14.0	14.0		14.0	14.0	14.0
Total Split (s)	23.0	40.4	0.0	13.6	31.0	22.0	19.0	21.0	0.0	20.0	22.0	22.0
Total Split (%)	24.2%	42.5%	0.0%	14.3%	32.6%	23.2%	20.0%	22.1%	0.0%	21.1%	23.2%	23.2%
Maximum Green (s)	17.5	34.4		8.1	25.0	16.0	13.0	15.0		14.0	16.0	16.0
Yellow Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.5	1.5	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	4.0	5.5	6.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None	None	None	None		None	None	None
Act Effct Green (s)	19.2	38.8		8.2	25.0	46.4	23.2	13.3		31.4	20.2	20.2
Actuated g/C Ratio	0.20	0.41		0.09	0.26	0.49	0.24	0.14		0.33	0.21	0.21
v/c Ratio	0.96	0.84		0.57	0.94	0.36	0.34	0.61		0.80	0.65	0.71
Control Delay	62.2	30.0		47.2	42.0	4.5	24.2	34.8		33.7	44.9	13.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	62.2	30.0		47.2	42.0	4.5	24.2	34.8		33.7	44.9	13.1
LOS	E	C		D	D	A	C	C		C	D	B
Approach Delay		39.0			34.7			32.1			28.5	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	~235	275		48	213	37	44	74		134	145	29

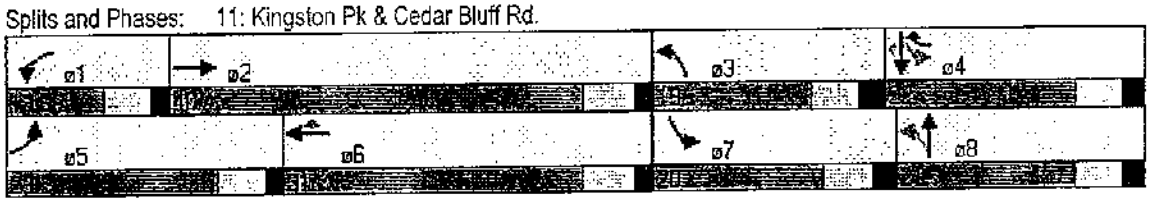


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m#280	m292		m51	m227	m43	83	118		#192	#278	#155
Internal Link Dist (ft)		1237			1396			610			1372	
Turn Bay Length (ft)	400			250		500	150			300		
Base Capacity (vph)	694	2065		152	1338	949	390	590		727	396	664
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.96	0.84		0.57	0.94	0.36	0.28	0.55		0.80	0.65	0.71

Intersection Summary

Area Type: Other
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 34.9 Intersection LOS: C
Intersection Capacity Utilization 83.9% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 11: Kingston Pk & Cedar Bluff Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	1104	796	242	1100	342	401	415	158	282	323	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	125		150	425		300	200		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	0.95
Frt			0.850			0.850			0.850		0.964	
Flt Protected	0.950			0.950			0.950	0.988		0.950	0.996	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1610	3350	1583	1610	3255	0
Flt Permitted	0.129			0.123			0.950	0.988		0.950	0.996	
Satd. Flow (perm)	240	3539	1583	229	3539	1583	1610	3350	1583	1610	3255	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			70			112			29		35	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1476			692			644			1688	
Travel Time (s)		22.4			10.5			14.6			38.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	141	1162	838	255	1158	360	422	437	166	297	340	122
Shared Lane Traffic (%)							34%			15%		
Lane Group Flow (vph)	141	1162	838	255	1158	360	279	580	166	252	507	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	8	1	6	4	8	8	1	4	4	
Permitted Phases	2		2	6		6			8			
Detector Phase	5	2	8	1	6	4	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0	8.0	8.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.5	22.0	14.0	13.5	22.0	14.0	14.0	14.0	13.5	14.0	14.0	
Total Split (s)	13.5	37.0	23.0	15.0	38.5	20.0	23.0	23.0	15.0	20.0	20.0	0.0
Total Split (%)	14.2%	38.9%	24.2%	15.8%	40.5%	21.1%	24.2%	24.2%	15.8%	21.1%	21.1%	0.0%
Maximum Green (s)	8.0	31.0	17.0	9.5	32.5	14.0	17.0	17.0	9.5	14.0	14.0	
Yellow Time (s)	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	2.0	1.5	1.5	2.0	2.0	2.0	1.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	None	None	None	None	None	None	None	None	None	
Act Effct Green (s)	39.5	31.0	48.0	42.5	32.5	52.5	17.0	17.0	32.5	14.0	14.0	
Actuated g/C Ratio	0.42	0.33	0.51	0.45	0.34	0.55	0.18	0.18	0.34	0.15	0.15	
v/c Ratio	0.62	1.01	1.00	0.99	0.96	0.39	0.97	0.97	0.30	1.06	0.99	
Control Delay	34.0	63.3	50.7	78.8	48.8	9.4	86.4	69.7	20.4	117.0	77.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	34.0	63.3	50.7	78.8	48.8	9.4	86.4	69.7	20.4	117.0	77.6	
LOS	C	E	D	E	D	A	F	E	C	F	E	
Approach Delay		56.5			45.1			66.3			90.7	
Approach LOS		E			D			E			F	
Queue Length 50th (ft)	70	~330	~434	103	355	76	185	192	59	~185	159	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m86	#502	m#649	#263	#497	136	#360	#307	110	#351	#274	
Internal Link Dist (ft)		1396			612			564			1608	
Turn Bay Length (ft)	225			125		150	425		300	200		
Base Capacity (vph)	229	1155	834	257	1211	925	288	599	561	237	510	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.62	1.01	1.00	0.99	0.96	0.39	0.97	0.97	0.30	1.06	0.99	

Intersection Summary

Area Type: Other
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 59.3 Intersection LOS: E
Intersection Capacity Utilization 92.8% ICU Level of Service F
Analysis Period (min): 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kingston Pk & N. Peters Rd.

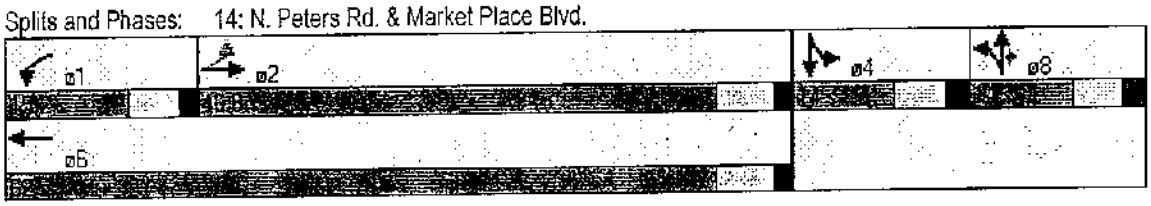
Lane Group	All	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Volume (vph)		21	1190	126	320	1027	70	134	5	234	24	3	16
Ideal Flow (vphpl)		1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100		0	100		0	0		0	0		0
Storage Lanes		0		0	2		0	0		1	0		0
Taper Length (ft)		25		25	25		25	25		25	25		25
Lane Util. Factor		0.95	0.95	0.95	0.97	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.986			0.990				0.850		0.949	
Flt Protected			0.999		0.950				0.954			0.973	
Satd. Flow (prot)		0	3486	0	3433	3504	0	0	1777	1583	0	1720	0
Flt Permitted			0.919		0.950				0.954			0.973	
Satd. Flow (perm)		0	3207	0	3433	3504	0	0	1777	1583	0	1720	0
Right Turn on Red				Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			16			15				246		17	
Link Speed (mph)			30			30			30			30	
Link Distance (ft)			863			1366			1450			170	
Travel Time (s)			19.6			31.0			33.0			3.9	
Peak Hour Factor		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)		22	1253	133	337	1081	74	141	5	246	25	3	17
Shared Lane Traffic (%)													
Lane Group Flow (vph)		0	1408	0	337	1155	0	0	146	246	0	45	0
Turn Type		Perm			Prot			Split		Perm	Split		
Protected Phases			2		1	6		8	8		4	4	
Permitted Phases		2								8			
Detector Phase		2	2		1	6		8	8	8	4	4	
Switch Phase													
Minimum Initial (s)		10.0	10.0		8.0	10.0		8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)		22.0	22.0		13.5	22.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)		46.8	46.8	0.0	15.2	62.0	0.0	14.0	14.0	14.0	14.0	14.0	0.0
Total Split (%)		52.0%	52.0%	0.0%	16.9%	68.9%	0.0%	15.6%	15.6%	15.6%	15.6%	15.6%	0.0%
Maximum Green (s)		40.8	40.8		9.7	56.0		8.0	8.0	8.0	8.0	8.0	
Yellow Time (s)		4.5	4.5		4.0	4.5		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)		1.5	1.5		1.5	1.5		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	4.0	5.5	6.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0
Lead/Lag		Lag	Lag		Lead								
Lead-Lag Optimize?													
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode		C-Max	C-Max		None	C-Max		None	None	None	None	None	
Act Effct Green (s)			43.6		10.9	60.1			9.5	9.5		8.0	
Actuated g/C Ratio			0.48		0.12	0.67			0.11	0.11		0.09	
v/c Ratio			0.90		0.81	0.49			0.78	0.64		0.27	
Control Delay			31.6		55.8	8.9			69.1	13.7		31.3	
Queue Delay			0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay			31.6		55.8	8.9			69.1	13.7		31.3	
LOS			C		E	A			E	B		C	
Approach Delay			31.6			19.5			34.3			31.3	
Approach LOS			C			B			C			C	
Queue Length 50th (ft)			391		99	174			84	0		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NB	NBR	SBL	SB	SBR
Queue Length 95th (ft)		#557		#178	223			#198	#73		48	
Internal Link Dist (ft)		783			1286			1370			90	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1564		417	2344			188	387		168	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	
Reduced v/c Ratio		0.90		0.81	0.49			0.78	0.64		0.27	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 26.5 Intersection LOS: C
Intersection Capacity Utilization 95.2% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 14: N. Peters Rd. & Market Place Blvd.



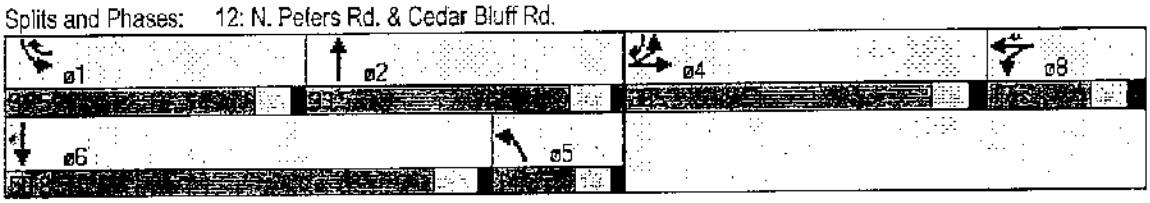
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1126	253	29	73	308	748	65	937	127	693	884	1186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	120		300	275		0	350		500
Storage Lanes	2		0	1		2	1		0	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	0.86	0.86	0.95	1.00	0.95	0.88	1.00	0.91	0.91	0.97	0.95	0.88
Frt		0.993				0.850		0.982				0.850
Flt Protected	0.950	0.973		0.950			0.950			0.950		
Satd. Flow (prot)	3044	3096	0	1770	3539	2787	1770	4994	0	3433	3539	2787
Flt Permitted	0.950	0.973		0.950			0.950			0.950		
Satd. Flow (perm)	3044	3096	0	1770	3539	2787	1770	4994	0	3433	3539	2787
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				4		19				246
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1366			378			1452			835	
Travel Time (s)		31.0			8.6			33.0			19.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1198	269	31	78	328	796	69	997	135	737	940	1262
Shared Lane Traffic (%)	67108894%											
Lane Group Flow (vph)	839	659	0	78	328	796	69	1132	0	737	940	1262
Turn Type	Split			Split		pm+ov	Prot			Prot		pm+ov
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases						8						6
Detector Phase	4	4		8	8	1	5	2		1	6	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	10.0		8.0	10.0	8.0
Minimum Split (s)	14.0	14.0		14.0	14.0	13.5	13.5	22.0		13.5	22.0	14.0
Total Split (s)	38.0	38.0	0.0	17.0	17.0	31.5	14.2	33.5	0.0	31.5	50.8	38.0
Total Split (%)	31.7%	31.7%	0.0%	14.2%	14.2%	26.3%	11.8%	27.9%	0.0%	26.3%	42.3%	31.7%
Maximum Green (s)	32.0	32.0		11.0	11.0	26.0	8.7	27.5		26.0	44.8	32.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	1.5	1.5	1.5		1.5	1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	5.5	5.5	6.0	4.0	5.5	6.0	6.0
Lead/Lag						Lead	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	None
Act Effct Green (s)	32.0	32.0		11.0	11.0	43.0	8.6	27.5		26.0	47.6	80.8
Actuated g/C Ratio	0.27	0.27		0.09	0.09	0.36	0.07	0.23		0.22	0.40	0.67
v/c Ratio	1.03	0.79		0.48	1.01	0.80	0.55	0.98		0.99	0.67	0.64
Control Delay	83.7	48.9		62.4	107.2	41.4	70.5	66.7		68.3	40.1	7.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	83.7	48.9		62.4	107.2	41.4	70.5	66.7		68.3	40.1	7.5
LOS	F	D		E	F	D	E	E		E	D	A
Approach Delay		68.4			60.7			67.0			33.2	
Approach LOS		E			E			E			C	
Queue Length 50th (ft)	~405	275		58	~137	310	53	316		302	374	176

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#547	355		111	#237	398	#104	#417		m#384	m419	m194
Internal Link Dist (ft)		1286			298			1372			755	
Turn Bay Length (ft)	275			120		300	275			350		500
Base Capacity (vph)	812	829		162	324	1001	128	1159		744	1405	1958
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.03	0.79		0.48	1.01	0.80	0.54	0.98		0.99	0.67	0.64

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 51.7 Intersection LOS: D
Intersection Capacity Utilization 90.2% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: N. Peters Rd. & Cedar Bluff Rd.



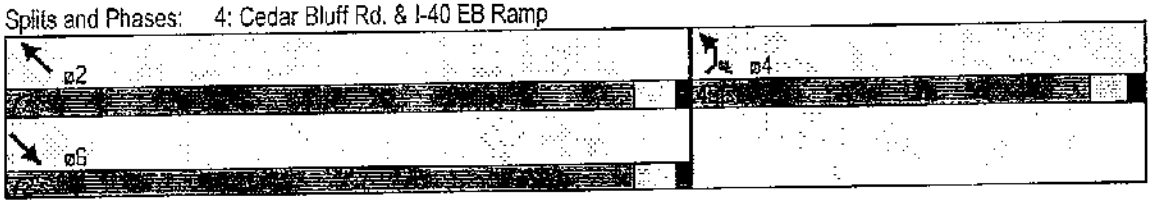
Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↑↑↑			↑↑↑	↰↑↑	↱
Volume (vph)	2441	0	0	1960	671	669
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	0.91
Frt					0.960	0.850
Flt Protected					0.965	
Satd. Flow (prot)	5085	0	0	5085	3348	1441
Flt Permitted					0.965	
Satd. Flow (perm)	5085	0	0	5085	3348	1441
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					2	2
Link Speed (mph)	30			30	30	
Link Distance (ft)	559			835	373	
Travel Time (s)	12.7			19.0	8.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2569	0	0	2063	706	704
Shared Lane Traffic (%)						37%
Lane Group Flow (vph)	2569	0	0	2063	966	444
Turn Type						Perm
Protected Phases	6			2	4	
Permitted Phases						4
Detector Phase	6			2	4	4
Switch Phase						
Minimum Initial (s)	10.0			10.0	8.0	8.0
Minimum Split (s)	22.0			22.0	14.0	14.0
Total Split (s)	72.0	0.0	0.0	72.0	48.0	48.0
Total Split (%)	60.0%	0.0%	0.0%	60.0%	40.0%	40.0%
Maximum Green (s)	66.0			66.0	42.0	42.0
Yellow Time (s)	4.5			4.5	4.0	4.0
All-Red Time (s)	1.5			1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Min			C-Min	None	None
Act Effct Green (s)	67.5			67.5	40.5	40.5
Actuated g/C Ratio	0.56			0.56	0.34	0.34
v/c Ratio	0.90			0.72	0.85	0.91
Control Delay	22.2			19.9	45.3	62.0
Queue Delay	29.7			0.0	0.0	0.0
Total Delay	51.9			19.9	45.3	62.0
LOS	D			B	D	E
Approach Delay	51.9			19.9	50.6	
Approach LOS	D			B	D	
Queue Length 50th (ft)	568			306	349	350
Queue Length 95th (ft)	m667			m326	433	#564
Internal Link Dist (ft)	479			755	293	
Turn Bay Length (ft)						

Lane Group	SET	SER	NWL	NWT	NEL	NER
Base Capacity (vph)	2861		2861	1173	506	
Starvation Cap Reductn	442		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	1.06		0.72	0.82	0.88	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NWT and 6:SET, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 40.7 Intersection LOS: D
Intersection Capacity Utilization 84.8% ICU Level of Service E
Analysis Period (min) 15
#: 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m: Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Cedar Bluff Rd. & I-40 EB Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰				↑↑↑	↱		↑↑	↱
Volume (vph)	0	0	0	895	0	0	0	2068	319	0	1957	756
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt									0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3433	0	0	0	5085	1583	0	3539	1583
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3433	0	0	0	5085	1583	0	3539	1583
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												619
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		151			240			559			476	
Travel Time (s)		3.4			5.5			12.7			10.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	942	0	0	0	2177	336	0	2060	796
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	942	0	0	0	2177	336	0	2060	796
Turn Type				Prot					Perm			Perm
Protected Phases				8				2			6	
Permitted Phases									2			6
Detector Phase				8				2	2		6	6
Switch Phase												
Minimum Initial (s)				8.0				10.0	10.0		10.0	10.0
Minimum Split (s)				22.0				26.5	26.5		22.0	22.0
Total Split (s)	0.0	0.0	0.0	41.0	0.0	0.0	0.0	79.0	79.0	0.0	79.0	79.0
Total Split (%)	0.0%	0.0%	0.0%	34.2%	0.0%	0.0%	0.0%	65.8%	65.8%	0.0%	65.8%	65.8%
Maximum Green (s)				35.0				73.0	73.0		73.0	73.0
Yellow Time (s)				4.0				4.5	4.5		4.5	4.5
All-Red Time (s)				2.0				1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	6.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0				3.0	3.0		3.0	3.0
Recall Mode				None				C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				34.7				73.3	73.3		73.3	73.3
Actuated g/C Ratio				0.29				0.61	0.61		0.61	0.61
v/c Ratio				0.95				0.70	0.35		0.95	0.66
Control Delay				60.9				11.2	8.7		33.4	5.8
Queue Delay				0.0				0.2	0.0		15.6	0.0
Total Delay				60.9				11.4	8.7		49.0	5.8
LOS				E				B	A		D	A
Approach Delay								11.1			37.0	
Approach LOS								B			D	
Queue Length 50th (ft)				367				207	84		740	57
Queue Length 95th (ft)				#495				219	m106		#971	168
Internal Link Dist (ft)		71			160			479			396	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)				1001				3107	967		2163	1208
Starvation Cap Reductn				0				296	0		0	0
Spillback Cap Reductn				0				0	0		163	0
Storage Cap Reductn				0				0	0		0	0
Reduced v/c Ratio				0.94				0.77	0.35		1.03	0.66

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 30.2 Intersection LOS: C
Intersection Capacity Utilization 88.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: I-40 WB Ramp & Cedar Bluff Rd.