

PARK AVENUE TRAFFIC STUDY

IRONTON, OH



DECEMBER 2017

PREPARED FOR:
KYOVA INTERSTATE PLANNING COMMISSION
400 3RD AVENUE
HUNTINGTON, WV



Protection of Data from Discovery & Admission into Evidence

Section 148(g)(4) stipulates that data compiled or collected for the preparation of safety lists "...shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in an action for damages arising from any occurrence at a location identified or addressed in such reports..." This information is also protected by 23 USC 409 (discovery and admission as evidence of certain reports and surveys).

EXECUTIVE SUMMARY

The study area is the corridor of Park Avenue from 6th Street to the US 52 Off Ramp, and is located in Ironton, Ohio. The segment is considered to be a rural minor arterial according to ODOT Classifications and is shown in Figure 1.1 below. Park Avenue is a two way 3 lane road that includes a two way left turn lane in the middle. The lane widths are fairly narrow and sidewalks are only present on certain segments of the corridor.

Figure 1.1 Location Map

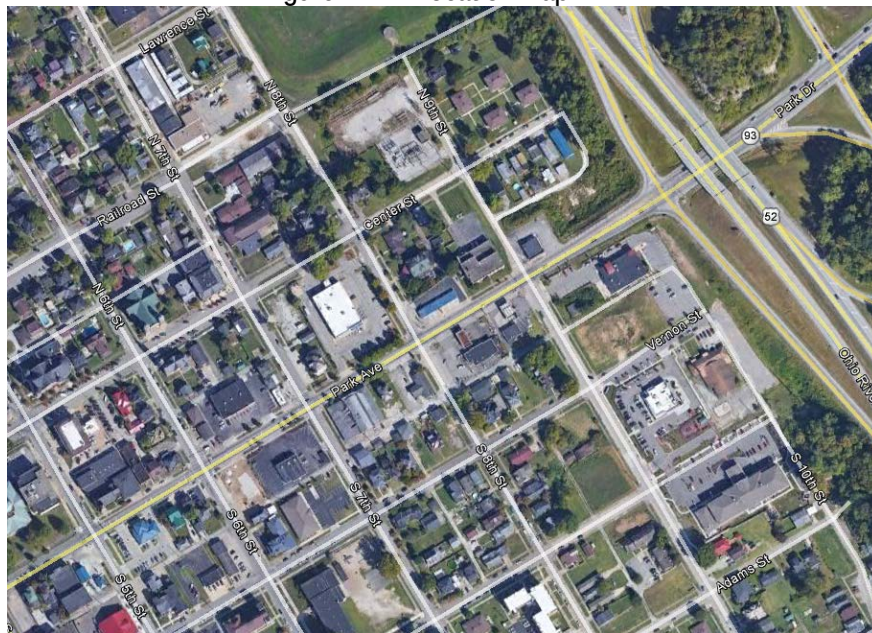


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1.0 INTRODUCTION

The Park Avenue Traffic Study was completed to develop and evaluate several conceptual improvements for improving traffic congestion and safety along a segment of Park Avenue in Ironton, Ohio. Currently, the project corridor features three (3) lanes, with undefined/extended commercial drives and narrow lanes that can make the corridor feel very busy. Additionally, recent developments along the Park Avenue have increased traffic volumes, making it a convenient time to re-evaluate traffic control along the project corridor. Finally, pedestrian accommodations along the corridor (i.e., pedestrian curb ramps, crosswalks, pedestrian signs and signals) need to be updated to meet ADA (Americans with Disabilities Act) compliance. This study will evaluate concepts to improve congestion, safety, and corridor aesthetics that include:

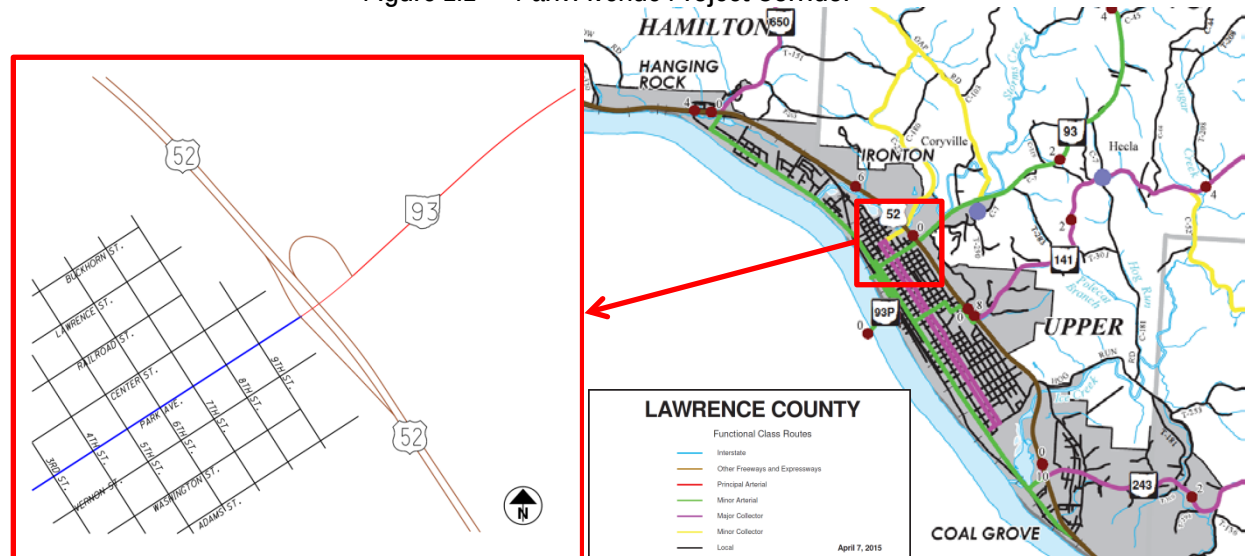
- Converting Park Avenue from a three (3) lane roadway to a two (2) lane roadway;
- Widening Park Avenue to provide a bike lane;
- Widening Park Avenue at the intersections to provide for additional turn lanes;
- Sidewalk improvements to address ADA compliance; and
- Intersection signal improvements.

In addition to the concepts outlined above, other concepts, as deemed necessary by the analyses of this study will be developed. The following sections contain information regarding the project corridor as well as the purpose and need for the conceptual improvements.

1.1 Project Location

The project corridor is a 0.39 mile segment of Park Avenue bounded by 6th Street at its western end and the westbound US 52 Off Ramp at its eastern end. Along this segment, Park Avenue is classified as an urban minor arterial (by the Ohio Department of Transportation), and provides access from US 52 (a freeway) to the city's center. Land uses along Park Avenue are largely commercial. The project corridor is illustrated in Figure 1.2.

Figure 1.1 Park Avenue Project Corridor



1.2 Purpose and Need for Project

The Purpose of the project is to improve operations and traffic safety along the Park Avenue corridor between 6th Street and the US 52 Off Ramp in Lawrence County, so to reduce congestion as well as the frequency and severity of crashes at the intersections and roadway segments.

There were several Need elements for the project identified as contributing to the crash frequencies of the intersection, which has made this a priority location for the County due to consistent crashes and traffic congestion over the past few years. These need elements included the following:

- Recent business developments have caused an increase in traffic volume in a relatively small populated area;
- The Ohio Department of Transportation (ODOT) CAM (Crash Analysis Module) tool revealed that the corridor experienced 54 crashes in the three year period 2014-2016, with 16 of those crashes involving injuries;
- The corridor is very dense with access points, including three signalized intersections, three unsignalized intersections and approximately 20 driveways per mile. Driveway access along the corridor is not well defined in some locations as it contains several access points that are continuous asphalt, several parcels have redundant driveways, and some driveways are located very close to adjacent intersections;
- Synchro analysis of AM and PM peak hour conditions shows very high delays and poor progression through the signals, which is indicative of congestion at the closely spaced signals;
- The most common (46.3 percent) type of crashes on the corridor were rear end (25 crashes), which is more than twice the State Average of 20.7 percent for a similar location. Concentrations of rear end crashes are occurring at the approaches of the Park Avenue intersections with the eastbound and westbound US 52 Off Ramps;
- Angle crashes are the second most common crash type at 25.9 percent of the total crashes. These crash types are generally occurring at both the signalized and unsignalized intersections and typically lead to the most severe injuries, which is apparent from the intersection data. Therefore, angle crashes are well above state average rates (17.6 percent) for non-state system facilities;
- Sideswipe-passing crashes constitute 5.6 percent of the total crashes. These crashes are likely occurring as drivers make last minute lane changes or at midblock driveways as vehicles merge or diverge after turning into or out of driveways. The study corridor experiences considerably more frequent sideswipe-passing crashes than the statewide average of 3.1 percent;
- Pedestrian accommodations/facilities – The corridor currently has inadequate pedestrian accommodations that do not meet current ADA standards at several locations. Most intersections have no signing to alert drivers of pedestrian presence, and the existing sidewalks and crosswalks are in poor condition at various locations.

In summary, the need elements discussed above outline the basis for exploring potential countermeasures to improve the safety and traffic operations for both motorized and non-motorized traffic users along this Lawrence County roadway.

2.0 EXISTING CONDITIONS

2.1 Physical Conditions – Park Avenue Corridor

Physical conditions of the Park Avenue corridor are illustrated in Figure 2.1. As shown in the figure, Park Avenue is a three (3) lane corridor from 6th Street to 9th Street, and a four lane corridor from 9th Street to the westbound US 52 Off Ramps. All lanes are twelve feet wide. There are three (3) signalized intersections and three (3) un-signalized intersections (all two way stop controlled) along the project corridor. While the 6th Street intersection is a part of a coordinated system (along Park Avenue to the west), the three (3) project signals are not coordinated with each other. Sidewalks exist along the corridor from west of 6th Street to 9th Street. Land uses along the corridor are largely commercial. The entrance to the Ironton Hills Shopping Center is located between the westbound US 52 On Ramp and Coryville Road. Detailed information regarding project corridor intersections and specific corridor segments is provided in the following sections.

2.1.1 Physical Conditions – 6th Street to 7th Street

This segment of Park Avenue has a posted speed limit of 35 miles per hour with three (3), twelve (12) foot lanes. After recent traffic signal upgrades, the Park Avenue & 6th Street intersection now features new, decorative mast arms, new traffic signal heads (with backplates), new countdown pedestrian signal heads, and intersection lighting (See Photo 1). Pedestrian crossings are featured on all four corners and curb ramps appear to be in fair condition. Current infrastructure at this intersection in need of improvement includes:

- Commercial driveways – There are several extended curb cuts (up to 56 feet wide) with no defining markings (Tudor's Biscuit World, Advance Auto Parts, Dickess Auto Repair).
- Pavement – There are sections of cracking pavement along this segment.



Recently installed signal upgrades at Park Avenue & 6th Street



Extended curb cuts along Park Avenue (Giovanni's Pizza)



Extended curb cuts along Park Avenue (Advance Auto Parts)



Cracking pavement along Park Avenue

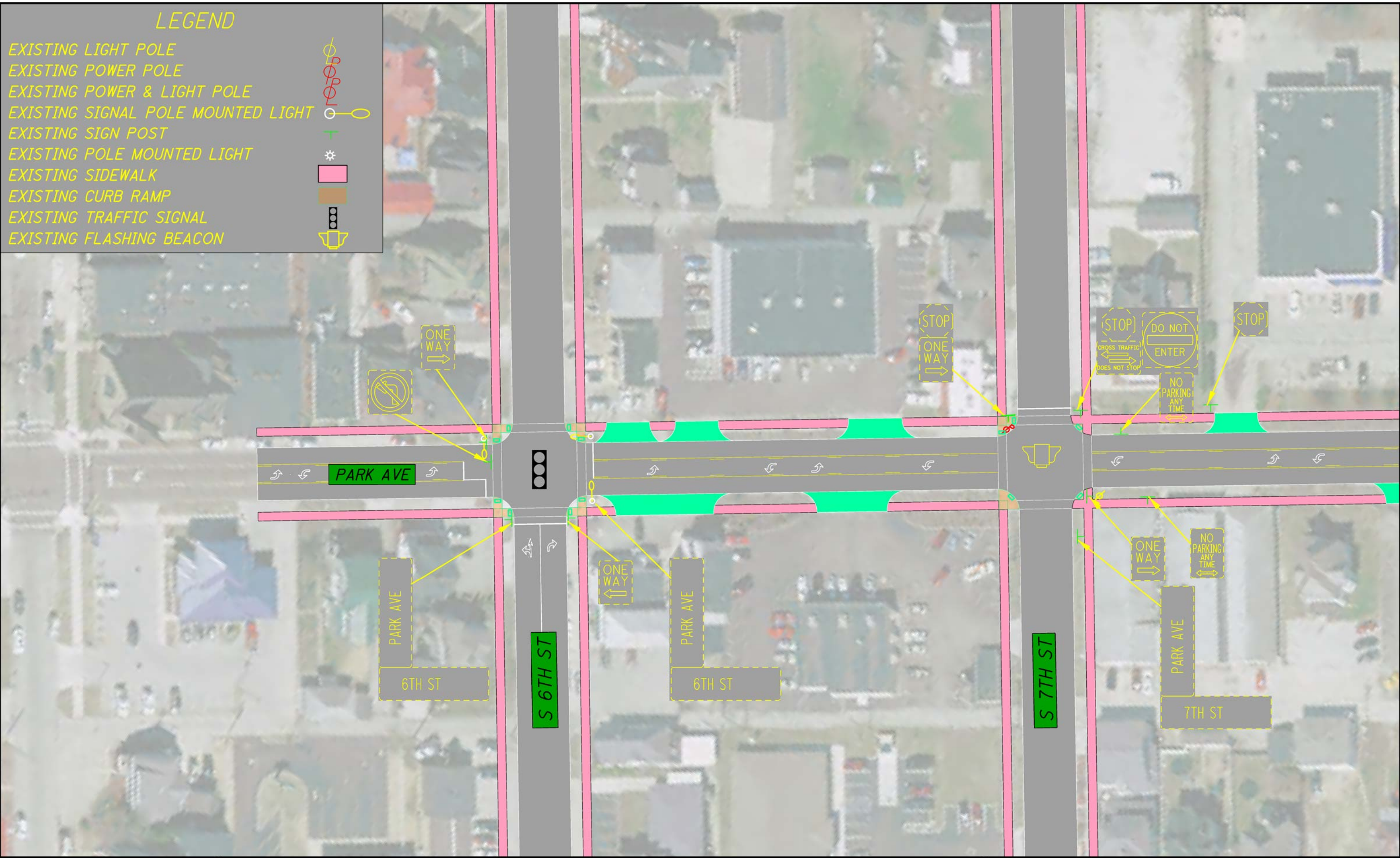


FIGURE 2.1 - EXISTING CONDITONS
PARK AVENUE CORRIDOR

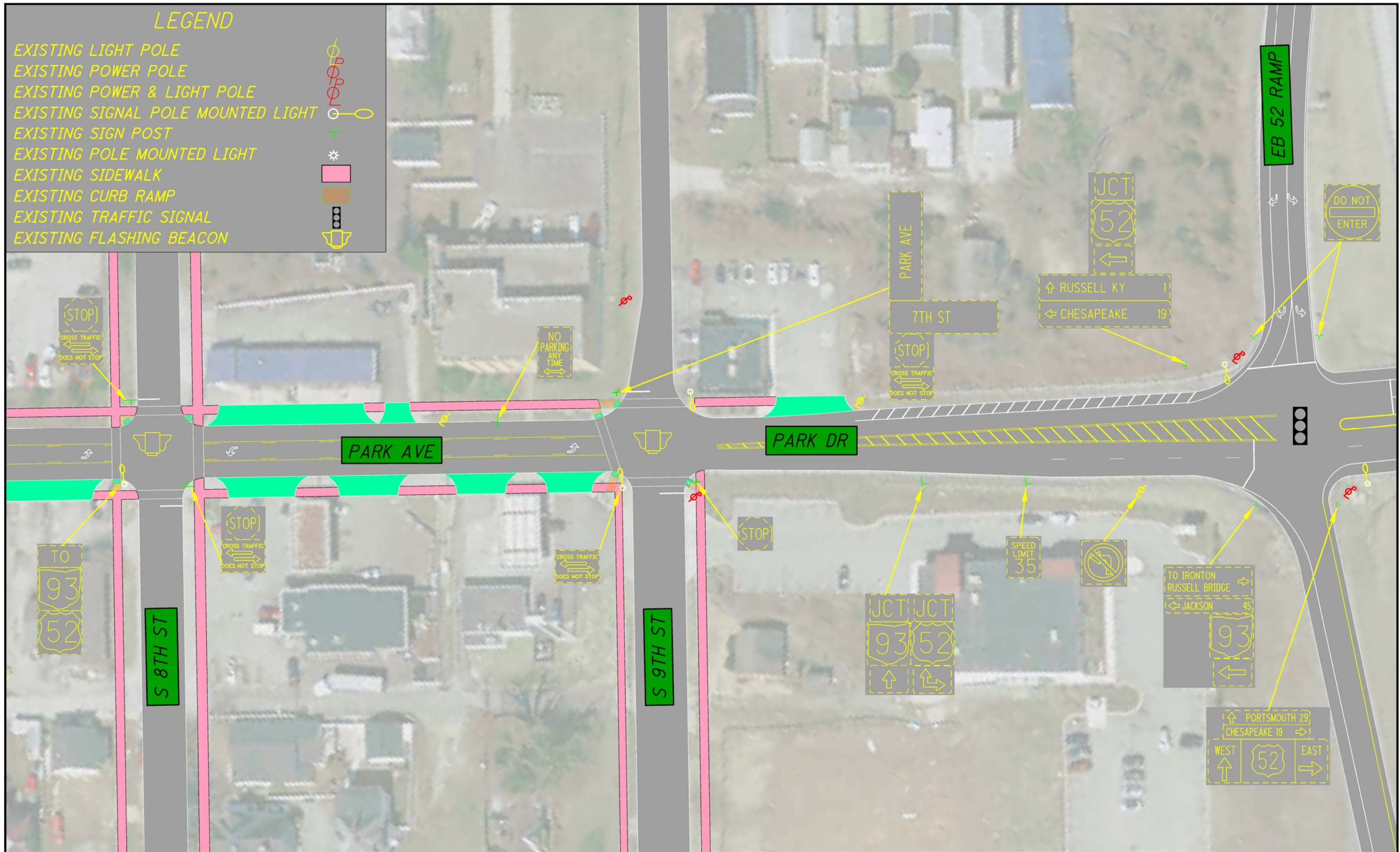


FIGURE 2.1 - EXISTING CONDITNS
PARK AVENUE CORRIDOR



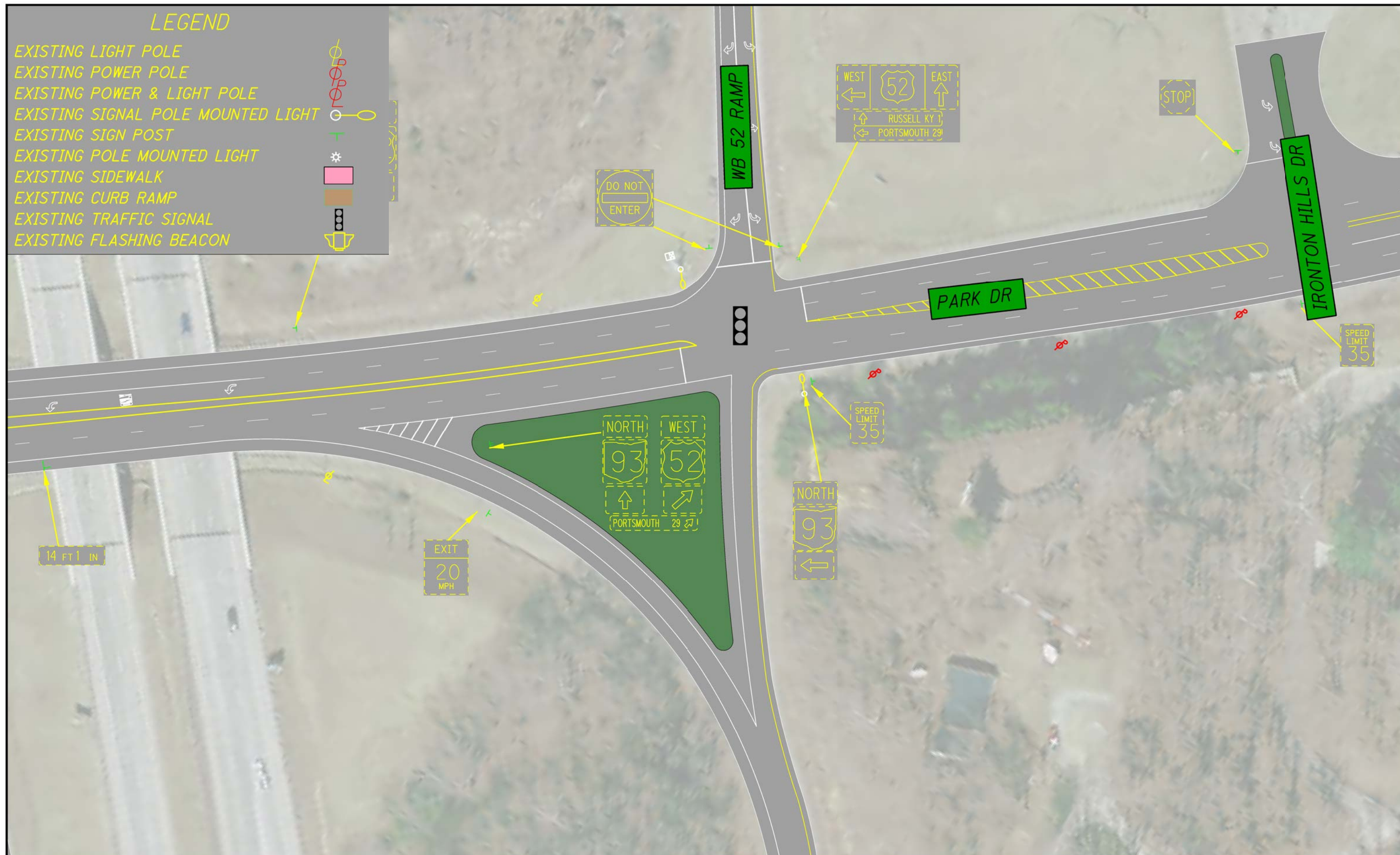


FIGURE 2.1 - EXISTING CONDITIONS
PARK AVENUE CORRIDOR



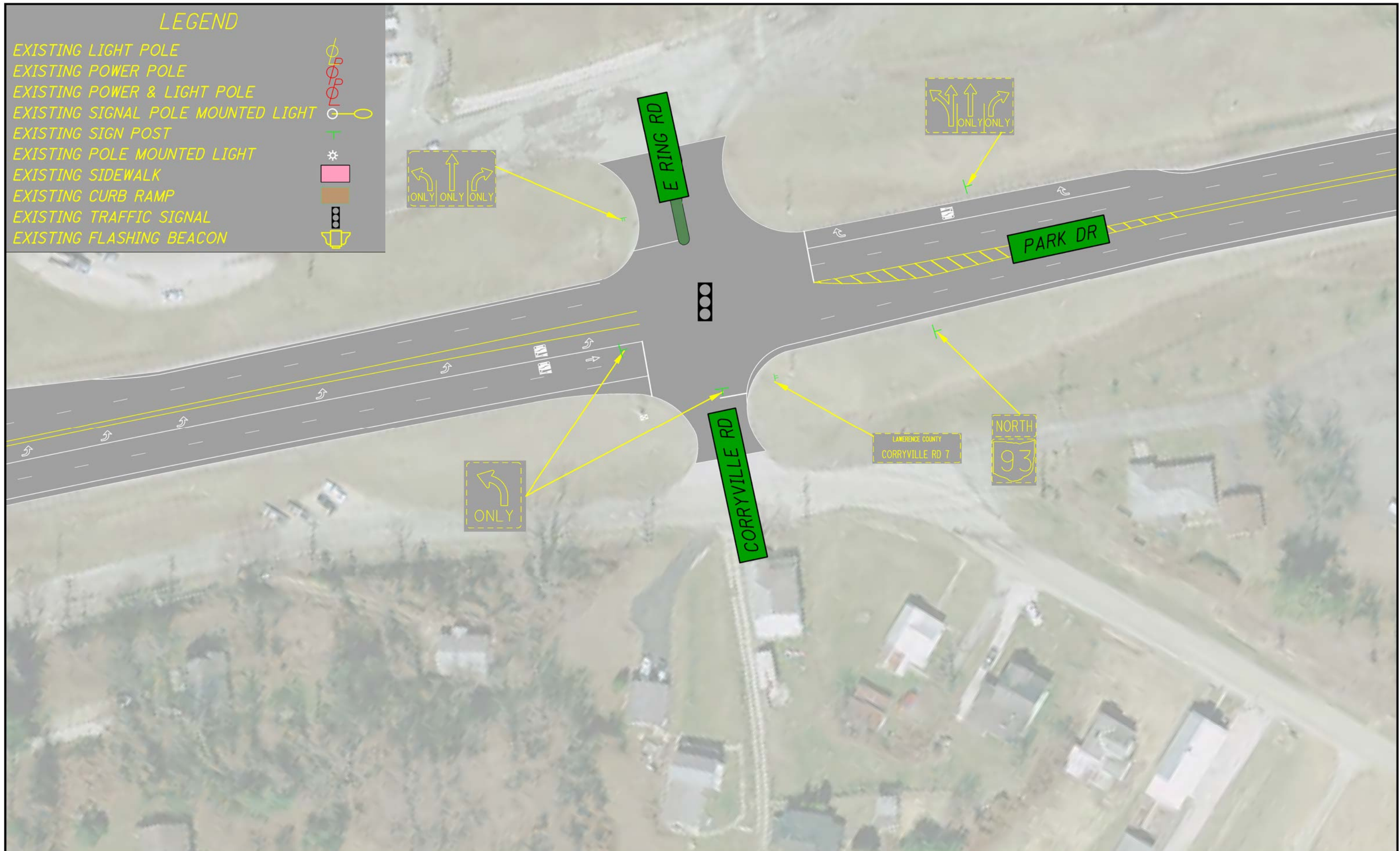


FIGURE 2.1 - EXISTING CONDIONS
PARK AVENUE CORRIDOR



2.1.2 Physical Conditions – 7th Street to 8th Street

This segment of Park Avenue has a posted speed limit of 35 miles per hour with three (3), twelve (12) foot lanes. The Park Avenue & 7th Street intersection is currently under one-way stop control (Park Avenue does not stop) with a span wire mounted flashing beacon. This intersection features pedestrian crossings on all four (4) legs. Luminaires are present at this intersection. Current infrastructure along this segment of Park Avenue in need of improvement includes:

- Pedestrian infrastructure – At the Park Avenue & 7th Street intersection, crosswalk markings are worn and there are no pedestrian crossing signs along Park Avenue to alert drivers to the possible presence of pedestrians.
- Pavement and sidewalks – Sections of cracking pavement exist along this segment.
- Commercial driveways – There are several extended commercial driveways with no defining markings (Century 21)



No pedestrian warning signs for vehicles
(7th Street intersection)



Cracking pavement along Park Avenue



Worn pedestrian pavement markings at the Park Avenue
& 7th Street intersection



Extended curb cut along eastbound Park Avenue
approaching 8th Street (Century 21)



Sidewalk cracking Along Park Avenue between 7th Street
and 8th Street



Ramps and detectable warning areas are oriented into the
traveled way and not to crosswalks.

2.1.3 Physical Conditions – 8th Street to 9th Street

This segment of Park Avenue has a posted speed limit of 35 miles per hour with three (3), twelve (12) foot travel lanes. The Park Avenue & 8th Street intersection is currently under two (2) way stop control (Park Avenue does not stop) with a span wire mounted flashing beacon. This intersection features pedestrian crossings on all four legs. Current infrastructure along this segment in need of improvement includes:

- Pedestrian infrastructure – There are currently no pedestrian crossing warning signs along Park Avenue to alert vehicles to the possible presence of pedestrians at 8th Street. Further, several pedestrian ramps do not feature detectable warning areas.
- Pavement – Pavement and sidewalk sections along this segment both show signs of cracking.



2.1.4 Physical Conditions – 9th Street to EB US 52 Off Ramp

This segment of Park Avenue has a posted speed limit of 35 miles per hour with two (2) twelve (12) foot lanes. The Park Avenue & 9th Street intersection is currently under two (2) way stop control (Park Avenue does not stop) with a span wire mounted flashing beacon. This intersection features pedestrian crossings on all four (4) legs. Luminares are mounted on power poles at the Park Avenue & 9th Street intersection. Current infrastructure along this segment in need of improvement includes:

- Pedestrian signing – There are no signs placed near the intersection that can alert drivers to the potential presence of pedestrians.
- Turning lanes – The westbound left turn lane at this intersection does not feature a dedicated left turn lane, despite a relatively large westbound left turn movement (more than 100 vehicles per hour during the PM peak hour).

- Curb ramps – There are curb ramps at this intersection that do not feature detectable warning areas and are not oriented toward crosswalks.



2.1.5 Physical Conditions – EB US 52 Off Ramp – WB US 52 Off Ramp

This segment of Park Avenue has a posted speed limit of 35 miles per hour with four (4), twelve (12) foot travel lanes. The Park Avenue & WB US 52 Off Ramp intersection is currently signalized, with protected permitted phasing for the westbound left turn from Park Avenue to US 52. This intersection does not feature accommodations for pedestrians (no curb ramps or crosswalks are present). Lane use signs approaching the interchange with US 52 ramps are currently span wire mounted. Luminares are mounted on strain poles at the eastbound US 52 Off Ramps intersection. Current infrastructure along this segment in need of improvement includes:

- Lane use signs – Lane use signs approaching the US 52 interchange are span wire mounted adjacent to traffic signal heads and may be more visible if mounted separately.
- Traffic signal visibility – Traffic signal heads at the Park Avenue & Eastbound US 52 Off Ramps intersection do not feature backplates.



2.1.6 Physical Conditions – WB US 52 Off Ramp – Coryville Road

This segment of Park Avenue has a posted speed limit of 35 miles per hour with four (4), twelve (12) foot travel lanes. Intersections along Park Avenue at the westbound US 52 Off Ramps and at Coryville Road are both signalized. Left turns from westbound Park Avenue to the westbound US 52 Off Ramp are permitted only, while left turns from eastbound Park Avenue to the Ironton hills Shopping center are protected/permitted. There are no pedestrian facilities at either intersection. Luminares are mounted on strain poles at the westbound US 52 Off Ramps intersection and there are no luminaires at Coryville Road. Current infrastructure along this segment in need of improvement includes:

- Traffic signal visibility – Traffic signal heads along Park Avenue at the westbound US 52 Off Ramp and at Coryville Road do not feature backplates
- Intersection lighting – The intersection of Park Avenue with Coryville Road does not feature lighting.



2.2 Existing Traffic Operations

Existing traffic operations along the Park Avenue corridor from 6th Street to the westbound US 52 Off Ramp were evaluated using the Synchro 9 traffic analysis software package. Synchro 9 provides several measures of effectiveness (MOEs) for traffic operations based on Highway Capacity Manual 2010 (HCM 2010) methodology. The primary MOE for this analysis will be level-of-service (LOS) and the guidelines and results from this analysis are shown in Tables 2.1 and 2.2.

Level-of-service provides a letter grade for traffic operations based on the amount of delay experienced at an intersection, along an intersection approach (i.e., eastbound, westbound), or for an intersection lane group (i.e., eastbound left, westbound through). LOS can range from A to F, with A representing the conditions that experience

the least amount of delay, and F representing the conditions that experience the most delay. Typically, LOS values from A to D represent satisfactory traffic operations, while LOS values E and F represent unsatisfactory traffic operations. Unsatisfactory traffic operations generally necessitate changes to traffic control or roadway geometry to reduce delays for vehicles. LOS for this analysis will be evaluated at the intersection level.

In this section, traffic operations were evaluated during the AM and PM peak hours for existing (2017) conditions, for an Opening Year No Build (2020) condition (analysis in the assumed opening year of any potential improvements along the Park Avenue corridor under the assumption that no changes are implemented), and a Design Year No Build (2040) condition (similar to Opening Year No Build, with analysis conducted 20 years after the Opening Year). After the development of potential improvements along the Park Avenue corridor, these analyses will serve as a baseline, against which traffic operations of the proposed improvements (i.e., Build conditions) will be measured. It may be noted that analyses were conducted under the following conditions and assumptions:

- Existing conditions analyses were conducted with existing traffic volumes (shown in Figure 2.3), while Opening Year and Design Year No Build analyses were conducted with design hour volumes (obtained with a design hour factor specified by ODOT—1.16 for peak hour traffic counts collected on a weekday in February—as shown in Figure 2.2 below) Opening year and design year traffic volumes are shown in Figures 2.4 and 2.5 below.
- A comparison of historical traffic data from ODOT Transportation Information Mapping System and traffic counts collected for this project indicate negative growth for background traffic volumes along the Park Avenue corridor (-0.8%) from 2010 to 2017 (see Appendix A for details). As the use of a negative growth rate to project traffic volumes for this study is infeasible (e.g., unknown future developments may lead to growth in traffic volumes), a conservative annual growth rate of 0.5% was used for this study. Optimized timings were used for all analyses as timings as existing intersections were not available.
- As the HCM 2010 does not provide intersection LOS for un-signalized intersections, LOS for the highest delay approach at un-signalized intersections is presented in traffic analyses.

PEAK HOUR to DESIGN HOUR FACTORS
FUNCTIONAL CLASSIFICATION = 04, 05, 07u
(Urban Minor Arterial, Urban Major Collector, & Urban Local Access)

Month	Monthly Average by Day-of-Week							
	WEEKDAY MON- THUR	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
January	1.21	1.99	1.19	1.26	1.21	1.16	1.17	1.55
February	1.16	1.90	1.24	1.16	1.14	1.11	1.09	1.58
March	1.29	1.90	1.25	1.26	1.40	1.26	1.14	1.46
April	1.12	1.55	1.14	1.12	1.10	1.12	1.07	1.40
May	1.14	1.55	1.09	1.17	1.16	1.13	1.11	1.44
June	1.26	1.61	1.24	1.25	1.27	1.28	1.20	1.48
July	1.25	1.62	1.27	1.26	1.26	1.22	1.20	1.50
August	1.20	1.62	1.24	1.20	1.19	1.17	1.14	1.47
September	1.09	1.56	1.10	1.09	1.09	1.08	1.05	1.37
October	1.09	1.50	1.09	1.09	1.08	1.08	1.06	1.43
November	1.12	1.59	1.11	1.19	1.11	1.08	1.08	1.47
December	1.11	1.65	1.14	1.13	1.10	1.07	1.11	1.57

peak hour volume * factor = design hour volume

source: year 2013 & 2014 Automatic Traffic Recorders (ATR) Data

ATR STATIONS:
2014:131, 134, 166, 167, 169
2013:131, 134, 166, 167, 169

Ohio Department of Transportation
Modeling & Forecasting Section
April 2015

NOTE: These are NOT seasonal adjustment factors!!!

Figure 2.2 Design Hour Factor – Park Avenue Corridor

\$DATE\$

\$FILE\$

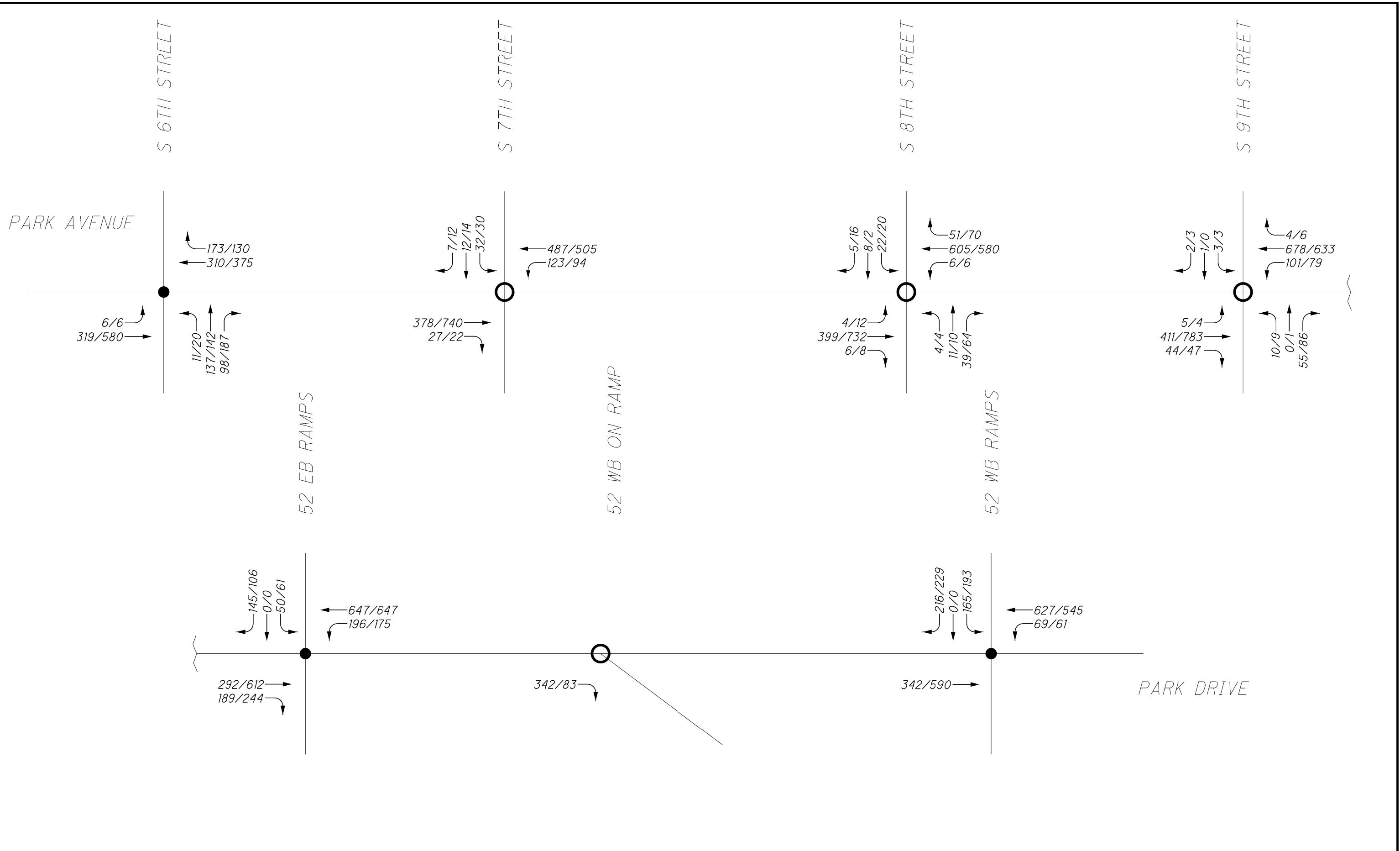


FIGURE 2.3
EXISTING (2016) PEAK HOUR TRAFFIC VOLUMES

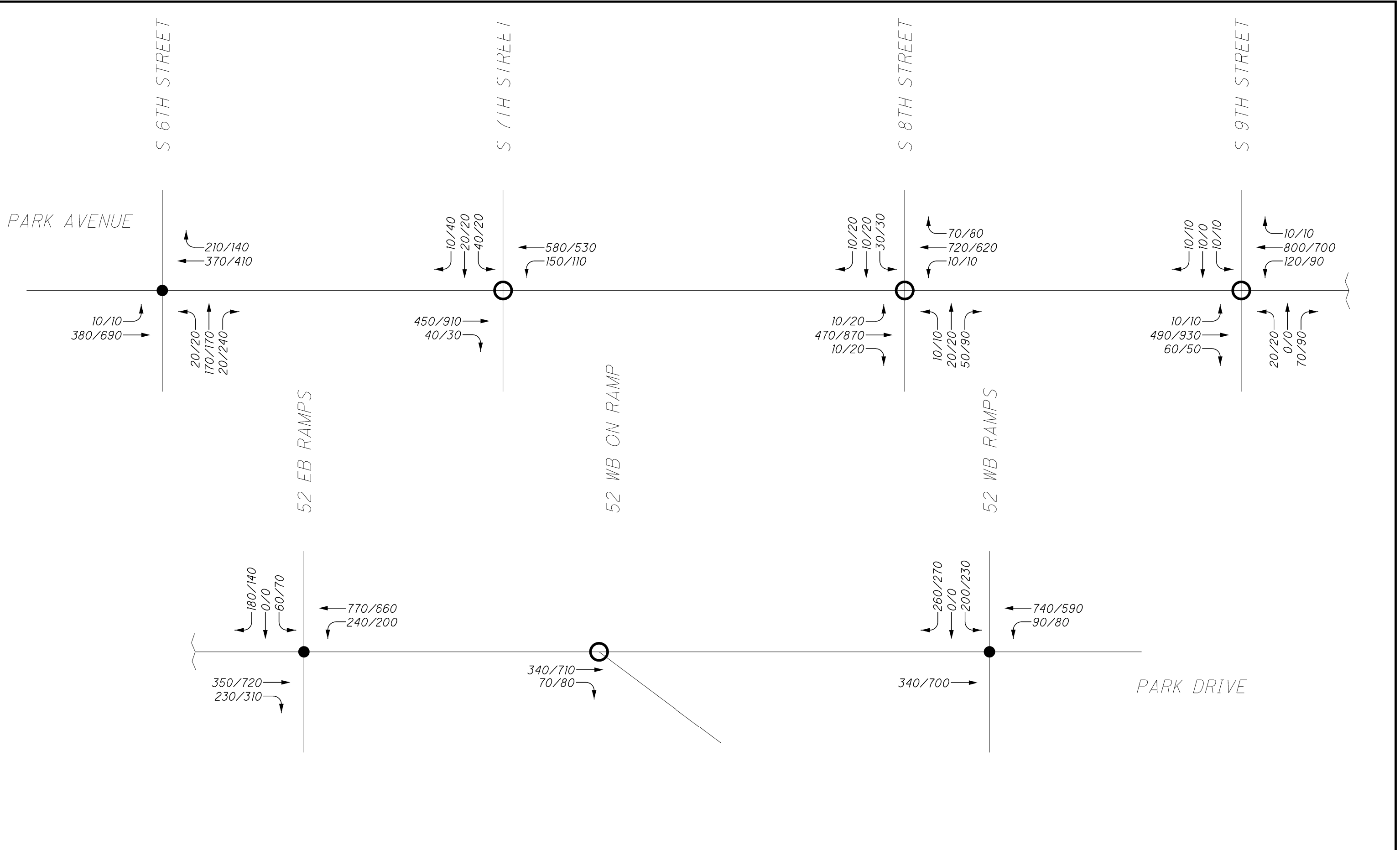
LEGEND

- = SIGNALIZED
- = UNSIGNALIZED
- 123/123 ↗ = AM/PM PEAK HOUR TRAFFIC



\$DATE\$

\$FILE\$

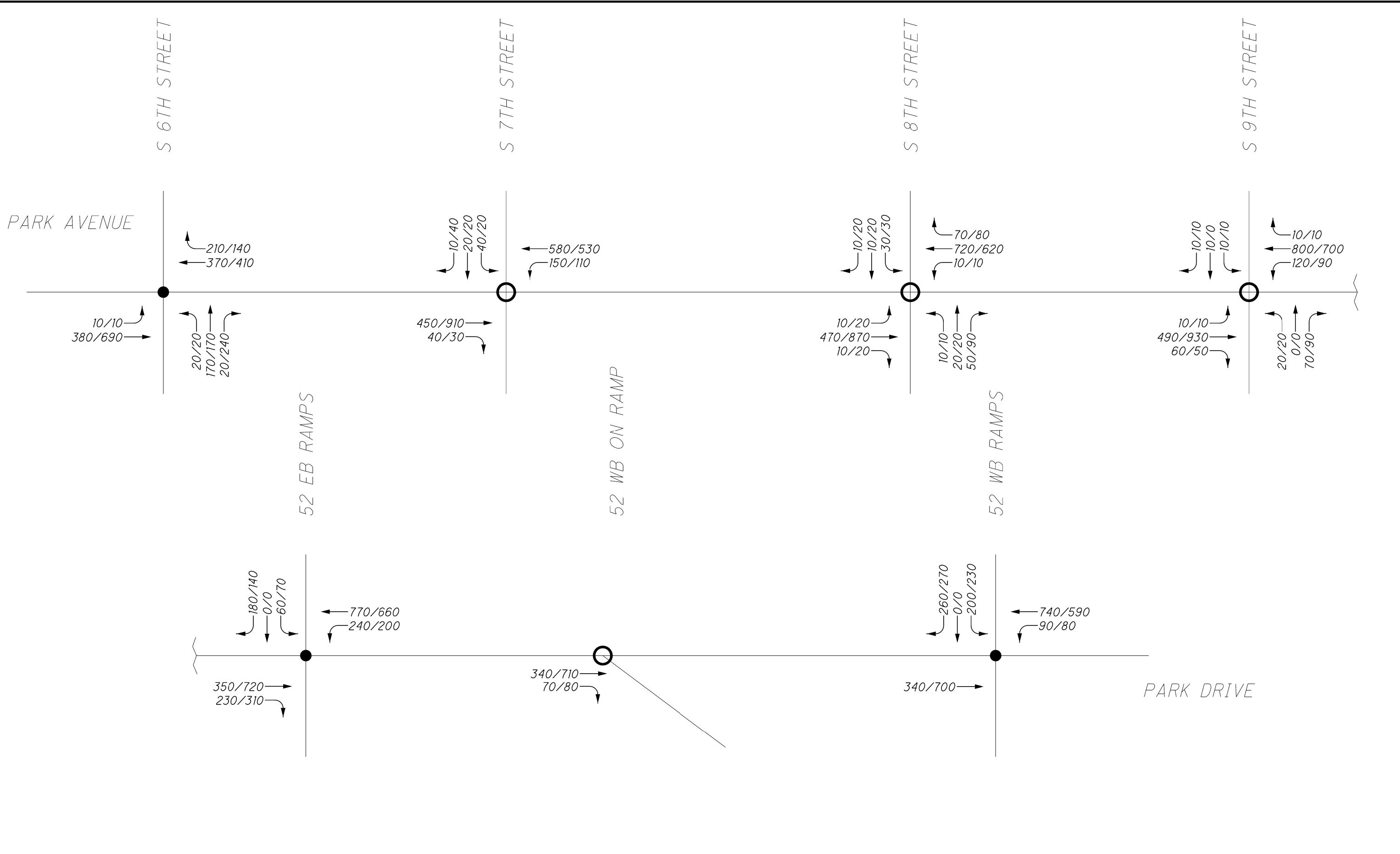


2.4 FIGURE
OPENING YEAR DESIGN HOUR TRAFFIC VOLUMES (DHV)



\$DATE\$

\$FILE\$



2.5 FIGURE
DESIGN YEAR DESIGN HOUR TRAFFIC VOLUMES (DHV)

LEGEND

- = SIGNALIZED
- = UNSIGNALIZED
- ↔ = AM/PM PEAK HOUR TRAFFIC

123/123



Table 2.1 Delay Thresholds for Level-of-Service (LOS)		
LOS	Delay (Signalized)	Delay (Un-Signalized)
A	0.0 – 10.0	0.0 – 10.0
B	10.1 – 20.0	10.1 – 15.0
C	20.1 – 35.0	15.1 – 25.0
D	35.1 – 55.0	25.1 – 35.0
E	55.0 – 80.0	35.1 – 50.0
F	>80.0	>50.0

Table 2.2 Existing Conditions Level-of-Service (Delay)					
Location	Existing Year (2017)			Opening Year (2020) No Build	Design Year (2040) No Build
	Volume	v/c	LOS (Delay)	LOS (Delay)	LOS (Delay)
AM Peak Hour					
Park Ave. & 6 th St. (Signalized)	1,054	0.33	B (12.8)	B (14.2)	B (15.5)
Park Ave & 7 th St. (Un-signalized)			D (30.2)	F (108.8)	F (215.4)
Park Ave. & 8 th St. (Un-Signalized)			E (49.7)	F (252.2)	F (552.4)
Park Ave. & 9 th St. (Un-Signalized)			F (74.7)	F (1030.8)	F (1774.5)
Park Ave. & EB US-52 Ramps (Signalized)	1,519	0.41	B (12.0)	B (17.0)	C (20.4)
Park Ave. & US 52 WB Ramps (Signalized)	1,364	0.31	B (12.4)	B (14.5)	B (16.7)
Volume-to-Capacity Ratio		0.34			
PM Peak Hour					
Park Ave. & 6 th St. (Signalized)	1,398	0.42	B (14.0)	B (16.9)	B (19.0)
Park Ave & 7 th St. (Un-Signalized)			D (27.1)	F (63.8)	F (700.2)
Park Ave. & 8 th St. (Un-Signalized)			F (130.9)	F (1113.0)	F(2188.1)
Park Ave. & 9 th St. (Un-Signalized)			F (100.0)	F (755.7)	F (1668.9)
Park Ave. & EB US-52 Ramps (Signalized)	1,753	0.47	B (14.5)	B (16.0)	B (17.5)
Park Ave. & US 52 WB Ramps (Signalized)	1,566	0.63	A (9.8)	A (11.0)	B (11.7)
Volume-to-Capacity Ratio		0.41			

During the AM peak hour under existing conditions, four (4) of the six (6) intersections under analysis had LOS grades of D or better. Intersections along Park Avenue at 8th Street and 9th Street had LOS values of E, and F respectively. Under the Opening Year No Build conditions, three (3) of the six (6) intersections are projected to have LOS grades of D or better during the AM peak hour, with the 8th Street and 9th Street intersections having worse traffic operations and the 7th Street intersection degrading from LOS D to LOS F. Under the Design Year No Build conditions, three (3) of the six (6) project intersections are still projected to have LOS values of D or better during the AM peak hour, with intersections at 7th, 8th, and 9th all performing worse. Poor traffic operations along Park Avenue at 7th, 8th, and 9th, street could be a result of the traffic control (two/one way stop control) currently implemented at these intersections. Heavy traffic volumes along Park Avenue may make it difficult to make left or right turns from 7th, 8th, or 9th Streets.

During the PM peak hour under existing conditions, four (4) of the six (6) intersections had LOS grades of D or better, with intersections at 8th Street and 9th Street both operating at LOS F. Under Opening Year No Build, and Design Year No Build conditions, three (3) of the intersections under analysis had LOS grades of D or better during the PM peak hour. Intersections along Park Avenue at 7th Street, 8th Street, and 9th Street, all had LOS values of F with heavy traffic volumes along Park Avenue potentially making turns from these streets difficult.

2.3 Crash History and Relative Severity Index (RSI)

Vehicular crashes along the analysis corridor for the three (3) year period from 2014 to 2016 were evaluated using ODOT's GIS crash analysis tool (GCAT) for the segment of Park Avenue from 6th Street to Coryville Road. GCAT summarizes reported crashes (as reported in OH-1 crash reports) along roadways based on a number of user specified filters (e.g., length of segment, crash type, year, etc.). Within the analysis period, there were 54 total crashes along the project corridor, with sixteen (16) of the crashes being injury crashes, and 38 of the crashes being property damage only (PDO) crashes. No fatal crashes were reported along the corridor. Figure 2.2 illustrates crashes along the Park Avenue and Table 2.3 summarizes crashes along the corridor by type.

Crash Type	Number of Crashes	% of Total	Estimated Cost to Society (Per Crash)
Rear End	25	46.3%	\$28,510
Angle	14	25.9%	\$55,418
Sideswipe-Meeting	3	5.6%	\$74,344
Backing	3	5.6%	\$14,054
Other Object	2	3.7%	\$26,564
Parked Vehicle	2	3.7%	\$32,653
Left Turn	2	3.7%	\$54,771
Sideswipe-Passing	1	1.9%	\$31,832
Fixed Object	1	1.9%	\$44,711
Overturning	1	1.9%	\$84,209
Total Crashes	54	100.0%	\$2,142,524
Relative Severity Index (RSI)			\$39,676

Rear end crashes were the most prevalently reported crash type along the analysis corridor, making up over 46 percent of the total, with angle (25.9 %), sideswipe (5.6 %), and backing (5.6 %) crashes making up the second, third, and fourth most reported types respectively. Rear end crashes can sometimes be indicative of congestion or poor signal timing along a corridor, however, Figure 2.2 illustrates that the majority of rear end crashes (19 of 25) occurred between the US 52 Off Ramp intersections, locations that had B LOS values (optimized) during the existing AM and PM peak hours. Given that existing timings were not evaluated for this study, the crash data presented may still be indicative of corridor congestion or ineffective signal timing. A review of existing signals along the entire analysis corridor is recommended to determine if timings can be improved.

The relative severity index (RSI) for the corridor is 39,676. RSI is an estimate of the cost to society, per crash in an area, based on the mix of crash types reported in that area. As different crash types have different impacts on society (i.e., head on crashes have a larger cost to society than bicycle and pedestrian crashes as they have a higher probability of severe injury or death), the RSI can be compared to the estimated cost to society for a specific crash type to estimate the safety of a particular corridor. The RSI for this corridor (\$39,676) is more than the median cost crash type for an urban non-freeway location (angle crash, \$25,558) corridor, indicating the types of crashes reported along the corridor may be more dangerous than those for a similar roadway.

FIGURE 2.6 COLLISION DIAGRAM 1 OF 3
(PARK AVENUE BETWEEN S 6TH STREET & S 8TH STREET)
2014-2016



IMPROPER LANE CHANGE/SIDESWIPE

HEAD ON

FIXED OBJECT

OUT OF CONTROL

REAR-END

ANGLE

TURNING

BACKING

OTHER

INJURY

FATAL

PARKED VEHICLE

PEDESTRIAN

BICYCLE

TEXT DATE/TIME/ROAD CONDITION /CRASH CODE

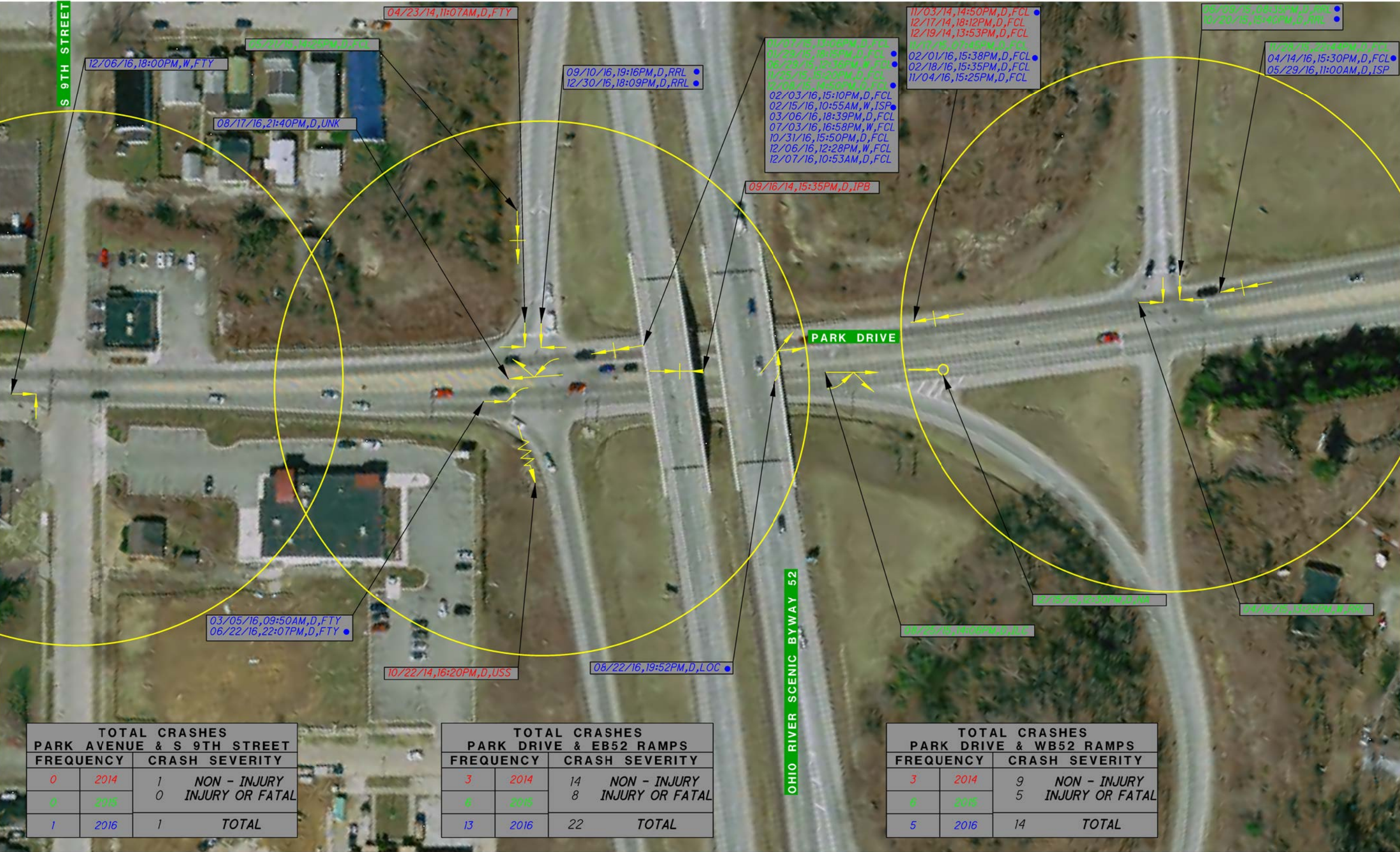
FCL = FOLLOWED TOO CLOSELY
FTY = FAILURE TO YIELD
IPB = IMPROPER BACKING
ILC = IMPROPER LANE CHANGE
ISP = IMPROPER START FROM PARKED
LOC = LEFT OF CENTER
NA = NOT APPLICABLE
UKN = UNKNOWN

USS = UNSAFE SPEED
RRL = RAN RED LIGHT
STA = SWERVING TO AVOID

ROAD CONDITION:
D = DRY
W = WET
I = ICE
S = SNOW

TOTAL CRASHES ON PAGE			
FREQUENCY		CRASH SEVERITY	
0	2014	10	NON - INJURY
0	2015	1	INJURY OR FATAL
11	2016	11	TOTAL

FIGURE 2.6 COLLISION DIAGRAM 2 OF 3
(PARK AVENUE BETWEEN S 9TH STREET & WB ON/OFF RAMP)
2014-2016



INJURY
FATAL
PARKED VEHICLE
PEDESTRIAN
BICYCLE

TEXT
DATE/TIME/ROAD CONDITION
/CRASH CODE

FCL = FOLLOWED TOO CLOSELY
FTY = FAILURE TO YIELD
IPB = IMPROPER BACKING
ILC = IMPROPER LAND CHANGE
ISP = IMPROPER START FROM PARKED
LOC = LEFT OF CENTER
NA = NOT APPLICABLE
UKN = UNKNOWN

USS = UNSAFE SPEED
RRL = RAN RED LIGHT
STA = SWERVING TO AVOID

ROAD CONDITION:
D = DRY
W = WET
I = ICE
S = SNOW

TOTAL CRASHES ON PAGE			
FREQUENCY		CRASH SEVERITY	
6	2014	25	NON - INJURY
13	2015	13	INJURY OR FATAL
19	2016	38	TOTAL

FIGURE 2.6 COLLISION DIAGRAM 3 OF 3
(PARK DRIVE BETWEEN IRONTON HILLS DRIVE & CORRYVILLE RD)
2014-2016



								TOTAL CRASHES ON PAGE	
								FREQUENCY	CRASH SEVERITY
	IMPROPER LANE CHANGE/SIDESWIPE		ANGLE		INJURY	TEXT	DATE/TIME/ROAD CONDITION /CRASH CODE	1	2014
	HEAD ON		TURNING		FATAL			1	2015
	FIXED OBJECT		BACKING		PARKED VEHICLE			3	NON - INJURY
	OUT OF CONTROL		OTHER		PEDESTRIAN			2	INJURY OR FATAL
	REAR-END				BICYCLE			3	2016
								5	TOTAL

FCL = FOLLOWED TOO CLOSELY
FTY = FAILURE TO YIELD
IPB = IMPROPER BACKING
ILC = IMPROPER LAND CHANGE
ISP = IMPROPER START FROM PARKED
LOC = LEFT OF CENTER
NA = NOT APPLICABLE
UKN = UNKNOWN

USS = UNSAFE SPEED
RRL = RAN RED LIGHT
STA = SWERVING TO AVOID

ROAD CONDITION:
D = DRY
W = WET
I = ICE
S = SNOW

2.4 Crash Frequencies (Rates)

ODOT's economic crash analysis tool (ECAT) was used to evaluate the rate of crashes along nine (9) specific segments of the project corridor. Specifically, the expected number of crashes for each segment (the number of crashes projected along the project corridor based on a version of the Highway Safety Manual's safety performance functions weighted by actual crash data along the corridor) were compared to the predicted number of crashes for each segment (the number of crashes projected by an unweighted version of the safety performance functions) to estimate the potential for reducing the number of crashes in each segment, or the potential for safety improvement (PSI). Expected crash frequencies, predicted crash frequencies, and the PSI are presented in Table 2.4 for corridor segments and intersections, and in Table 2.5 for crash types.

Table 2.4 Crash Frequency Analysis (Locations)			
Location	Predicted Crashes (per MVMT)	Expected Crashes (per MVMT)	Potential for Safety Improvement (PSI)
Roadway Segments			
Park Avenue (S. of 6 th St.)	0.10	0.10	0.00
Park Avenue (6 th St. to 7 th St.)	0.18	0.18	0.00
Park Avenue (7 th St. to 8 th St.)	0.26	0.25	-0.01
Park Avenue (8 th St. to 9 th St.)	0.25	0.24	-0.01
Park Avenue (N. of 9 th St.)	0.45	0.42	-0.03
Park Avenue (9 th St. to EB US 52 Ramps)	0.43	0.40	-0.03
Park Avenue (EB US 52 Ramps to WB US 52 Ramps)	0.22	0.21	-0.01
Park Avenue (WB US 52 Ramps to Coryville Road)	0.27	0.26	-0.01
Park Avenue (9 th St. to EB US 52 Ramps)	0.13	0.13	-0.00
Intersections			
Park Avenue & 6 th St.	3.89	3.35	-0.54
Park Avenue & to 7 th St.	0.93	0.99	0.06
Park Avenue & 8 th St.	2.07	1.92	-0.15
Park Avenue & 9 th St.	4.47	4.00	-0.47
Park Avenue & EB US 52 Ramps	4.20	5.04	0.84
Park Avenue & WB US 52 Ramps	4.37	4.18	-0.19
Park Avenue & Coryville Road	4.60	3.73	-0.87
Potential for Safety Improvement (Corridor)			-1.42

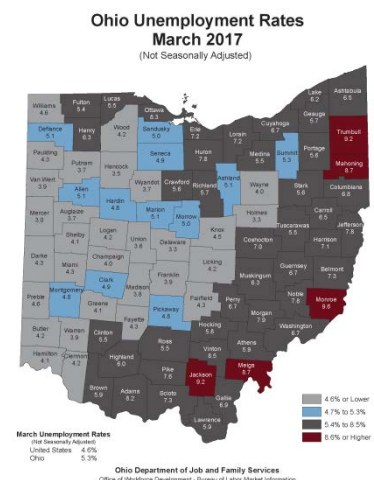
Table 2.5 Crash Frequency Analysis (Crash Type)			
Crash Type	Predicted Crash Frequency	Expected Crash Frequency	Potential for Safety Improvement (PSI)
Unknown	0.03	0.03	0.00
Head On	0.17	0.17	0.00
Rear End	12.85	11.94	-0.91
Backing	0.63	0.63	0.00
Sideswipe - Meeting	0.46	0.47	0.01
Sideswipe – Passing	3.01	2.74	-0.27
Angle	4.47	4.37	-0.10
Parked Vehicle	0.53	0.53	0.00
Pedestrian	0.20	0.20	0.00
Animal	0.56	0.49	-0.07
Train	0.00	0.00	0.00
Pedalcycles	0.61	0.58	-0.03
Other Non-Vehicle	0.00	0.00	0.00
Fixed Object	1.04	1.03	-0.01
Other Object	0.05	0.05	0.00
Overturning	0.06	0.06	0.00
Other Non-Collision	0.14	0.14	0.00
Left Turn	2.56	2.46	-0.10
Right Turn	0.00	0.00	0.00
Potential for Safety Improvement			-1.42

In general, predicted and expected crash frequencies along segments and at intersections were similar, with -1.81 being the largest PSI observed along the corridor. In total, five (5) of the nine (9) roadway segments had PSI values of zero (0), while the other four had PSI values of -0.01. Two (2) of the corridor intersections had PSI values greater than zero (0), with intersections at 7th Street and the eastbound US 52 Ramps having PSI values of 0.06 and 0.13 respectively. All other intersection PSI values were less than zero (0). The results of this analysis suggest that there are segments or intersections with crash patterns in need of immediate remediation.

All PSI values for crash types were either zero (0) or negative, with the largest negative value observed along the corridor being for rear end crashes (-2.88). Sideswipe-passing, angle, and left turn crash types had the second (-0.68), third (-0.53), and fourth (-0.27) PSI values among potential crash types along the corridor. Data from this table suggests that there are no crash types along the corridor in need of immediate remediation.

2.5 Economic Health (Lawrence County)

Lawrence County has the 34th highest unemployment rate (out of 88 counties) in the state of Ohio as of March 2017. This rate is larger than the average rate for the state of Ohio (5.3%) and the United States as a whole (4.6%), but lower than those for surrounding counties. Adams, Pike, Scioto, Jackson, Vinton, Meigs, and Gallia Counties all had unemployment rates greater than 7.3%.



3.0 RECOMMENDED IMPROVEMENTS

In an effort to mitigate safety and operational concerns along the project corridor, one short term improvement alternative, and three (3) long term improvement alternatives were developed. Short term improvements are those that could be easily implemented at a lower estimated cost (< \$150,000), while long term improvements are those that have higher estimated costs and may require external funding sources. All proposed improvements are summarized in Table 3.1.

Table 3.1 Summary of Proposed Improvements	
Location	Description of Conceptual Improvements
Short Term Improvements (Safety and Operational Improvements)	
Entire Corridor	- Pavement restriping (6th Street to 9th Street) - Install shared lane, or "sharrow" pavement markings for bicycle use along Park Avenue (6th St. to 9th St.) - Install wayfinding signs at specific locations (see Figure 3.1)
Intersection of: Park Avenue & 6 th Street	- Provide dedicated eastbound Park Avenue left turn lane - Redefine driveway for Tudor's Biscuit World (see Figure 3.1) - Close Park Avenue driveway for Dickess Auto Repair (see Figure 3.1) - Close west driveway for Advance Auto Parts (see Figure 3.1) - Prohibit access to middle lane along westbound approach - Install "Share the Road" sign (see Figure 3.1) along eastbound approach
Intersection of: Park Avenue & 7 th Street	- Install pedestrian refuge island - Replace curb ramps (see Figure 3.1) - Remove east leg pedestrian crossing - Install (OMUTCD W11-2) pedestrian warning signs along eastbound and westbound approaches - Install dedicated westbound left turn lane
Intersection of: Park Avenue & 8 th Street	- Redefine driveway for Park Avenue Carry Out (see Figure 3.1) - Redefine driveway for Super Wash (see Figure 3.1) - Redefine driveway for Speedway Gas (see Figure 3.1) - Install dedicated eastbound left turn lane - Install dedicated westbound left turn lane - Replace curb ramps (see Figure 3.1)
Intersection of: Park Avenue & 9 th Street	- Redefine driveway for BP Gas (see Figure 3.1) - Redefine driveway for vacant building (see Figure 3.1) - Install dedicated eastbound left turn lane - Install dedicated westbound left turn lane - Replace curb ramps - Install "Share the Road" sign (see Figure 3.1) along westbound approach
Estimated Total Cost	\$87,000
Long Term Improvements	
Alternative 1 (Safety and Operational Improvements)	
Entire Corridor	Update timing at signalized intersections
Intersections of: Park Avenue with both 8 th and 9 th Streets	- Install mast arm traffic signals at both intersections (include pedestrian countdown signals & pushbuttons) - Pavement restriping (crosswalks) and ADA curb ramp improvements where needed
Segment of: 9 th Street to Eastbound US 52 Off Ramps	- Install sidewalk along the north side of Park Avenue (see Figure 3.1) - Replace curb along the north side of Park Avenue (see Figure 3.1)
Intersection of: Park Avenue & Eastbound US 52 Off Ramp	- Install mast arm mounted lane use signs - Traffic signal upgrades (install pedestrian countdown signals & pushbuttons)
Segment of: Eastbound US 52 Off Ramps to Westbound US 52 Off Ramps	Install sidewalk along the north side of Park Avenue (see Figure 3.1)
Intersection of: Park Avenue & Westbound US 52 Off Ramp	- Install mast arm mounted lane use signs - Pavement restriping (crosswalk) - Traffic signal upgrades (install pedestrian countdown signals & pushbuttons)
Segment of: Westbound US 52 Off Ramps to Coryville Road	- Install sidewalk along the north side of Park Avenue (see Figure 3.1) - Pavement restriping (crosswalks)
Intersection of: Park Avenue & Coryville Road	- Pavement restriping (crosswalk) - Traffic signal upgrades (install pedestrian countdown signals & pushbuttons)
Estimated Total Cost	\$1,155,800

Table 3.1(Cont'd) Summary of Proposed Improvements	
Location	Description of Conceptual Improvements
Long Term Improvements	
Alternative 2 (Alternative 1 + Traffic Calming Improvements)	
Entire Corridor	• All Alternative 1 improvements • Reduce Park Avenue from three (3) lanes to two (2) lanes
Alternative 3 (Alternative 1 + Capacity Improvements)	
Entire Corridor	• All Alternative 1 improvements • Widen Park Avenue at intersections to install additional turn lanes

3.1 Short Term Improvements

Short term improvements proposed for the Park Avenue corridor consist of several lower cost changes to improve pedestrian safety to the south of 9th Street, vehicular safety, and access management. Specifically, these improvements include redefining several wide/undefined driveways along Park Avenue, restriping Park Avenue to define new left turn lanes, as well as wayfinding signs, warning signs, and curb ramp improvements for pedestrians. Short term improvements are largely proposed between 6th Street and 9th Street and have an estimated cost of \$87,000

3.2 Long Term Improvements

Long term improvements along the Park Avenue corridor consist of several higher cost changes to improve traffic operations along the entire project corridor and pedestrian safety to the north of 9th Street. All long term improvement alternatives include the installation of mast arm mounted lane use signs at the US-52 interchange, updates to timing at all signalized intersections along the project corridor, and the installation of pedestrian pushbuttons and countdown pedestrian signals at signalized intersections to the north of 9th Street. Detailed information regarding each of the long term improvement alternatives is provided below.

- **Alternative 1** – This alternative includes all long term improvements outlined above, while maintaining the three (3) existing lanes along Park Avenue as well as the existing roadway width. Install new signals at both 8th Street and 9th Street intersections with Park Avenue.
- **Alternative 2** – This alternative includes all improvements outlined in Alternative 1, while reducing Park Avenue from three (3) lanes to two (2) lanes.
- **Alternative 3** – This alternative includes all improvements outlined in Alternative 2, while widening Park Avenue at intersections to provide additional turn lanes, and signaling 8th and 9th Streets at Park Avenue.

3.2.1 Feasibility Evaluation – Conceptual Improvements

Short and long term improvements were evaluated for feasibility based on ODOT design criteria, performance concerns, and potential costs. Table 3.2 highlights the design criteria that were used for selected improvements, the factors that are considered for these improvement alternatives, and the conceptual design of the improvement based on those factors. A detailed illustration of the recommended improvements is shown in Figure 3.1.

After the feasibility evaluation, all short term improvements, and long term improvement Alternative 1 are recommended for implementation. It may be noted that among the recommended short term improvements, the eastbound left turn lane at 6th Street did not meet ODOT criteria for installation. As a consequence, this improvement cannot be implemented through funding from state or federal sources. However, as the traveled way along Park Avenue features adequate space to maintain the existing two (2) through lanes and add a left turn lane, this improvement can be implemented through restriping, a low cost solution.

Long term improvement Alternative 1 is recommended for implementation along the Park Avenue corridor. This alternative represents the most efficient means to improve traffic operations along Park Avenue (through the installation of traffic signals where warranted) while avoiding prohibitive costs (e.g., potential right-of-way acquisition). Information regarding why Alternatives 2 and 3 were ultimately not recommended as provided below.

- Alternative 2 (reduction of Park Avenue from a three (3) lane roadway to a two (2) lane roadway):**
 Not recommended – This alternative raises concerns regarding traffic operations. Two (2) intersections along Park Avenue currently operate at LOS E or worse and a reduction in the number of lanes could exacerbate vehicle delays. Further, with several commercial businesses having primary access from Park Avenue, the elimination of the center left turn lane poses a safety concern (possible increase in rear end collisions).
- Alternative 3 (widening Park Avenue to provide additional turn lanes at intersections):**
 Not recommended – This alternative raises concerns regarding potential right-of-way acquisition as the proximity of a number of buildings to the traveled way along Park Avenue may make widening at any location cost prohibitive. Further, any improvements to traffic operations that could be achieved through widening and the addition of turn lanes could also likely be achieved through the installation of traffic signals (see Alternative 1) at un-signalized intersections.

Table 3.2 Conceptual Design Considerations			
Design Consideration	Design Criteria	Input (s) / Guidance	Conceptual Design
Short Term Improvements (Safety and Operational Improvements): Recommended Alternative			
Placement of "sharrow" pavement markings	Ohio Manual on Uniform Traffic Control Devices (OMUTCD)	Placed immediately after intersection and spaced at intervals no more than 250'	"Sharrow" pavement markings placed based on OMUTCD guidance
Warrant for eastbound left turn lane at 6 th Street	Ohio State Highway Access Management Manual	Number of lanes, speed limit ≤ 40mph, design hour volume	Does not meet warrant for installation (See Appendix B) – Install
Warrant for eastbound left turn lane at 8 th Street	Ohio State Highway Access Management Manual	Number of lanes, speed limit ≤ 40mph, design hour volume	Meets warrant for installation (See Appendix B) - Install
Warrant for westbound left turn lane at 8 th Street	Ohio State Highway Access Management Manual	Number of lanes, speed limit ≤ 40mph, design hour volume	Meets warrant for installation (See Appendix B) - Install
Warrant for eastbound left turn lane at 9 th Street	Ohio State Highway Access Management Manual	Number of lanes, speed limit ≤ 40mph, design hour volume	Meets warrant for installation (See Appendix B) – Install
Warrant for westbound left turn lane at 9 th Street	Ohio State Highway Access Management Manual	Number of lanes, speed limit ≤ 40mph, design hour volume	Meets warrant for installation (See Appendix B) - Install
Pedestrian refuge island	Ohio Location & Design Manual (L & D) Section 401.8.3	At grade, 6 foot minimum width	At grade, 12' wide.
Curb ramps	Ohio Department of Transportation Standard Construction Drawing BP-7.1	4' minimum landing area, ramp slope 12:1 max, ramp flares, 10:1 max	Designed to standards outlined in BP-7.1
Restriping	Ohio Manual on Uniform Traffic Control Devices (OMUTCD)	Speed limit, lane width	Designed to meet OMUTCD standards
Redefine driveways	Ohio Location & Design Manual (L & D) Section 803.5.1, Figure 802-2	35' maximum width, at least 20' (along curb) from corner bisector	Designed to meet L & D manual standards.
Long Term Improvements – Alternative 1 (Safety and Operational Improvements): Recommended Alternative			
Addition of sidewalks	Ohio Location & Design Manual (L & D) Figure 306-1E	Commercial roadways in urban areas should have sidewalk installed on both sides	North side of Park Drive from 9 th to Coryville Rd (from Ironton Hills to EB 52 Ramp, sidewalk installed behind guardrail)
Mast arm mounted lane use signs	Ohio Manual on Uniform Traffic Control Devices (OMUTCD) section 2B.19.05	Lane use signs should be placed over lanes in which: through lanes become mandatory turn lanes and other lane use regulations are present that would be unexpected by unfamiliar drivers	Placed in advance of US-52 freeway onramps.
Pedestrian signals	Ohio Manual on Uniform Traffic Control Devices (OMUTCD) chapter 4E	Install if it is necessary to assist pedestrians in deciding when to begin crossing the roadway in the chosen direction	Countdown signals installed at existing signal locations where sidewalks, ramps, and crosswalks are being installed.

Table 3.2 (Cont'd) Conceptual Design Considerations			
Design Consideration	Design Criteria	Input (s) / Guidance	Conceptual Design
Long Term Improvements – Alternative 1 (Safety and Operational Improvements): Recommended Alternative (Cont'd)			
Restriping	Ohio Manual on Uniform Traffic Control Devices (OMUTCD)	Speed limit, lane width	Designed to meet OMUTCD standards
New traffic signals	Ohio Manual on Uniform Traffic Control Devices (OMUTCD) chapter 4C (Studies and Factors Justifying Traffic Control Signals)	Traffic volumes must meet signal warrant criteria	Intersections along Park Avenue at 8 th Street and 9 th Street meet OMUTCD warrants for the installation of traffic signals.
Alternative 2 (Alternative 1 + Traffic Calming Improvements): Not Recommended			
Converting Park Avenue from a three (3) lane roadway to a two (2) lane roadway;	Ohio Location & Design Manual (L & D) 502.10	Capacity analysis, length of roadway	Given existing traffic operational concerns, a reduction in roadway capacity along Park Avenue is not feasible.
Alternative 3 (Alternative 1 + Capacity Improvements): Not Recommended			
Widening Park Avenue at the intersections to provide for additional turn lanes;	Ohio State Highway Access Management Manual	Capacity analysis, lane warrants, required width of all lanes, number of lanes on approach	Proximity of existing buildings to roadway is likely to make widening cost prohibitive, traveled way along Park Avenue features sufficient space to accommodate turning lanes, and traffic operations can be improved through traffic signal timing.

3.2.2 Future 8th Street & 9th Street Access Option and NB Right Turn Lane to US52 EB On-Ramp

At the time that this traffic study was being conducted, there were on-going plans developing by a public-private partnership to redevelop the couple blocks south of Park Avenue involving 8th and 9th Streets over to Washington Street. The redevelopment plans were only in the early stages of planning and not finalized enough to provide details on the various types of land uses and sizes that would be proposed, thus traffic generation predictions were not feasible at the time of this study. The alternative access options at 8th Street and 9th Street to Park Avenue that was discussed as a potential once the future redevelopment occurs



is to revise 9th Street to either a one-way street towards Park Avenue, or to maintain it as a two-way street and limit movements at Park Avenue to be right turn only with a raised island (see graphic below). All left turn movements from southbound Park Avenue that turn onto 9th Street would be redirected to a new traffic signal at 8th Street which would be a full access intersection that services the redeveloped area south of Park Avenue over to Washington Street. It is recommended that this alternative access be explored in further detail should the development plans become finalized in their recommendations for what types of proposed developments/sizes of uses become known so that traffic generation and impacts can be assessed to determine if proposed access changes at 8th Street and 9th Street would adequately provide traffic operations to acceptable levels of service of operation. If the access changes are implemented that eliminates the southbound left turn movement to 9th Street, this provides the opportunity to re-purpose the pavement width between 9th Street and the US52 EB On-Ramp such that there is a potential to add an exclusive right turn lane to the on-ramp for the northbound to eastbound movement to enter US52. There may be a need for minimal strip take widening near the intersection of 9th Street along the King's Daughters urgent care facility, which would need determined with established right-of-way limits from a topographic survey. Adding an exclusive right turn lane to US52 EB on-ramp would improve overall intersection operations from a LOS C (20.7 seconds of delay) to a LOS B (14.2 seconds) in the design year traffic scenario. Both conditions (with a right turn lane and without a right turn lane) provide acceptable LOS based on capacity analyses (see Appendix C).

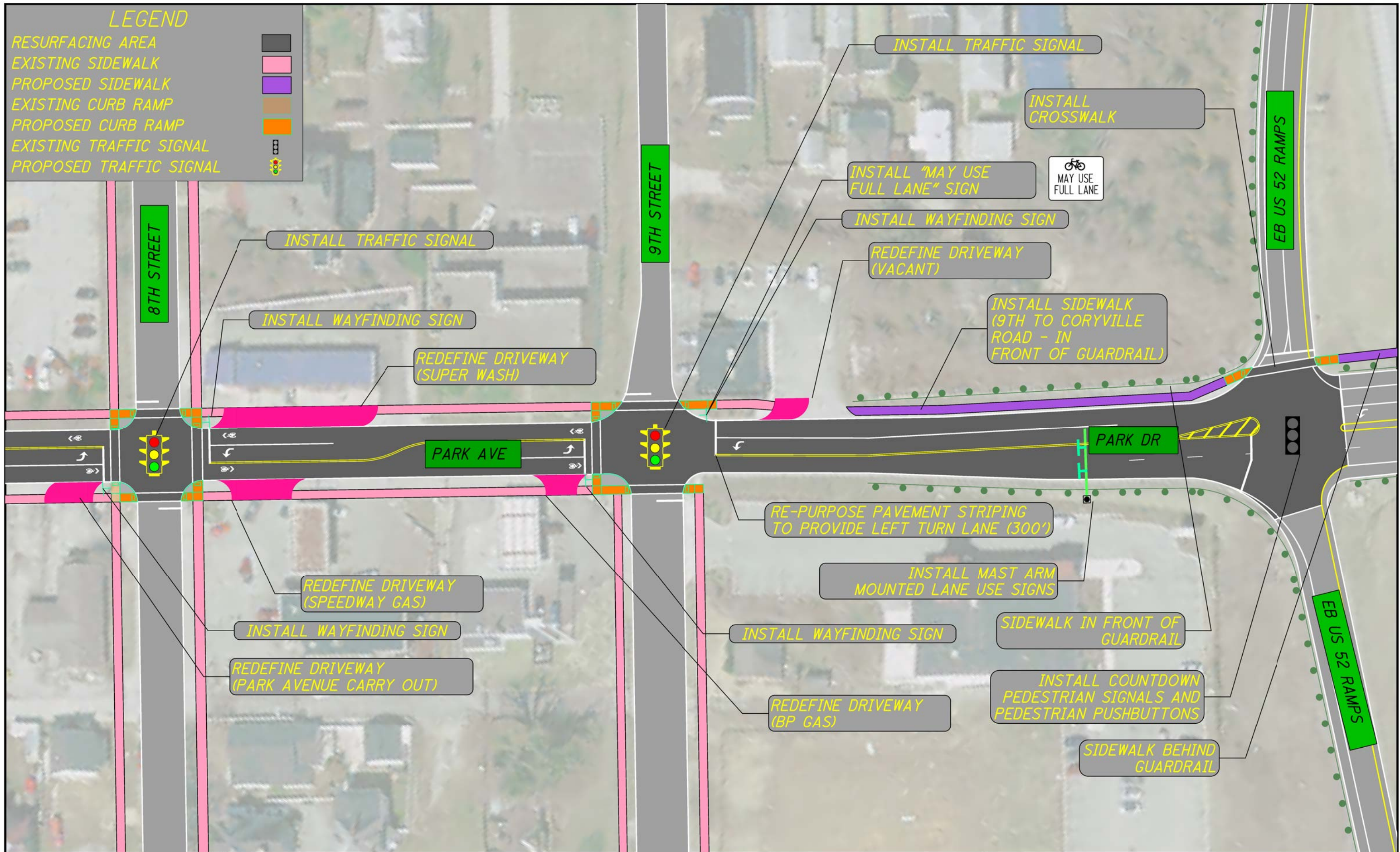
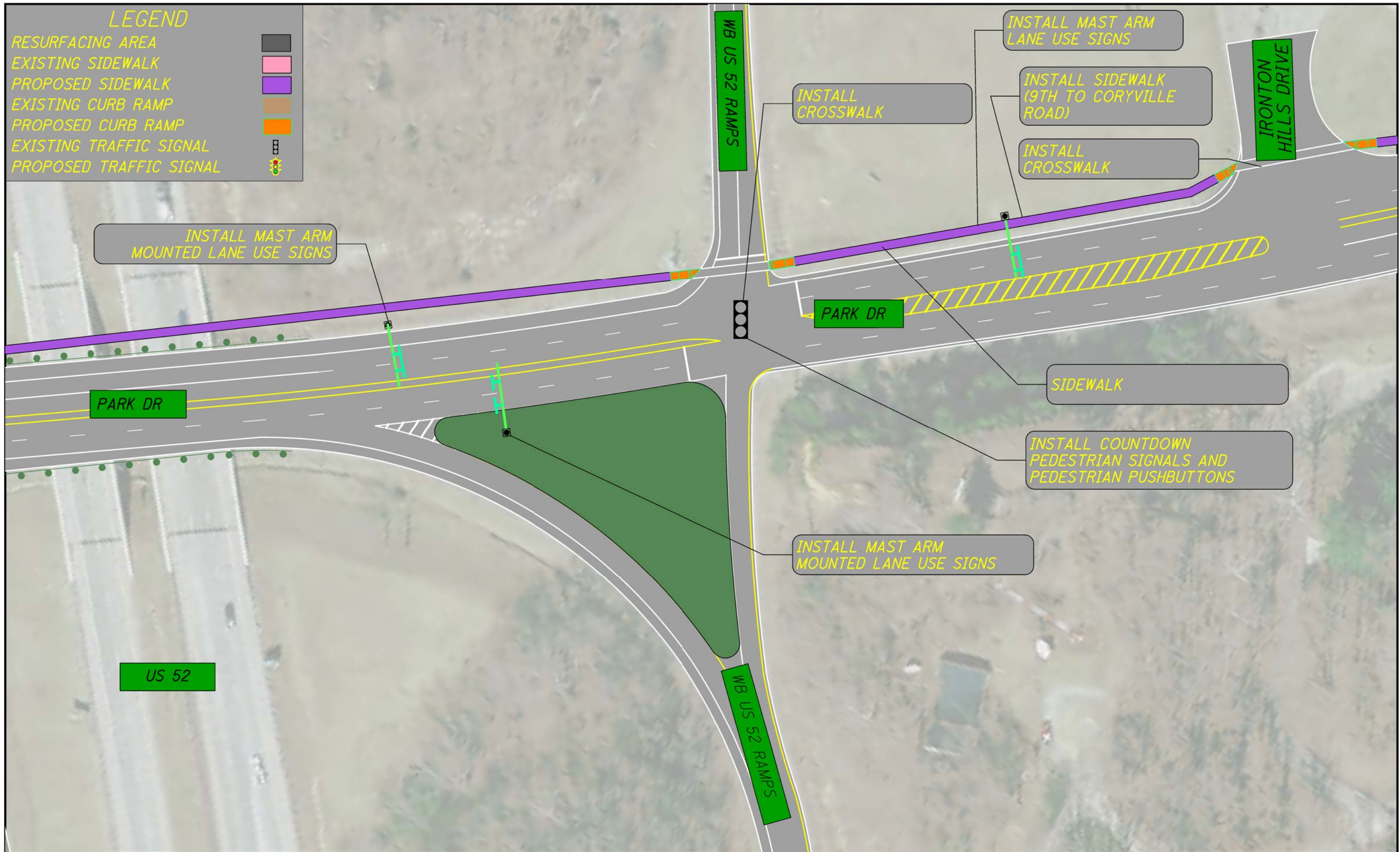


FIGURE 3.1 - CONCEPTUAL IMPROVEMENTS
PARK AVENUE CORRIDOR





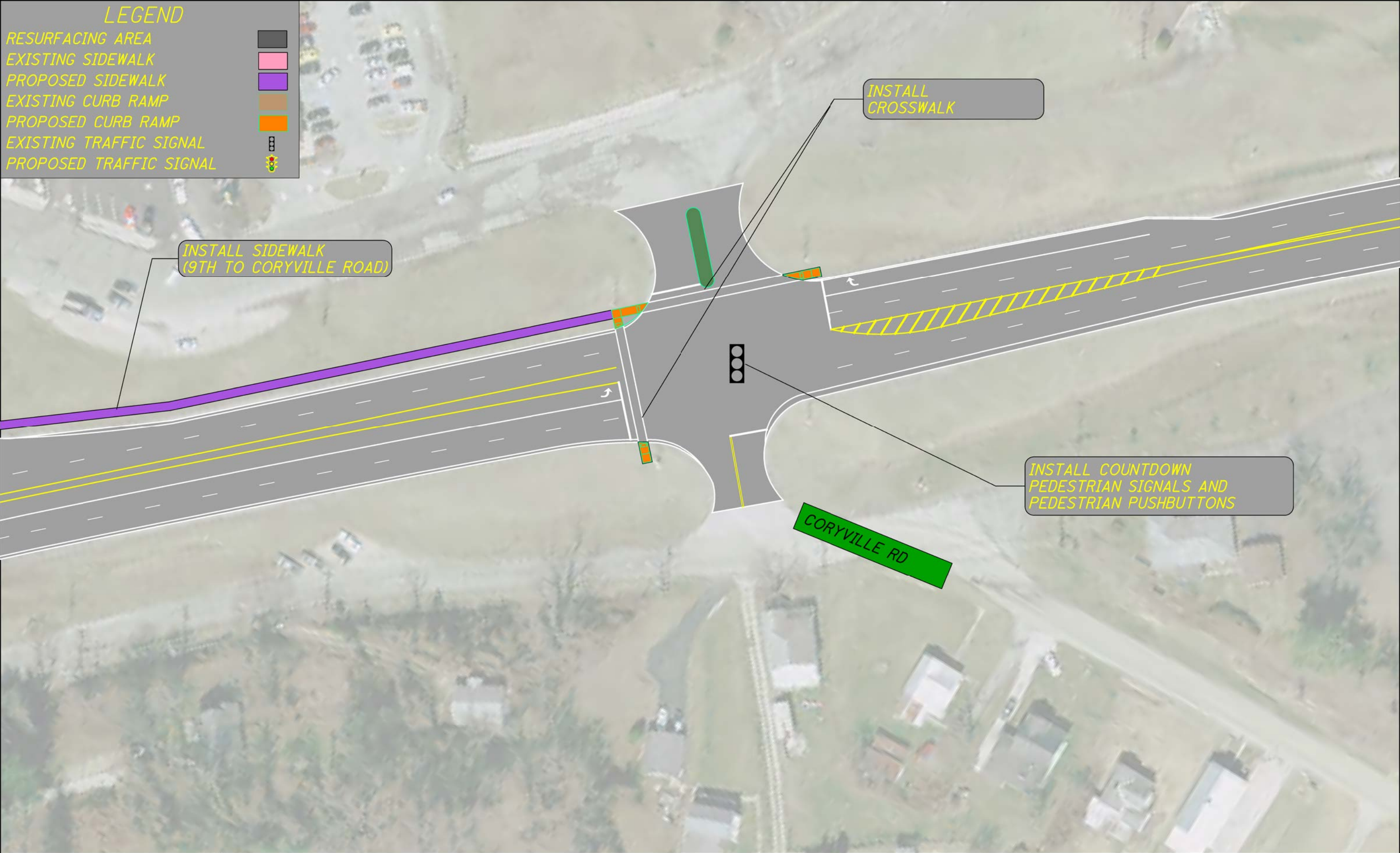


FIGURE 3.1 - CONCEPTUAL IMPROVEMENTS
PARK AVENUE CORRIDOR

3.2.3 Traffic Operations – Alternative 1

Projected traffic operations for the Build conditions (i.e., short and long term improvement Alternative 1) during the opening design year are shown in Table 3.3. Operations for the No Build scenario are also shown for comparison.

Table 3.3 Alternative 1 Level-of-Service (Delay)				
Location	Opening Year (2020)		Design Year (2040)	
	No Build (No Improvements)	Build (w/ Improvements)	No Build (No Improvements)	Build (w/ Improvements)
AM Peak Hour				
Park Avenue & 6 th Street (Signalized)	B (14.2)	C (24.0)	B (15.5)	B (15.0)
Park Avenue & 7 th Street (Un-Signalized)	F (108.8)	F (64.7)	F (215.4)	F (123.1)
Park Avenue & 8 th Street (Signalized)	F (252.2)	C (20.1)	F (552.4)	B (18.2)
Park Avenue & 9 th Street (Signalized)	F (1030.8)	C (22.1)	F (1774.5)	C (20.2)
Park Drive & EB US 52 Off Ramp (Signalized)	B (17.0)	C (23.4)	C (20.4)	C (20.4)
Park Drive & WB US 52 Off Ramp (Signalized)	B (14.5)	B (19.7)	B (16.7)	B (16.7)
PM Peak Hour				
Park Avenue & 6 th Street (Signalized)	B (16.9)	B (16.0)	B (19.0)	B (18.5)
Park Avenue & 7 th Street (Un-Signalized)	F (63.8)	F (63.8)	F (700.2)	F (433.6)
Park Avenue & 8 th Street (Signalized)	F (1113.0)	B (15.5)	F (552.4)	B (18.2)
Park Avenue & 9 th Street (Signalized)	F (755.7)	C (24.7)	F (1774.5)	C (20.2)
Park Drive & EB US 52 Off Ramp (Signalized)	B (16.0)	B (19.6)	B (17.5)	C (20.7)
Park Drive & WB US 52 Off Ramp (Signalized)	A (11.0)	C (13.8)	B (11.7)	B (15.1)

During the AM and PM peak hours under the Opening Year and Design Year Build conditions, five (5) of the six (6) project corridor intersections had traffic operations of C or better. The intersection of Park Avenue & 7th Street remained at LOS F from the No Build condition. A significant improvement in traffic operations is projected at intersections along Park Avenue at 8th Street and 9th Street, with LOS improving from F to C or better at both intersections during all four (4) analysis scenarios.. It may be noted that improving LOS at Park Avenue & 9th Street required the implementation of protected-permissive phasing along the westbound approach.

3.2.4 Traffic Operations – Future 8th Street & 9th Street Access Option on Park Avenue for Development Plan

Traffic operations for the alternative to convert 9th Street to northbound right-in/right-out (RIRO) access (with 8th Street accommodating the diverted traffic) as a part of a development plan were also evaluated using Synchro 9. This alternative was evaluated for the Design Year (2040) only. The results of this analysis are provided in Table 3.4. The table indicates that with the conversion of 9th Street to a RIRO, the intersection of Park Avenue & 8th Street operates at LOS C during the AM and PM peak hours. Both LOS values for this intersection represent increases from Alternative 1 (LOS B to LOS C). The Park Avenue & 9th Street intersection operates at LOS D during the AM peak hour, and LOS E during the PM peak hour. Both of these LOS values represent an increase in LOS from Alternative 1 (LOS C to LOS D during the AM peak and LOS C to LOS E during the PM peak. It may be noted that the traffic operations associated with this option are based on Design Year (20 year) traffic volumes. If the development plan is implemented, traffic operations for this configuration at 8th and 9th Streets along Park Avenue

should be monitored. Further, once future development land uses are known, traffic operations for this intersection should be evaluated with updated traffic projections.

Table 3.4 Alternative 1 Level-of-Service (Delay)			
Location	Design Year (2040)		
	No Build	Build (Alternative 1)	Build (9 th RIRO)
AM Peak Hour			
Park Avenue & 8 th Street (Signalized)	F (552.4)	B (18.2)	C (30.1)
Park Avenue & 9 th Street (Un-Signalized – Right In/Right Out)	F (1774.5)	C (20.2)	D (28.3)
PM Peak Hour			
Park Avenue & 8 th Street (Signalized)	F (552.4)	B (18.2)	C (34.3)
Park Avenue & 9 th Street (Un-Signalized – Right In/Right Out)	F (1774.5)	C (20.2)	E (38.5)

3.2.5 Potential Safety Improvement

Six (6) crash modification factors (CMFs) were used in the safety analysis of the recommended improvements. CMFs estimate enhancements in safety (through changes to predicted crash frequency; see Section 2.4 for discussion on predicted crash frequency) associated with specific roadway improvements and are developed for roadway segments and intersections. CMFs used for this study include:

- Change in driveway density from X to Y (segment related) – 16% reduction in all crash types
- Install left-turn lane (intersection related) – 21% reduction (excluding PDO crashes)
- Install pedestrian countdown timer (intersection related) – 70% reduction (pedestrian crashes only)
- Install pedestrian signals (intersection related) – 1-12% reduction (varies by location, see appendix)
- Install raised median with marked crosswalk (intersection related) – 44% reduction in all crash types
- Install traffic signal (intersection related) – 39% reduction in all crash types

Table 3.5 summarizes the potential improvements in safety (through changes to predicted crash frequency) along the project corridor associated with the recommended improvements. The improvements could reduce crashes along the corridor by 3.9 crashes per million vehicle miles traveled, with the most significant potential reductions in crashes occurring at the intersections of Park Avenue & 8th Street, Park Avenue & 9th Street, and Park Avenue & Coryville Road. Minor potential improvements to safety are projected along Park Avenue at 7th Street, the EB US 52 Ramps, and the WB US 52 Ramps. No potential improvements are projected along Park Avenue at 6th Street.

Table 3.5 Crash Frequency Analysis (per Million Vehicle Miles Traveled)				
Location	Existing Predicted Crashes	CMF(s) Applied	Proposed Predicted Crashes	Overall Change in Predicted Crashes
Roadway Segments				
Park Avenue (S. of 6 th St.)	0.10	None	0.10	0.00
Park Avenue (6 th St. to 7 th St.)	0.18	Change in driveway density from X to Y	0.15	-0.03
Park Avenue (7 th St. to 8 th St.)	0.26	None	0.26	0.00
Park Avenue (8 th St. to 9 th St.)	0.25	None	0.25	0.00
Park Avenue (N. of 9 th St.)	0.45	None	0.45	0.00
Park Avenue (9 th St. to EB US 52 Ramps)	0.43	None	0.43	0.00
Park Avenue (EB US 52 Ramps to WB US 52 Ramps)	0.22	None	0.22	0.00
Park Avenue (WB US 52 Ramps to Coryville Road)	0.27	None	0.27	0.00
Park Avenue (9 th St. to EB US 52 Ramps)	0.13	None	0.13	0.00
Intersections				
Park Avenue & 6 th St.	3.89	None	3.89	0.00
Park Avenue & to 7 th St.	0.93	Install left-turn lane, install raised median with marked crosswalk	0.86	-0.07
Park Avenue & 8 th St.	2.07	Install left turn lane, install pedestrian countdown timer, install pedestrian signals, install a traffic signal	1.10	-0.97
Park Avenue & 9 th St.	4.47	Install left turn lane, install pedestrian countdown timer, install pedestrian signals, install a traffic signal	2.40	-2.07
Park Avenue & EB US 52 Ramps	4.20	Install pedestrian countdown timer, install pedestrian signals	4.03	-0.17
Park Avenue & WB US 52 Ramps	4.37	Install pedestrian countdown timer, install pedestrian signals	4.33	-0.04
Park Avenue & Coryville Road	4.60	Install pedestrian countdown timer, install pedestrian signals	4.05	-0.55
Potential for Safety Improvement (Corridor)				-3.90

3.2.6 Cost Estimate and Benefit/Cost Ratio

The following Table 3.6 summarizes the planning level cost estimate for the recommended alternative (Alternative 1) based on various funding sources. The total planning level cost estimate for all improvements is \$1,242,800, with an estimate of \$87,000 for the short term improvements and \$1,155,800 for the long term improvements. Local sources will provide funding for the proposed improvements for the required matches of various funding programs.

Table 3.6 Planning Level Cost Estimate and Potential Funding Sources (Alt. 1)					
Funding Sources	Fiscal Year (ODOT)	Local Contribution (TBD)	MPO Programs	ODOT Safety Program	Total
Short Term Improvements					
Preliminary Engineering / Environmental Studies / NEPA	2018	\$10,000	Apply for funds as available	Apply for funds as available	\$10,000
Detailed Design	2018	\$3,000	Apply for funds as available	Apply for funds as available	\$3,000
Right-of-Way/ Utilities	2018	\$3,000	Apply for funds as available	Apply for funds as available	\$3,000
Materials/ Construction	2018	\$66,000	Apply for funds as available	Apply for funds as available	\$66,000
Construction Engineering	2018	\$5,000	Apply for funds as available	Apply for funds as available	\$5,000
Subtotal	2018	\$87,000			\$87,000
Long Term Improvements					
Preliminary Engineering / Environmental Studies / NEPA	2020	\$130,000	Apply for funds as available	Apply for funds as available	\$130,000
Detailed Design	2020	\$43,000	Apply for funds as available	Apply for funds as available	\$43,000
Right-of-Way/ Utilities	2020	\$43,000	Apply for funds as available	Apply for funds as available	\$43,000
Materials/ Construction	2020	\$869,800	Apply for funds as available	Apply for funds as available	\$869,800
Construction Engineering	2020	\$70,000	Apply for funds as available	Apply for funds as available	\$70,000
Subtotal	2020	\$1,155,800			\$1,155,800
Total		\$1,242,800			\$1,242,800

The benefit/cost ratio for the project is illustrated in Figure 3.2. As the estimated increase in safety related to the implementation of the Alternative 1 improvements is valued at \$1,745,020.99 and the estimated cost for the improvements is \$1,242,800, the benefit/cost ratio is 1.40. This represents a net societal benefit of \$502,220.99.

Benefit - Cost Calculator					
Net Present Value of Project				\$1,242,800.00	
Net Present Value of Safety Benefits				\$1,745,020.99	
Net Benefit				\$502,220.99	
Benefit / Cost Ratio				1.40	

Figure 3.2 Benefit/Cost Ratio

4.0 SUMMARY AND RECOMMENDATIONS

This traffic study was conducted to document the safety concerns and needed improvements for the existing roadway, intersection, and pedestrian conditions of the Park Avenue corridor from 6th Street to the US 52 Off Ramp. The report identifies the elements of need for the project which include safety and operational improvements along with the upgrading of pedestrian facilities to meet ADA requirements.

The current need to improve safety conditions is a result of the area experiencing 54 crashes over the years of 2014-2016 with sixteen (16) of the crashes being injury crashes, and 38 of the crashes being property damage only (PDO) crashes. The resulting relative severity index (RSI) for the corridor is 39,676. After evaluating the crash frequencies for overall potential for improvement, the results suggest that there are segments or intersections with crash patterns in need of immediate remediation however no individual crash types needed immediate remediation.

Existing conditions analyses were conducted for the AM and PM peak hours. During the AM peak hour under existing conditions, intersections along Park Avenue at 8th Street and 9th Street had LOS values of E, and F respectively. During the PM peak hour under existing conditions, intersections along Park Avenue at 7th Street, 8th Street, and 9th Street, all had LOS values of E or worse. For the AM and PM No Build conditions for the Opening Year (2020) and Design Year (2040), delays increased at every single intersection from the existing conditions. The intersections along Park Avenue at 7th Street, 8th Street, and 9th Street, all had LOS values of F with very significant delays for the No Build conditions.

To address the needs previously discussed, it is recommended that the following conceptual improvements be made:

- Roadway resurfacing (6th Street to 9th Street)
- Signal timing improvements to minimize delays
- Pavement restriping to provide a shared use bike lane, along with “sharrow” pavement markings on Park Avenue (6th Street to 9th Street.) “Share the Road” signs will also be installed for biker safety.
- Decrease the possibility of intersection crashes with the addition of EB Left turn lanes along Park Avenue at the intersections of 6th Street, 8th Street, and 9th Street, and the addition of WB Left turn lanes along Park Avenue at the intersections of 7th Street, 8th Street, and 9th Street
- Installing a traffic signal along Park Avenue at the intersections of 8th Street and 9th Street to reduce delay and congestion from cars attempting to cross multiple lanes of traffic
- Installation of pedestrian signal heads, push buttons, and replacement of curb ramps to meet ADA (Americans with Disabilities Act) standards, and increase pedestrian safety.
- Replacement of some existing sidewalks along with the addition of new sidewalks is proposed for increased pedestrian safety
- Several driveways along Park Avenue will be closed or redefined. Less driveways along the Park Avenue corridor will result in less rear end crashes
- Mast arm lane use signs will be installed at the EB and WB US 52 Off Ramps for better driver visibility
- To further increase pedestrian safety, a pedestrian refuge island will be installed and pedestrian warning signs will be placed along the EB and WB approaches at the 7th Street intersection and the East leg of the existing pedestrian crossing will be removed

Analysis was performed on the study area for the Design Year (2040) with the recommended improvements being made. During the AM Peak hour, five of the 6 intersection LOS values were performing at LOS C or better. The one intersection of Park Avenue and 7th Street remained LOS F but the delay did not change. During the PM Peak hour, four of the six intersections were performing at LOS C or better. The two intersections along Park Avenue at 7th Street and 9th Street remained at LOS F however; the delay either remained the same or improved significantly.

The recommended improvements are expected to benefit the area significantly with a potential reduction in crash frequencies of nearly four (4) per year. The estimated societal savings as a result in this potential reduction in crash

frequencies is \$1,745.020.99. As the total estimated cost of the short term and long term improvements is \$1,242.800, their associated benefit/cost ratio is 1.40. The City of Ironton is expected to use the analyses and conclusions presented in this study to apply for ODOT Small City Grant funds along with other various funding sources.

APPENDIX A TRAFFIC VOLUMES




[List View](#)
[All DIRs](#)

Record	⏮ ⏪ 1 ⏩ ⏭	of 1	Goto Record	go
Location ID	886000		MPO ID	
Type	SPOT		HPMS ID	
On NHS	No		On HPMS	No
LRS ID	CLAWCR00007C*C		LRS Loc Pt.	0.397
SF Group	Urban Minor Arterial (4);Collector(5-6);Local(7)		Route Type	CR
AF Group	URBAN_MINOR_ARTERIAL		Route	00007
GF Group	URBAN_MINOR_ARTERIAL ▶		Active	Yes
Class Dist Grp	▶		Category	HPMS Collector
WIM Group	▶			
QC Group	Default			
Funct'l Class	Minor Arterial		Milepost	
Located On	PARK AVE			
Loc On Alias				
BETWEEN	S 8TH ST AND S 9TH ST			
More Detail ▶				
STATION DATA				

Directions: [2-WAY](#) [EB](#) [WB](#) [?](#)
AADT [?](#)

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2016	14,315 ³						Grown from 2015
2015	13,738 ³						Grown from 2014
2014	13,593 ³						Grown from 2013
2013	13,942						
2010	14,561						

Travel Demand Model

Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV
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VOLUME COUNT

Date	Int	Total
Wed 1/20/2010	60	14,414

VOLUME TREND [?](#)

Year	Annual Growth
2016	4%
2015	1%
2014	-3%
2013	-1%

SPEED

Date	Int	Pace	85th	Total
No Data				

CLASSIFICATION

Date	Int	Total
Wed 1/20/2010	60	14,414

PER VEHICLE

WEIGH-IN-MOTION 				
	Date	Axles	Avg GVW	Total
No Data				

	Date	Axles	85th	Total
No Data				

GAP			
	Date	Int	Total
No Data			

PARTIAL COUNT

Date	Int	24-Hr Total

NOTES/FILES			
	Note	Date	



Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: EB 52 Off Ramp On Ramp
Site Code:
Start Date: 02/21/2017
Page No: 1

Turning Movement Data

Start Time	Park Avenue Southbound					On Ramp Westbound		Park Avenue Northbound					Off Ramp Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
2:30 PM	134	34	0	0	168	0	0	52	134	0	0	186	23	0	3	0	26	380
2:45 PM	177	50	0	0	227	0	0	49	132	0	0	181	26	0	12	0	38	446
Hourly Total	311	84	0	0	395	0	0	101	266	0	0	367	49	0	15	0	64	826
3:00 PM	152	36	0	0	188	0	0	66	135	0	0	201	26	0	16	1	42	431
3:15 PM	152	48	0	0	200	0	0	50	135	0	0	185	22	0	20	0	42	427
3:30 PM	171	50	0	0	221	0	0	65	149	0	0	214	16	0	18	3	34	469
3:45 PM	178	43	0	0	221	0	0	50	158	0	0	208	31	0	19	2	50	479
Hourly Total	653	177	0	0	830	0	0	231	577	0	0	808	95	0	73	6	168	1806
4:00 PM	138	38	0	0	176	0	0	59	156	0	0	215	32	0	16	2	48	439
4:15 PM	160	44	0	0	204	1	0	70	149	0	0	219	27	0	8	2	35	458
4:30 PM	130	41	0	0	171	0	0	65	160	0	0	225	26	0	11	3	37	433
4:45 PM	129	38	0	0	167	0	0	55	132	0	0	187	25	0	22	0	47	401
Hourly Total	557	161	0	0	718	1	0	249	597	0	0	846	110	0	57	7	167	1731
5:00 PM	138	42	0	0	180	0	0	73	165	0	0	238	33	0	10	0	43	461
5:15 PM	143	40	0	0	183	0	0	51	146	0	0	197	22	0	13	3	35	415
5:30 PM	131	27	0	0	158	0	0	54	139	0	0	193	42	0	17	1	59	410
5:45 PM	134	47	0	0	181	0	0	38	119	0	0	157	21	0	11	0	32	370
Hourly Total	546	156	0	0	702	0	0	216	569	0	0	785	118	0	51	4	169	1656
6:00 PM	123	33	0	0	156	0	0	37	115	0	0	152	27	0	16	1	43	351
6:15 PM	103	31	0	0	134	1	0	45	81	0	0	126	24	0	13	1	37	297
6:30 PM	115	33	0	0	148	0	0	33	110	0	0	143	19	0	11	2	30	321
6:45 PM	109	38	0	0	147	0	0	34	93	0	0	127	20	0	10	0	30	304
Hourly Total	450	135	0	0	585	1	0	149	399	0	0	548	90	0	50	4	140	1273
7:00 PM	105	21	0	0	126	0	0	21	96	0	0	117	11	0	8	1	19	262
7:15 PM	80	33	0	0	113	0	0	23	99	0	0	122	13	0	4	2	17	252
7:30 PM	79	21	0	0	100	0	0	24	83	0	0	107	10	0	10	3	20	227
7:45 PM	97	21	0	0	118	7	0	21	72	0	0	93	10	0	9	1	19	230
Hourly Total	361	96	0	0	457	7	0	89	350	0	0	439	44	0	31	7	75	971
8:00 PM	73	28	0	0	101	1	0	25	91	0	0	116	3	0	9	0	12	229
8:15 PM	56	33	0	0	89	0	0	19	63	0	0	82	15	0	4	1	19	190
8:30 PM	59	21	0	0	80	0	0	15	68	0	0	83	10	0	1	0	11	174
8:45 PM	55	19	0	0	74	0	0	20	56	0	0	76	7	0	2	0	9	159
Hourly Total	243	101	0	0	344	1	0	79	278	0	0	357	35	0	16	1	51	752
9:00 PM	54	24	0	0	78	0	0	17	41	0	0	58	7	0	3	4	10	146
9:15 PM	54	12	0	0	66	0	0	16	39	0	0	55	4	0	6	1	10	131
9:30 PM	43	15	0	0	58	0	0	12	41	0	0	53	5	0	3	0	8	119
9:45 PM	37	8	0	0	45	0	0	18	46	0	0	64	4	0	5	0	9	118
Hourly Total	188	59	0	0	247	0	0	63	167	0	0	230	20	0	17	5	37	514

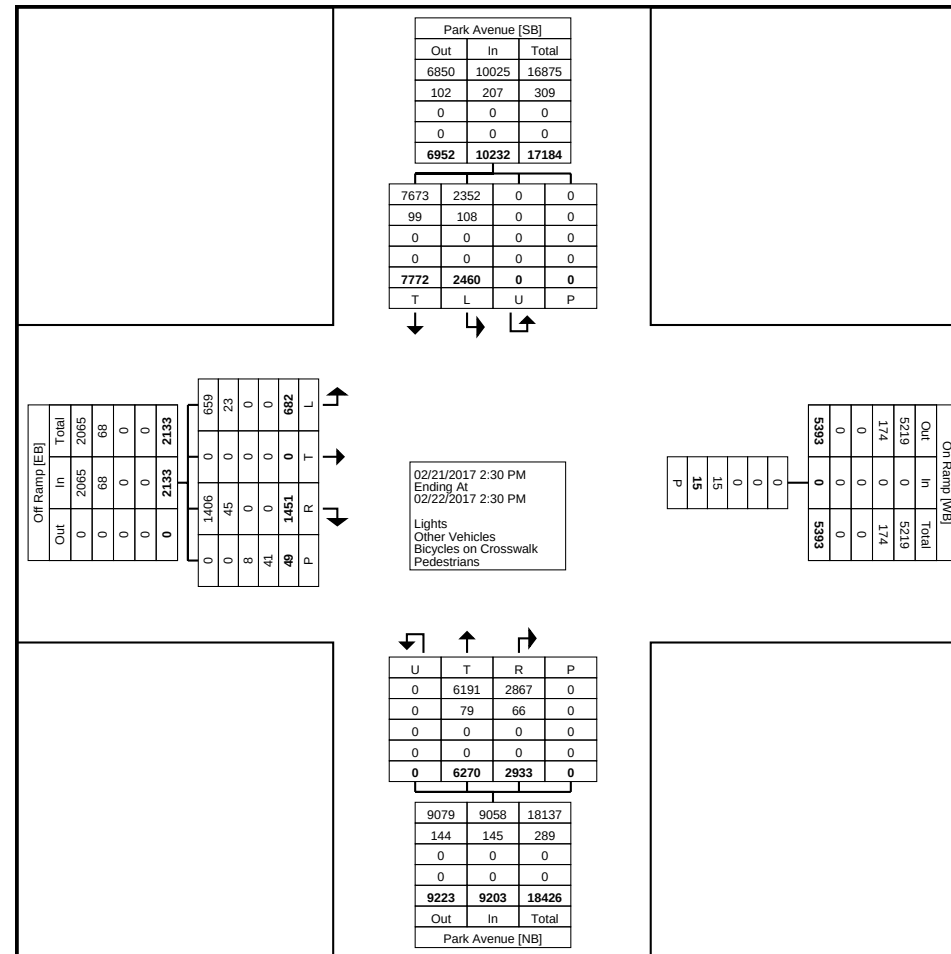
10:00 PM	52	15	0	0	67	2	0	12	56	0	0	68	2	0	0	1	2	137
10:15 PM	45	10	0	0	55	1	0	8	36	0	0	44	2	0	2	0	4	103
10:30 PM	40	8	0	0	48	0	0	9	31	0	0	40	4	0	3	0	7	95
10:45 PM	24	5	0	0	29	2	0	5	21	0	0	26	7	0	3	0	10	65
Hourly Total	161	38	0	0	199	5	0	34	144	0	0	178	15	0	8	1	23	400
11:00 PM	16	7	0	0	23	0	0	6	17	0	0	23	6	0	3	0	9	55
11:15 PM	26	11	0	0	37	0	0	11	22	0	0	33	1	0	1	0	2	72
11:30 PM	14	6	0	0	20	0	0	2	17	0	0	19	2	0	4	0	6	45
11:45 PM	24	2	0	0	26	0	0	4	24	0	0	28	2	0	1	0	3	57
Hourly Total	80	26	0	0	106	0	0	23	80	0	0	103	11	0	9	0	20	229
12:00 AM	22	2	0	0	24	0	0	4	17	0	0	21	1	0	2	0	3	48
12:15 AM	10	4	0	0	14	0	0	4	14	0	0	18	4	0	0	0	4	36
12:30 AM	15	1	0	0	16	0	0	3	6	0	0	9	1	0	0	0	1	26
12:45 AM	5	6	0	0	11	0	0	3	7	0	0	10	3	0	2	1	5	26
Hourly Total	52	13	0	0	65	0	0	14	44	0	0	58	9	0	4	1	13	136
1:00 AM	10	4	0	0	14	0	0	6	8	0	0	14	2	0	0	0	2	30
1:15 AM	6	2	0	0	8	0	0	1	4	0	0	5	1	0	2	1	3	16
1:30 AM	7	3	0	0	10	0	0	1	12	0	0	13	1	0	0	0	1	24
1:45 AM	2	1	0	0	3	0	0	1	3	0	0	4	1	0	1	0	2	9
Hourly Total	25	10	0	0	35	0	0	9	27	0	0	36	5	0	3	1	8	79
2:00 AM	8	3	0	0	11	0	0	5	2	0	0	7	2	0	0	0	2	20
2:15 AM	8	3	0	0	11	0	0	2	0	0	0	2	0	0	0	0	0	13
2:30 AM	7	2	0	0	9	0	0	2	6	0	0	8	1	0	0	0	1	18
2:45 AM	6	1	0	0	7	0	0	5	7	0	0	12	0	0	1	0	1	20
Hourly Total	29	9	0	0	38	0	0	14	15	0	0	29	3	0	1	0	4	71
3:00 AM	3	0	0	0	3	0	0	1	2	0	0	3	1	0	1	0	2	8
3:15 AM	7	2	0	0	9	0	0	3	1	0	0	4	0	0	0	0	0	13
3:30 AM	7	6	0	0	13	0	0	3	6	0	0	9	0	0	0	0	0	22
3:45 AM	4	4	0	0	8	0	0	2	2	0	0	4	0	0	1	0	1	13
Hourly Total	21	12	0	0	33	0	0	9	11	0	0	20	1	0	2	0	3	56
4:00 AM	9	8	0	0	17	0	0	4	5	0	0	9	2	0	0	0	2	28
4:15 AM	8	7	0	0	15	0	0	7	6	0	0	13	1	0	0	0	1	29
4:30 AM	11	8	0	0	19	0	0	3	6	0	0	9	2	0	4	0	6	34
4:45 AM	7	6	0	0	13	0	0	10	9	0	0	19	2	0	1	0	3	35
Hourly Total	35	29	0	0	64	0	0	24	26	0	0	50	7	0	5	0	12	126
5:00 AM	14	6	0	0	20	0	0	7	7	0	0	14	2	0	3	0	5	39
5:15 AM	27	13	0	0	40	0	0	8	16	0	0	24	6	0	4	0	10	74
5:30 AM	22	29	0	0	51	0	0	14	19	0	0	33	9	0	3	2	12	96
5:45 AM	28	27	0	0	55	0	0	26	19	0	0	45	10	0	6	0	16	116
Hourly Total	91	75	0	0	166	0	0	55	61	0	0	116	27	0	16	2	43	325
6:00 AM	37	25	0	0	62	0	0	22	25	0	0	47	10	0	3	1	13	122
6:15 AM	29	46	0	0	75	0	0	22	31	0	0	53	18	0	6	0	24	152
6:30 AM	66	43	0	0	109	0	0	29	34	0	0	63	19	0	7	0	26	198
6:45 AM	74	38	0	0	112	0	0	28	30	0	0	58	18	0	11	1	29	199
Hourly Total	206	152	0	0	358	0	0	101	120	0	0	221	65	0	27	2	92	671
7:00 AM	71	39	0	0	110	0	0	37	34	0	0	71	17	0	9	0	26	207
7:15 AM	87	51	0	0	138	0	0	48	64	0	0	112	26	0	15	0	41	291
7:30 AM	153	62	0	0	215	0	0	51	70	0	0	121	39	0	12	0	51	387
7:45 AM	206	45	0	0	251	0	0	50	81	0	0	131	54	0	13	0	67	449
Hourly Total	517	197	0	0	714	0	0	186	249	0	0	435	136	0	49	0	185	1334
8:00 AM	134	49	0	0	183	0	0	54	71	0	0	125	33	0	16	0	49	357
8:15 AM	154	40	0	0	194	0	0	34	70	0	0	104	19	0	9	0	28	326

8:30 AM	145	48	0	0	193	0	0	45	57	0	0	102	31	0	15	1	46	341
8:45 AM	137	47	0	0	184	0	0	42	56	0	0	98	31	0	9	0	40	322
Hourly Total	570	184	0	0	754	0	0	175	254	0	0	429	114	0	49	1	163	1346
9:00 AM	131	33	0	0	164	0	0	41	61	0	0	102	20	0	7	1	27	293
9:15 AM	111	31	0	0	142	0	0	40	77	0	0	117	22	0	10	0	32	291
9:30 AM	110	39	0	0	149	0	0	42	70	0	0	112	27	0	9	0	36	297
9:45 AM	107	25	0	0	132	0	0	46	69	0	0	115	16	0	7	0	23	270
Hourly Total	459	128	0	0	587	0	0	169	277	0	0	446	85	0	33	1	118	1151
10:00 AM	97	25	0	0	122	0	0	54	79	0	0	133	22	0	7	0	29	284
10:15 AM	109	36	0	0	145	0	0	38	82	0	0	120	19	0	13	0	32	297
10:30 AM	113	29	0	0	142	0	0	36	78	0	0	114	22	0	4	0	26	282
10:45 AM	115	45	0	0	160	0	0	46	87	0	0	133	23	0	9	1	32	325
Hourly Total	434	135	0	0	569	0	0	174	326	0	0	500	86	0	33	1	119	1188
11:00 AM	94	41	0	0	135	0	0	53	94	0	0	147	18	0	7	0	25	307
11:15 AM	125	30	0	0	155	0	0	49	91	0	0	140	21	0	9	1	30	325
11:30 AM	120	29	0	0	149	0	0	52	112	0	0	164	21	0	9	1	30	343
11:45 AM	132	40	0	0	172	0	0	46	109	0	0	155	25	0	5	1	30	357
Hourly Total	471	140	0	0	611	0	0	200	406	0	0	606	85	0	30	3	115	1332
12:00 PM	145	40	0	0	185	0	0	59	111	0	0	170	27	0	16	0	43	398
12:15 PM	132	37	0	0	169	0	0	57	111	0	0	168	22	0	12	0	34	371
12:30 PM	134	32	0	0	166	0	0	59	100	0	0	159	12	0	13	0	25	350
12:45 PM	123	24	0	0	147	0	0	39	91	0	0	130	21	0	6	0	27	304
Hourly Total	534	133	0	0	667	0	0	214	413	0	0	627	82	0	47	0	129	1423
1:00 PM	144	32	0	0	176	0	0	57	91	0	0	148	28	0	12	1	40	364
1:15 PM	132	31	0	0	163	0	0	61	105	0	0	166	22	0	8	0	30	359
1:30 PM	116	38	0	0	154	0	0	59	87	0	0	146	25	0	7	1	32	332
1:45 PM	123	29	0	0	152	0	0	64	113	0	0	177	27	0	6	0	33	362
Hourly Total	515	130	0	0	645	0	0	241	396	0	0	637	102	0	33	2	135	1417
2:00 PM	134	36	0	0	170	0	0	51	90	0	0	141	20	0	10	0	30	341
2:15 PM	129	44	0	0	173	0	0	63	128	0	0	191	37	0	13	0	50	



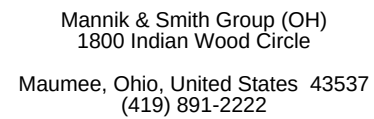
Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: EB 52 Off Ramp On Ramp
Site Code:
Start Date: 02/21/2017
Page No: 4



Turning Movement Data Plot

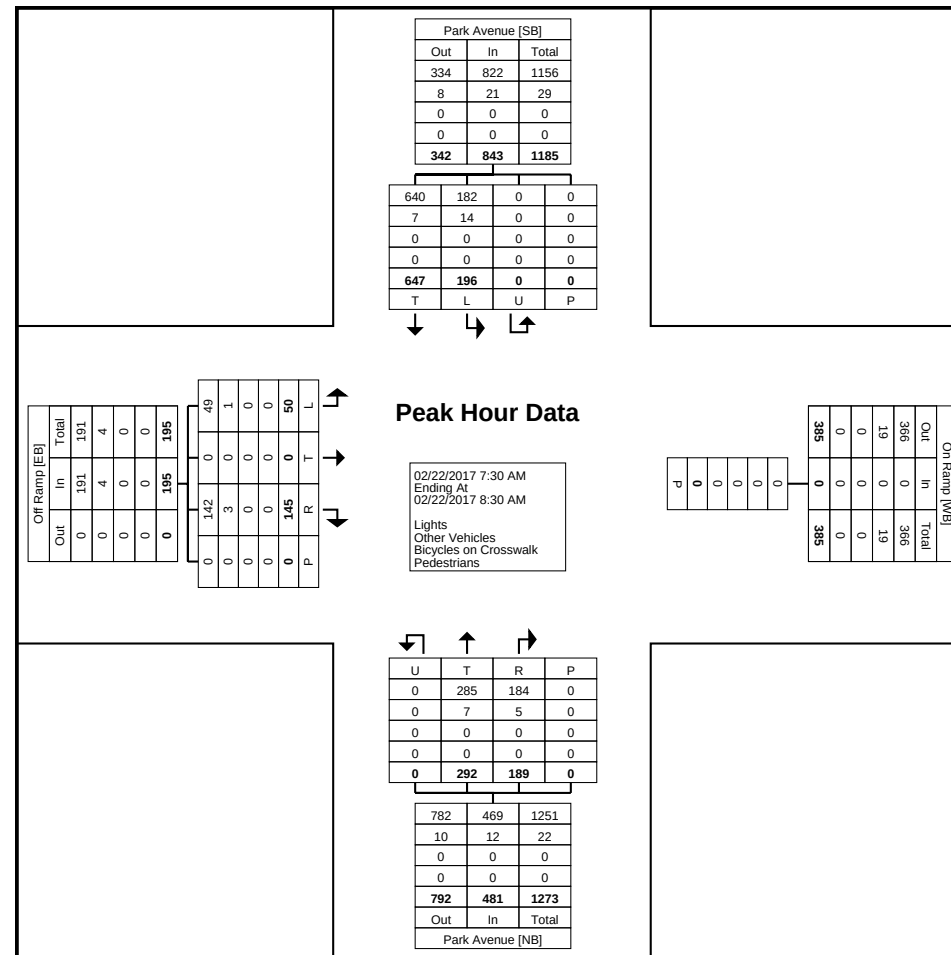






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Count Name: EB 52 Off Ramp On Ramp
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Mannik & Smith Group (OH)
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Count Name: EB 52 Off Ramp On Ramp
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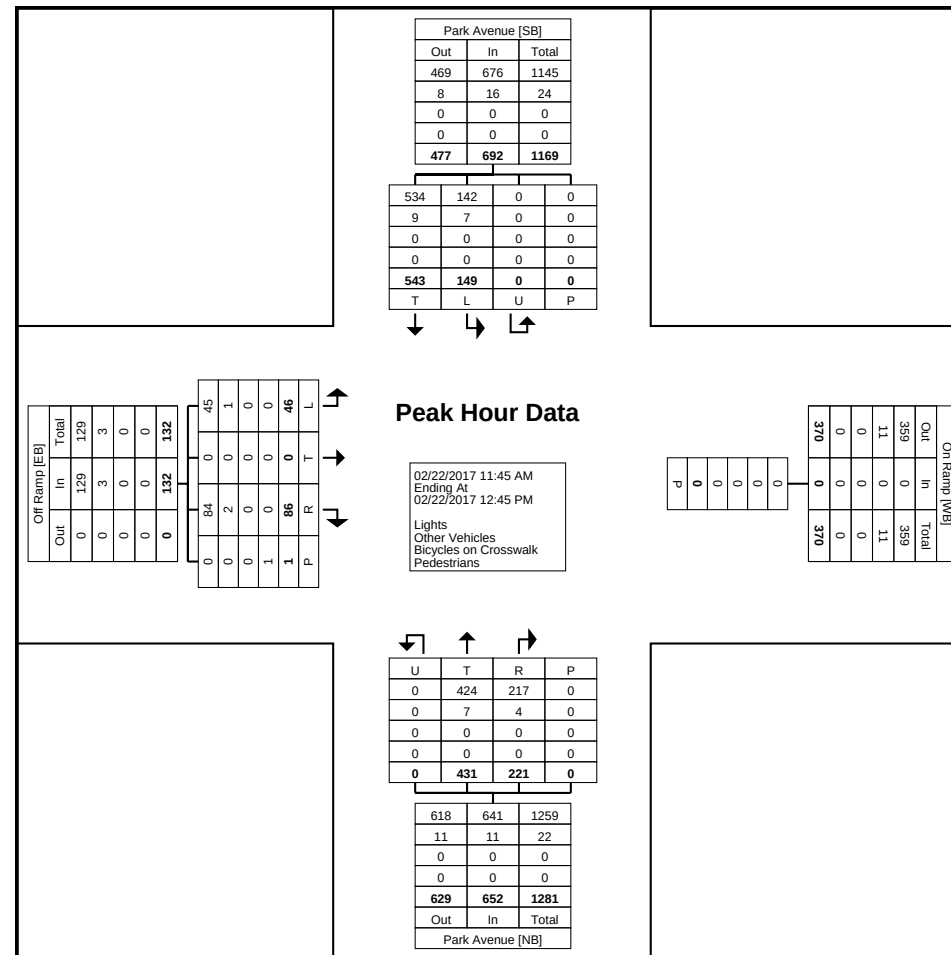
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Park Avenue Southbound					On Ramp Westbound		Park Avenue Northbound					Off Ramp Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:45 AM	132	40	0	0	172	0	0	46	109	0	0	155	25	0	5	1	30	357
12:00 PM	145	40	0	0	185	0	0	59	111	0	0	170	27	0	16	0	43	398
12:15 PM	132	37	0	0	169	0	0	57	111	0	0	168	22	0	12	0	34	371
12:30 PM	134	32	0	0	166	0	0	59	100	0	0	159	12	0	13	0	25	350
Total	543	149	0	0	692	0	0	221	431	0	0	652	86	0	46	1	132	1476
Approach %	78.5	21.5	0.0	-	-	-	-	33.9	66.1	0.0	-	-	65.2	0.0	34.8	-	-	-
Total %	36.8	10.1	0.0	-	46.9	-	0.0	15.0	29.2	0.0	-	44.2	5.8	0.0	3.1	-	8.9	-
PHF	0.936	0.931	0.000	-	0.935	-	0.000	0.936	0.971	0.000	-	0.959	0.796	0.000	0.719	-	0.767	0.927
Lights	534	142	0	-	676	-	0	217	424	0	-	641	84	0	45	-	129	1446
% Lights	98.3	95.3	-	-	97.7	-	-	98.2	98.4	-	-	98.3	97.7	-	97.8	-	97.7	98.0
Other Vehicles	9	7	0	-	16	-	0	4	7	0	-	11	2	0	1	-	3	30
% Other Vehicles	1.7	4.7	-	-	2.3	-	-	1.8	1.6	-	-	1.7	2.3	-	2.2	-	2.3	2.0
Bicycles on Crosswalk	-	-	-	0	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Mannik & Smith Group (OH)
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Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: EB 52 Off Ramp On Ramp
Site Code:
Start Date: 02/21/2017
Page No: 10



Turning Movement Peak Hour Data Plot (11:45 AM)



Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: S 6th Street & Park Ave
Site Code:
Start Date: 02/21/2017
Page No: 1

Turning Movement Data

Start Time	Park Avenue Southbound					S 6th Street Westbound					Park Avenue Northbound					S 6th Street Eastbound		Int. Total
	Right	Thru	U-Turn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Peds	App. Total	
1:15 PM	32	92	0	1	124	28	23	0	5	51	124	2	0	0	126	0	0	301
1:30 PM	29	82	0	0	111	36	35	5	0	76	131	2	0	0	133	0	0	320
1:45 PM	26	77	0	0	103	26	38	5	2	69	86	4	0	0	90	0	0	262
Hourly Total	87	251	0	1	338	90	96	10	7	196	341	8	0	0	349	0	0	883
2:00 PM	31	79	0	1	110	43	26	1	1	70	130	3	0	0	133	2	0	313
2:15 PM	26	97	0	2	123	17	33	6	4	56	128	2	0	0	130	0	0	309
2:30 PM	30	85	0	2	115	36	36	5	2	77	141	1	0	0	142	1	0	334
2:45 PM	30	105	0	0	135	39	28	3	0	70	114	1	0	0	115	0	0	320
Hourly Total	117	366	0	5	483	135	123	15	7	273	513	7	0	0	520	3	0	1276
3:00 PM	25	84	0	0	109	41	60	5	1	106	128	1	0	2	129	0	0	344
3:15 PM	21	90	0	0	111	40	35	4	2	79	136	3	0	3	139	1	0	329
3:30 PM	35	94	0	0	129	40	43	8	4	91	150	1	0	0	151	0	0	371
3:45 PM	37	107	0	2	144	40	35	3	0	78	138	2	0	0	140	0	0	362
Hourly Total	118	375	0	2	493	161	173	20	7	354	552	7	0	5	559	1	0	1406
4:00 PM	29	76	0	0	105	46	30	5	0	81	150	0	0	0	150	1	0	336
4:15 PM	29	98	0	2	127	61	34	4	3	99	142	3	0	0	145	0	0	371
4:30 PM	32	76	0	1	108	51	41	1	1	93	146	2	0	0	148	2	0	349
4:45 PM	26	93	0	1	119	40	38	3	3	81	140	2	0	0	142	0	0	342
Hourly Total	116	343	0	4	459	198	143	13	7	354	578	7	0	0	585	3	0	1398
5:00 PM	26	78	0	0	104	40	32	4	1	76	133	3	0	0	136	0	0	316
5:15 PM	35	87	0	1	122	34	26	0	2	60	127	2	0	4	129	1	0	311
5:30 PM	32	81	0	0	113	35	35	0	0	70	121	0	0	2	121	2	0	304
5:45 PM	26	73	0	0	99	27	21	0	1	48	103	2	0	0	105	0	0	252
Hourly Total	119	319	0	1	438	136	114	4	4	254	484	7	0	6	491	3	0	1183
6:00 PM	35	64	0	0	99	26	28	0	0	54	98	1	0	1	99	0	0	252
6:15 PM	24	61	0	3	85	29	23	1	0	53	85	0	0	0	85	4	0	223
6:30 PM	28	59	0	0	87	34	22	0	2	56	86	1	0	0	87	0	0	230
6:45 PM	22	66	0	0	88	22	31	0	3	53	82	0	0	0	82	0	0	223
Hourly Total	109	250	0	3	359	111	104	1	5	216	351	2	0	1	353	4	0	928
7:00 PM	35	59	0	0	94	20	20	0	6	40	79	3	0	0	82	0	0	216
7:15 PM	23	35	0	0	58	25	13	0	0	38	83	1	0	0	84	4	0	180
7:30 PM	22	38	0	0	60	19	14	2	1	35	65	1	0	0	66	0	0	161
7:45 PM	22	35	0	0	57	11	14	2	0	27	62	1	0	0	63	0	0	147
Hourly Total	102	167	0	0	269	75	61	4	7	140	289	6	0	0	295	4	0	704
8:00 PM	14	40	0	0	54	17	14	3	1	34	77	0	0	0	77	0	0	165
8:15 PM	12	43	0	0	55	12	15	0	1	27	52	0	0	0	52	0	0	134
8:30 PM	13	24	0	0	37	13	14	0	0	27	57	1	0	1	58	1	0	122
8:45 PM	14	22	0	1	36	7	11	2	0	20	43	0	0	0	43	0	0	99

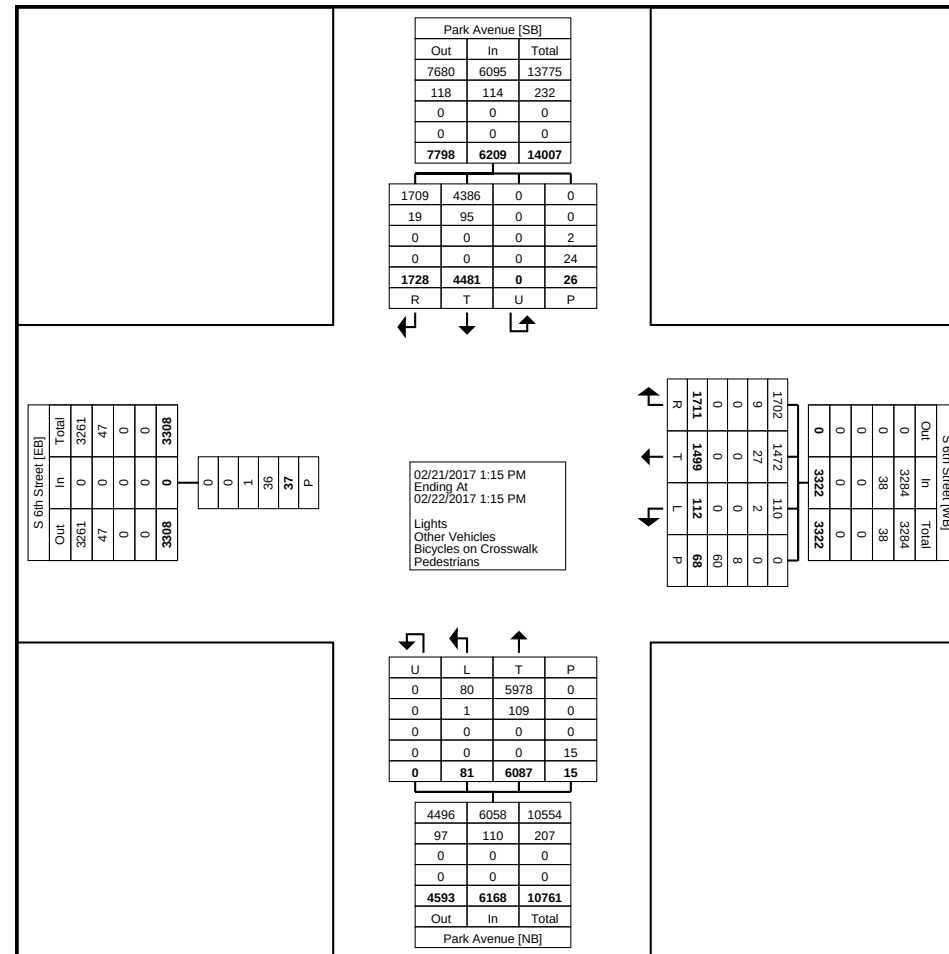
Hourly Total	53	129	0	1	182	49	54	5	2	108	229	1	0	1	230	1	0	520
9:00 PM	14	18	0	0	32	7	4	1	0	12	40	1	0	0	41	1	0	85
9:15 PM	14	28	0	0	42	13	7	0	0	20	33	0	0	0	33	0	0	95
9:30 PM	10	23	0	0	33	10	20	0	0	30	30	0	0	0	30	0	0	93
9:45 PM	11	14	0	0	25	9	7	0	1	16	37	0	0	0	37	2	0	78
Hourly Total	49	83	0	0	132	39	38	1	1	78	140	1	0	0	141	3	0	351
10:00 PM	10	23	0	0	33	10	9	0	1	19	30	0	0	0	30	1	0	82
10:15 PM	12	15	0	0	27	6	5	1	1	12	31	1	0	0	32	0	0	71
10:30 PM	11	19	0	0	30	6	4	0	0	10	30	0	0	0	30	0	0	70
10:45 PM	5	13	0	1	18	2	8	1	0	11	18	0	0	0	18	1	0	47
Hourly Total	38	70	0	1	108	24	26	2	2	52	109	1	0	0	110	2	0	270
11:00 PM	5	9	0	0	14	8	2	0	0	10	20	0	0	0	20	2	0	44
11:15 PM	10	14	0	0	24	2	4	0	1	6	19	1	0	0	20	0	0	50
11:30 PM	5	10	0	0	15	8	2	0	0	10	8	0	0	0	8	0	0	33
11:45 PM	6	12	0	0	18	6	4	0	1	10	14	0	0	0	14	0	0	42
Hourly Total	26	45	0	0	71	24	12	0	2	36	61	1	0	0	62	2	0	169
12:00 AM	8	8	0	0	16	3	1	0	0	4	14	0	0	0	14	0	0	34
12:15 AM	3	11	0	0	14	2	3	0	0	5	10	0	0	0	10	0	0	29
12:30 AM	2	3	0	0	5	2	1	0	0	3	2	0	0	0	2	0	0	10
12:45 AM	2	4	0	0	6	1	3	0	0	4	6	0	0	0	6	0	0	16
Hourly Total	15	26	0	0	41	8	8	0	0	16	32	0	0	0	32	0	0	89
1:00 AM	5	5	0	0	10	1	2	0	0	3	6	1	0	0	7	0	0	20
1:15 AM	1	6	0	1	7	2	2	0	0	4	4	0	0	0	4	0	0	15
1:30 AM	1	1	0	0	2	0	1	0	1	1	7	0	0	0	7	0	0	10
1:45 AM	2	2	0	0	4	3	0	0	0	3	1	0	0	0	1	0	0	8
Hourly Total	9	14	0	1	23	6	5	0	1	11	18	1	0	0	19	0	0	53
2:00 AM	4	1	0	0	5	3	0	0	0	3	2	0	0	0	2	0	0	10
2:15 AM	2	2	0	0	4	0	0	0	1	0	2	0	0	0	2	0	0	6
2:30 AM	4	3	0	0	7	2	0	0	0	2	5	0	0	0	5	0	0	14
2:45 AM	2	1	0	0	3	1	0	0	0	1	6	1	0	0	7	0	0	11
Hourly Total	12	7	0	0	19	6	0	0	1	6	15	1	0	0	16	0	0	41
3:00 AM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	2
3:15 AM	1	4	0	0	5	0	1	0	0	1	2	0	0	0	2	0	0	8
3:30 AM	2	2	0	0	4	0	1	0	0	1	4	0	0	0	4	0	0	9
3:45 AM	2	3	0	0	5	1	1	0	0	2	2	0	0	0	2	0	0	9
Hourly Total	5	9	0	0	14	1	4	0	0	5	9	0	0	0	9	0	0	28
4:00 AM	3	4	0	0	7	1	0	0	0	1	2	0	0	0	2	0	0	10
4:15 AM	2	5	0	0	7	1	0	0	0	1	6	0	0	0	6	0	0	14
4:30 AM	5	2	0	0	7	4	0	0	0	4	5	0	0	0	5	0	0	16
4:45 AM	1	2	0	0	3	1	0	0	0	1	9	0	0	0	9	0	0	13
Hourly Total	11	13	0	0	24	7	0	0	0	7	22	0	0	0	22	0	0	53
5:00 AM	1	9	0	0	10	5	3	0	0	8	3	0	0	0	3	0	0	21
5:15 AM	5	20	0	0	25	6	0	0	0	6	11	0	0	0	11	0	0	42
5:30 AM	5	22	0	0	27	5	1	0	0	6	22	0	0	0	22	1	0	55
5:45 AM	10	17	0	0	27	13	4	0	0	17	14	0	0	0	14	0	0	58
Hourly Total	21	68	0	0	89	29	8	0	0	37	50	0	0	0	50	1	0	176
6:00 AM	15	17	0	0	32	7	2	0	0	9	20	0	0	0	20	0	0	61
6:15 AM	7	27	0	0	34	10	1	0	1	11	19	0	0	0	19	0	0	64
6:30 AM	9	36	0	0	45	6	7	0	0	13	34	0	0	0	34	0	0	92
6:45 AM	26	32	0	0	58	9	8	0	0	17	32	1	0	0	33	0	0	108
Hourly Total	57	112	0	0	169	32	18	0	1	50	105	1	0	0	106	0	0	325
7:00 AM	15	30	0	0	45	15	4	0	0	19	37	1	0	1	38	0	0	102

7:15 AM	28	35	0	0	63	14	16	1	1	31	49	0	0	0	49	1	0	143
7:30 AM	49	67	0	0	116	29	41	0	1	70	81	3	0	0	84	0	0	270
7:45 AM	53	85	0	0	138	22	48	5	0	75	88	2	0	0	90	0	0	303
Hourly Total	145	217	0	0	362	80	109	6	2	195	255	6	0	1	261	1	0	818
8:00 AM	41	72	0	1	113	25	27	2	0	54	78	1	0	0	79	0	0	246
8:15 AM	30	86	0	1	116	22	21	4	0	47	72	0	0	0	72	0	0	235
8:30 AM	36	77	0	0	113	19	14	0	0	33	68	0	0	0	68	2	0	214
8:45 AM	21	83	0	0	104	10	16	0	0	26	52	0	0	0	52	0	0	182
Hourly Total	128	318	0	2	446	76	78	6	0	160	270	1	0	0	271	2	0	877
9:00 AM	15	72	0	1	87	11	14	0	0	25	81	1	0	0	82	1	0	194
9:15 AM	26	78	0	1	104	23	17	0	0	40	78	3	0	0	81	0	0	225
9:30 AM	15	71	0	0	86	21	13	0	0	34	82	1	0	0	83	0	0	203
9:45 AM	21	74	0	0	95	21	7	0	0	28	82	1	0	0	83	0	0	206
Hourly Total	77	295	0	2	372	76	51	0	0	127	323	6	0	0	329	1	0	828
10:00 AM	23	61	0	0	84	21	18	0	2	39	92	0	0	0	92	0	0	215
10:15 AM	27	66	0	0	93	29	16	2	0	47	88	0	0	0	88	0	0	228
10:30 AM	17	68	0	0	85	23	11	3	0	37	79	1	0	0	80	0	0	202
10:45 AM	16	74	0	0	90	27	17	4	0	48	93	1	0	0	94	0	0	232
Hourly Total	83	269	0	0	352	100	62	9	2	171	352	2	0	0	354	0	0	877
11:00 AM	18	70	0	0	88	24	23	4	3	51	111	1	0	0	112	0	0	251
11:15 AM	26	84	0	0	110	31	20	1	1	52	109	0	0	0	109	1	0	271
11:30 AM	25	68	0	0	93	32	27	0	1	59	112	2	0	1	114	2	0	266
11:45 AM	19	86	0	0	105	37	22	1	2	60	105	2	0	0	107	2	0	272
Hourly Total	88	308	0	0	396	124	92	6	7	222	437	5	0	1	442	5	0	1060
12:00 PM	29	80	0	0	109	36	21	2	0	59	127	5	0	0	132	0	0	300
12:15 PM	37	93	0	0	130	25	16	2	1	43	104	2	0	0	106	0	0	279
12:30 PM	22	83	0	0	105	20	26	0	0	46	119	1	0	0	120	0	0	271
12:45 PM	27	75	0	1	102	26	29	3	2	58	99	1	0	0	100	1	0	260
Hourly Total	115	331	0	1	446	107	92	7	3	206	449	9	0	0	458	1	0	1110
1:00 PM	28	96	0	2	124	17	28	3	0	48	103	1	0	0	104	0	0	276
Grand Total	1728	4481	0	26	6209	1711	1499	112	68	3322	6087	81	0	15	6168	37	0	15699
Approach %	27.8	72.2	0.0	-	-	51.5	45.1	3.4	-	-	98.7	1.3	0.0	-	-	-	-	-
Total %	11.0	28.5	0.0	-	39.6	10.9	9.5	0.7	-	21.2	38.8	0.5	0.0	-	39.3	-	0.0	-
Lights	1709	4386	0	-	6095	1702	1472	110	-	3284	5978	80	0	-	6058	-	0	15437
% Lights	98.9	97.9	-	-	98.2	99.5	98.2	98.2	-	98.9	98.2	98.8	-	-	98.2	-	-	98.3
Other Vehicles	19	95	0	-	114	9	27	2	-	38	109	1	0	-	110	-	0	262
% Other Vehicles	1.1	2.1	-	-	1.8	0.5	1.8	1.8	-	1.1	1.8	1.2	-	-	1.8	-	-	1.7
Bicycles on Crosswalk	-	-	-	2	-	-	-	-	8	-	-	-	-	0	-	1	-	-
% Bicycles on Crosswalk	-	-	-	7.7	-	-	-	-	11.8	-	-	-	-	0.0	-	2.7	-	-
Pedestrians	-	-	-	24	-	-	-	-	60	-	-	-	-	15	-	36	-	-
% Pedestrians	-	-	-	92.3	-	-	-	-	88.2	-	-	-	-	100.0	-	97.3	-	-



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Count Name: S 6th Street & Park Ave
Site Code:
Start Date: 02/21/2017
Page No: 4



Turning Movement Data Plot

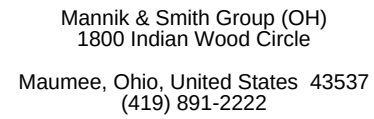


Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: S 6th Street & Park Ave
Site Code:
Start Date: 02/21/2017
Page No: 5

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Park Avenue Southbound					S 6th Street Westbound					Park Avenue Northbound					S 6th Street Eastbound		Int. Total
	Right	Thru	U-Turn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Peds	App. Total	
4:00 PM	29	76	0	0	105	46	30	5	0	81	150	0	0	0	150	1	0	336
4:15 PM	29	98	0	2	127	61	34	4	3	99	142	3	0	0	145	0	0	371
4:30 PM	32	76	0	1	108	51	41	1	1	93	146	2	0	0	148	2	0	349
4:45 PM	26	93	0	1	119	40	38	3	3	81	140	2	0	0	142	0	0	342
Total	116	343	0	4	459	198	143	13	7	354	578	7	0	0	585	3	0	1398
Approach %	25.3	74.7	0.0	-	-	55.9	40.4	3.7	-	-	98.8	1.2	0.0	-	-	-	-	-
Total %	8.3	24.5	0.0	-	32.8	14.2	10.2	0.9	-	25.3	41.3	0.5	0.0	-	41.8	-	0.0	-
PHF	0.906	0.875	0.000	-	0.904	0.811	0.872	0.650	-	0.894	0.963	0.583	0.000	-	0.975	-	0.000	0.942
Lights	116	340	0	-	456	198	143	13	-	354	574	7	0	-	581	-	0	1391
% Lights	100.0	99.1	-	-	99.3	100.0	100.0	100.0	-	100.0	99.3	100.0	-	-	99.3	-	-	99.5
Other Vehicles	0	3	0	-	3	0	0	0	-	0	4	0	0	-	4	-	0	7
% Other Vehicles	0.0	0.9	-	-	0.7	0.0	0.0	0.0	-	0.0	0.7	0.0	-	-	0.7	-	-	0.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	28.6	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	4	-	-	-	-	5	-	-	-	-	0	-	3	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	71.4	-	-	-	-	-	-	100.0	-	-

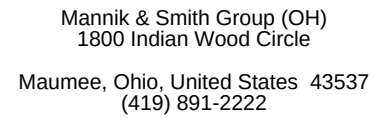




Count Name: S 6th Street & Park Ave
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Turning Movement Peak Hour Data (7:30 AM)

[illegible]





Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

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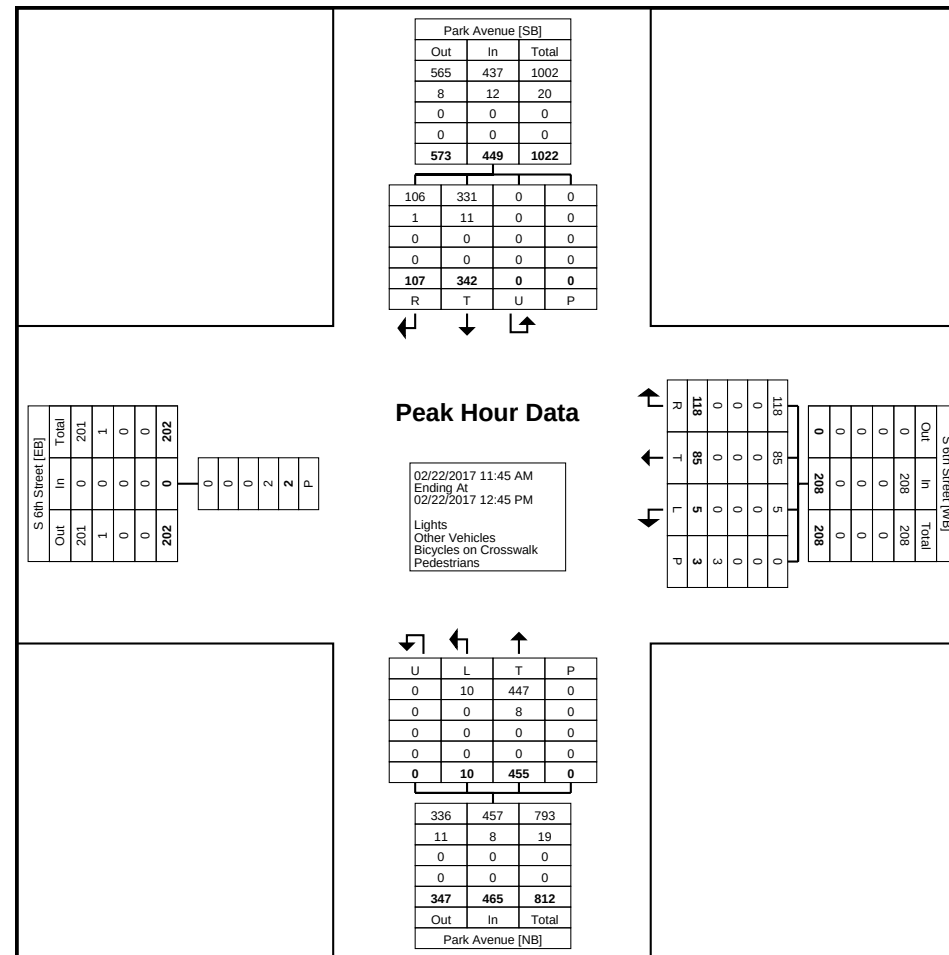
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Park Avenue Southbound					S 6th Street Westbound					Park Avenue Northbound					S 6th Street Eastbound		Int. Total
	Right	Thru	U-Turn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Peds	App. Total	
11:45 AM	19	86	0	0	105	37	22	1	2	60	105	2	0	0	107	2	0	272
12:00 PM	29	80	0	0	109	36	21	2	0	59	127	5	0	0	132	0	0	300
12:15 PM	37	93	0	0	130	25	16	2	1	43	104	2	0	0	106	0	0	279
12:30 PM	22	83	0	0	105	20	26	0	0	46	119	1	0	0	120	0	0	271
Total	107	342	0	0	449	118	85	5	3	208	455	10	0	0	465	2	0	1122
Approach %	23.8	76.2	0.0	-	-	56.7	40.9	2.4	-	-	97.8	2.2	0.0	-	-	-	-	-
Total %	9.5	30.5	0.0	-	40.0	10.5	7.6	0.4	-	18.5	40.6	0.9	0.0	-	41.4	-	0.0	-
PHF	0.723	0.919	0.000	-	0.863	0.797	0.817	0.625	-	0.867	0.896	0.500	0.000	-	0.881	-	0.000	0.935
Lights	106	331	0	-	437	118	85	5	-	208	447	10	0	-	457	-	0	1102
% Lights	99.1	96.8	-	-	97.3	100.0	100.0	100.0	-	100.0	98.2	100.0	-	-	98.3	-	-	98.2
Other Vehicles	1	11	0	-	12	0	0	0	-	0	8	0	0	-	8	-	0	20
% Other Vehicles	0.9	3.2	-	-	2.7	0.0	0.0	0.0	-	0.0	1.8	0.0	-	-	1.7	-	-	1.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-



Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: S 6th Street & Park Ave
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Turning Movement Peak Hour Data Plot (11:45 AM)



Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: S 7th Street & Park Avenue
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Turning Movement Data

Start Time	Park Avenue Southbound					S 7th Street Westbound		Park Avenue Northbound					S 7th Street Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
1:30 PM	104	18	0	2	122	0	0	5	158	0	1	163	3	2	6	0	11	296
1:45 PM	106	23	0	0	129	2	0	3	125	0	0	128	4	3	6	0	13	270
Hourly Total	210	41	0	2	251	2	0	8	283	0	1	291	7	5	12	0	24	566
2:00 PM	111	22	0	0	133	0	0	4	163	0	0	167	2	5	4	0	11	311
2:15 PM	112	21	0	1	133	5	0	11	138	0	0	149	4	1	7	1	12	294
2:30 PM	111	19	0	0	130	2	0	9	155	0	0	164	2	1	8	1	11	305
2:45 PM	135	21	0	0	156	5	0	6	141	0	0	147	3	3	6	1	12	315
Hourly Total	469	83	0	1	552	12	0	30	597	0	0	627	11	10	25	3	46	1225
3:00 PM	106	34	0	0	140	1	0	5	160	0	0	165	3	5	10	0	18	323
3:15 PM	114	21	0	0	135	5	0	13	166	0	0	179	0	4	4	1	8	322
3:30 PM	131	26	0	2	157	6	0	4	183	0	0	187	3	6	6	0	15	359
3:45 PM	147	18	0	0	165	0	0	3	172	0	0	175	3	2	7	0	12	352
Hourly Total	498	99	0	2	597	12	0	25	681	0	0	706	9	17	27	1	53	1356
4:00 PM	100	27	0	0	127	4	0	7	186	0	0	193	1	4	11	0	16	336
4:15 PM	127	23	0	0	150	5	0	8	199	0	0	207	5	2	6	1	13	370
4:30 PM	108	23	0	0	131	3	0	3	201	0	0	204	4	5	9	0	18	353
4:45 PM	115	15	0	0	130	2	0	4	181	0	0	185	5	2	5	0	12	327
Hourly Total	450	88	0	0	538	14	0	22	767	0	0	789	15	13	31	1	59	1386
5:00 PM	100	16	0	0	116	3	0	1	165	0	0	166	5	2	18	0	25	307
5:15 PM	123	24	0	3	147	4	0	5	160	0	1	165	2	5	7	1	14	326
5:30 PM	113	25	0	3	138	1	0	0	150	0	0	150	5	4	13	0	22	310
5:45 PM	107	22	0	1	129	2	0	2	129	0	0	131	2	4	2	0	8	268
Hourly Total	443	87	0	7	530	10	0	8	604	0	1	612	14	15	40	1	69	1211
6:00 PM	98	21	0	0	119	3	0	3	125	0	0	128	3	6	7	0	16	263
6:15 PM	88	14	0	1	102	0	0	3	114	0	0	117	4	2	9	3	15	234
6:30 PM	88	13	0	0	101	0	0	3	115	0	0	118	2	6	8	0	16	235
6:45 PM	88	13	0	1	101	3	0	5	101	0	0	106	3	4	4	0	11	218
Hourly Total	362	61	0	2	423	6	0	14	455	0	0	469	12	18	28	3	58	950
7:00 PM	82	15	0	3	97	0	0	3	99	0	0	102	7	7	8	0	22	221
7:15 PM	60	13	0	0	73	0	0	0	107	0	0	107	1	3	7	4	11	191
7:30 PM	59	16	0	2	75	1	0	1	89	0	0	90	0	5	5	0	10	175
7:45 PM	58	12	0	0	70	0	0	1	76	0	0	77	1	0	4	0	5	152
Hourly Total	259	56	0	5	315	1	0	5	371	0	0	376	9	15	24	4	48	739
8:00 PM	59	12	0	0	71	1	0	1	90	0	0	91	0	2	9	0	11	173
8:15 PM	56	8	0	0	64	0	0	4	69	0	0	73	2	1	3	0	6	143
8:30 PM	35	8	0	0	43	0	0	3	65	0	0	68	1	3	8	0	12	123
8:45 PM	30	8	0	0	38	0	0	0	55	0	0	55	0	2	7	0	9	102
Hourly Total	180	36	0	0	216	1	0	8	279	0	0	287	3	8	27	0	38	541

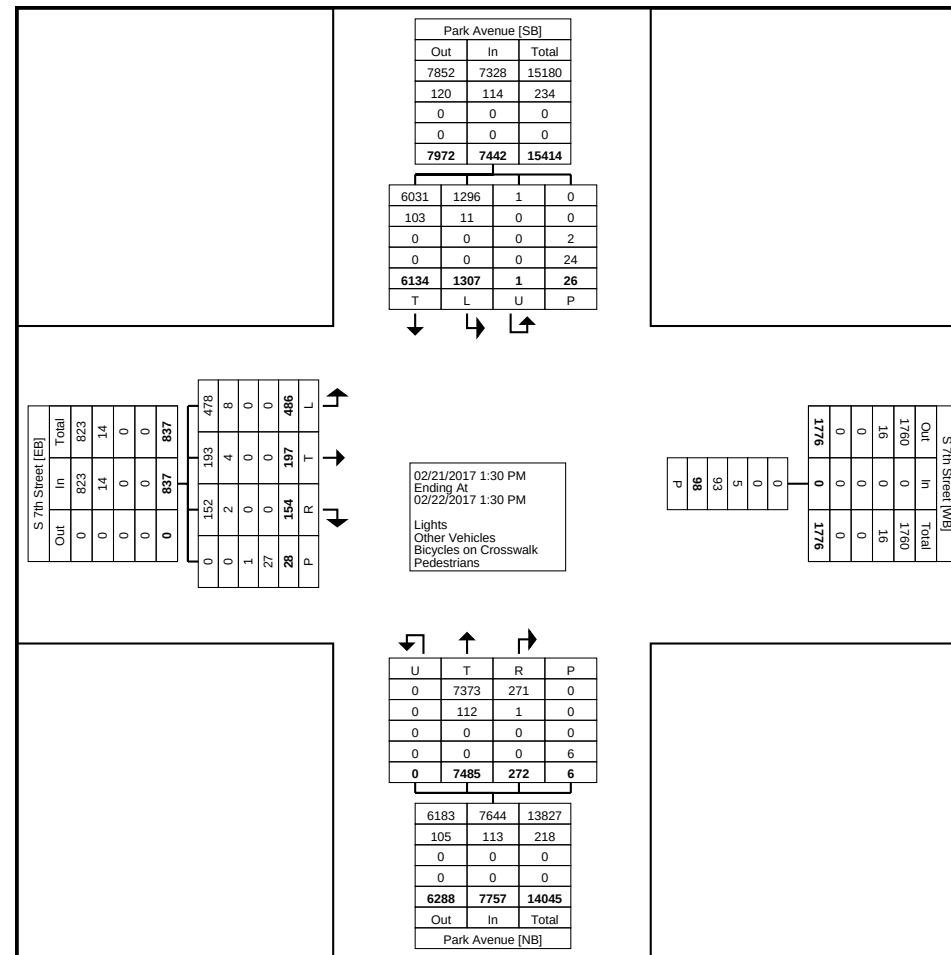
9:00 PM	35	8	0	0	43	0	0	0	48	0	1	48	0	4	4	0	8	99
9:15 PM	41	7	0	0	48	0	0	3	35	0	0	38	1	2	1	0	4	90
9:30 PM	31	6	0	0	37	0	0	1	45	0	0	46	0	4	2	0	6	89
9:45 PM	27	8	0	0	35	2	0	1	48	0	1	49	0	2	4	0	6	90
Hourly Total	134	29	0	0	163	2	0	5	176	0	2	181	1	12	11	0	24	368
10:00 PM	29	6	0	0	35	1	0	1	38	0	0	39	0	1	4	2	5	79
10:15 PM	26	8	0	0	34	1	0	0	37	0	0	37	0	1	1	1	2	73
10:30 PM	29	7	0	1	36	0	0	2	33	0	0	35	0	0	0	1	0	71
10:45 PM	17	3	0	0	20	0	0	2	20	0	0	22	0	1	4	0	5	47
Hourly Total	101	24	0	1	125	2	0	5	128	0	0	133	0	3	9	4	12	270
11:00 PM	15	7	0	0	22	1	0	1	24	0	0	25	1	0	1	2	2	49
11:15 PM	24	2	0	0	26	0	0	0	24	0	0	24	0	2	2	0	4	54
11:30 PM	16	2	0	0	18	0	0	1	14	0	0	15	0	2	2	0	4	37
11:45 PM	18	2	0	0	20	0	0	1	19	0	0	20	0	1	2	0	3	43
Hourly Total	73	13	0	0	86	1	0	3	81	0	0	84	1	5	7	2	13	183
12:00 AM	16	2	0	0	18	1	0	0	19	0	0	19	0	1	1	0	2	39
12:15 AM	17	3	0	0	20	0	0	0	11	0	0	11	0	0	1	0	1	32
12:30 AM	3	1	0	0	4	0	0	0	3	0	0	3	0	0	2	0	2	9
12:45 AM	4	0	0	0	4	0	0	0	8	0	0	8	0	2	0	0	2	14
Hourly Total	40	6	0	0	46	1	0	0	41	0	0	41	0	3	4	0	7	94
1:00 AM	8	2	0	0	10	0	0	0	8	0	0	8	0	3	2	0	5	23
1:15 AM	8	1	0	0	9	0	0	0	7	0	0	7	0	1	1	0	2	18
1:30 AM	2	0	0	0	2	0	0	0	6	0	0	6	0	1	1	0	2	10
1:45 AM	4	2	0	0	6	1	0	0	5	0	0	5	0	0	0	0	0	11
Hourly Total	22	5	0	0	27	1	0	0	26	0	0	26	0	5	4	0	9	62
2:00 AM	5	1	0	0	6	0	0	0	4	0	0	4	0	0	0	0	0	10
2:15 AM	4	1	0	0	5	0	0	0	3	0	0	3	0	0	0	0	0	8
2:30 AM	4	0	0	0	4	1	0	0	6	0	0	6	0	0	0	0	0	10
2:45 AM	6	2	0	0	8	0	0	0	8	0	0	8	0	0	2	0	2	18
Hourly Total	19	4	0	0	23	1	0	0	21	0	0	21	0	0	2	0	2	46
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM	3	2	0	0	5	0	0	0	3	0	0	3	0	1	0	0	1	9
3:30 AM	6	1	0	0	7	0	0	0	5	0	0	5	1	0	2	0	3	15
3:45 AM	5	0	0	0	5	0	0	0	3	0	0	3	0	0	0	0	0	8
Hourly Total	14	3	0	0	17	0	0	0	11	0	0	11	1	1	2	0	4	32
4:00 AM	7	0	0	0	7	0	0	0	2	0	0	2	0	0	2	0	2	11
4:15 AM	6	2	0	0	8	0	0	0	8	0	0	8	0	0	3	0	3	19
4:30 AM	5	1	0	0	6	0	0	0	6	0	0	6	0	0	1	0	1	13
4:45 AM	5	2	0	0	7	0	0	0	11	0	0	11	0	1	6	0	7	25
Hourly Total	23	5	0	0	28	0	0	0	27	0	0	27	0	1	12	0	13	68
5:00 AM	11	2	0	0	13	0	0	0	7	0	0	7	0	0	2	0	2	22
5:15 AM	24	2	0	0	26	0	0	0	16	0	0	16	0	0	1	0	1	43
5:30 AM	26	6	0	0	32	0	0	1	25	0	0	26	0	2	3	1	5	63
5:45 AM	26	6	0	0	32	0	0	0	25	0	0	25	0	2	7	0	9	66
Hourly Total	87	16	0	0	103	0	0	1	73	0	0	74	0	4	13	1	17	194
6:00 AM	29	10	0	0	39	0	0	2	30	0	0	32	1	1	6	0	8	79
6:15 AM	38	6	0	0	44	1	0	0	25	0	0	25	0	1	5	0	6	75
6:30 AM	42	13	0	0	55	0	0	0	35	0	0	35	0	0	9	0	9	99
6:45 AM	63	28	0	0	91	0	0	0	42	0	0	42	0	1	7	0	8	141
Hourly Total	172	57	0	0	229	1	0	2	132	0	0	134	1	3	27	0	31	394
7:00 AM	45	12	0	1	57	0	0	0	52	0	0	52	0	1	10	0	11	120
7:15 AM	62	18	0	1	80	0	0	0	67	0	0	67	0	0	10	1	10	157

7:30 AM	119	31	0	0	150	1	0	4	91	0	0	95	2	6	3	0	11	256
7:45 AM	144	47	0	0	191	0	0	11	102	0	0	113	1	2	10	0	13	317
Hourly Total	370	108	0	2	478	1	0	15	312	0	0	327	3	9	33	1	45	850
8:00 AM	119	24	0	0	143	0	0	6	104	0	0	110	1	3	9	0	13	266
8:15 AM	105	21	0	2	126	1	0	6	81	0	0	87	3	1	10	1	14	227
8:30 AM	119	29	0	0	148	0	0	2	84	0	0	86	1	3	6	0	10	244
8:45 AM	112	35	0	0	147	2	0	5	66	0	0	71	1	2	7	0	10	228
Hourly Total	455	109	0	2	564	3	0	19	335	0	0	354	6	9	32	1	47	965
9:00 AM	92	15	0	0	107	0	0	4	83	0	0	87	1	3	4	0	8	202
9:15 AM	103	18	0	0	121	1	0	4	97	0	0	101	1	2	9	0	12	234
9:30 AM	82	20	0	0	102	0	0	7	89	0	0	96	2	3	9	1	14	212
9:45 AM	97	20	0	0	117	0	0	3	102	0	0	105	4	1	0	0	5	227
Hourly Total	374	73	0	0	447	1	0	18	371	0	0	389	8	9	22	1	39	875
10:00 AM	82	17	0	0	99	4	0	10	105	0	0	115	2	2	5	0	9	223
10:15 AM	88	20	0	0	108	1	0	6	119	0	0	125	2	2	4	0	8	241
10:30 AM	91	17	0	0	108	0	0	8	96	0	0	104	1	3	9	0	13	225
10:45 AM	87	15	0	0	102	5	0	4	105	0	0	109	2	3	6	0	11	222
Hourly Total	348	69	0	0	417	10	0	28	425	0	0	453	7	10	24	0	41	911
11:00 AM	84	23	0	0	107	3	0	5	112	0	0	117	9	2	5	0	16	240
11:15 AM	104	20	0	0	124	0	0	7	132	0	1	139	4	1	8	1	13	276
11:30 AM	94	24	0	0	118	1	0	6	137	0	0	143	2	3	3	1	8	269
11:45 AM	98	29	0	1	127	5	0	9	126	0	1	135	3	0	6	2	9	271
Hourly Total	380	96	0	1	476	9	0	27	507	0	2	534	18	6	22	4	46	1056
12:00 PM	113	22	0	0	135	1	0	4	166	0	0	170	6	4	11	0	21	326
12:15 PM	124	26	0	0	150	1	0	3	128	0	0	131	6	3	7	0	16	297
12:30 PM	103	19	0	0	122	0	0	5	132	0	0	137	3	2	10	0	15	274
12:45 PM	98	23	0	0	121	3	0	5	117	0	0	122	5	4	7	0	16	259
Hourly Total	438	90	0	0	528	5	0	17	543	0	0	560	20	13	35	0	68	1156
1:00 PM	108	31	1	0	140	2	0	8	111	0	0	119	6	1	7	1	14	273
1:15 PM	105	18	0	1	123	0	0	4	128	0	0	132	2	2	6	0	10	265
Grand Total	6134	1307	1	26	7442	98	0	272	7485	0	6	7757	154	197	486	28	837	16036
Approach %	82.4	17.6	0.0	-	-	-	-	3.5	96.5	0.0	-	-	18.4	23.5	58.1	-	-	-
Total %	38.3	8.2	0.0	-	46.4	-	0.0	1.7	46.7	0.0	-	48.4	1.0	1.2	3.0	-	5.2	-
Lights	6031	1296	1	-	7328	-	0	271	7373	0	-	7644	152	193	478	-	823	15795
% Lights	98.3	99.2	100.0	-	98.5	-	-	99.6	98.5	-	-	98.5	98.7	98.0	98.4	-	98.3	98.5
Other Vehicles	103	11	0	-	114	-	0	1	112	0	-	113	2	4	8	-	14	241
% Other Vehicles	1.7	0.8	0.0	-	1.5	-	-	0.4	1.5	-	-	1.5	1.3	2.0	1.6	-	1.7	1.5
Bicycles on Crosswalk	-	-	-	2	-	5	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	7.7	-	5.1	-	-	-	-	0.0	-	-	-	-	3.6	-	-
Pedestrians	-	-	-	24	-	93	-	-	-	-	6	-	-	-	-	27	-	-
% Pedestrians	-	-	-	92.3	-	94.9	-	-	-	-	100.0	-	-	-	-	96.4	-	-



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Count Name: S 7th Street & Park Avenue
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Turning Movement Data Plot

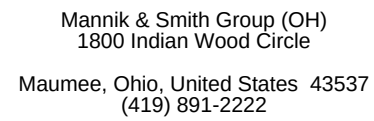


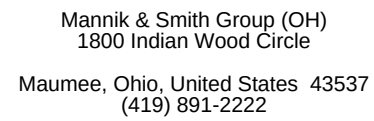
Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: S 7th Street & Park Avenue
Site Code:
Start Date: 02/21/2017
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Turning Movement Peak Hour Data (4:00 PM)

Start Time	Park Avenue Southbound					S 7th Street Westbound		Park Avenue Northbound					S 7th Street Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
4:00 PM	100	27	0	0	127	4	0	7	186	0	0	193	1	4	11	0	16	336
4:15 PM	127	23	0	0	150	5	0	8	199	0	0	207	5	2	6	1	13	370
4:30 PM	108	23	0	0	131	3	0	3	201	0	0	204	4	5	9	0	18	353
4:45 PM	115	15	0	0	130	2	0	4	181	0	0	185	5	2	5	0	12	327
Total	450	88	0	0	538	14	0	22	767	0	0	789	15	13	31	1	59	1386
Approach %	83.6	16.4	0.0	-	-	-	-	2.8	97.2	0.0	-	-	25.4	22.0	52.5	-	-	-
Total %	32.5	6.3	0.0	-	38.8	-	0.0	1.6	55.3	0.0	-	56.9	1.1	0.9	2.2	-	4.3	-
PHF	0.886	0.815	0.000	-	0.897	-	0.000	0.688	0.954	0.000	-	0.953	0.750	0.650	0.705	-	0.819	0.936
Lights	447	87	0	-	534	-	0	22	762	0	-	784	15	13	29	-	57	1375
% Lights	99.3	98.9	-	-	99.3	-	-	100.0	99.3	-	-	99.4	100.0	100.0	93.5	-	96.6	99.2
Other Vehicles	3	1	0	-	4	-	0	0	5	0	-	5	0	0	2	-	2	11
% Other Vehicles	0.7	1.1	-	-	0.7	-	-	0.0	0.7	-	-	0.6	0.0	0.0	6.5	-	3.4	0.8
Bicycles on Crosswalk	-	-	-	0	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	7.1	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	13	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	92.9	-	-	-	-	-	-	-	-	-	100.0	-	-





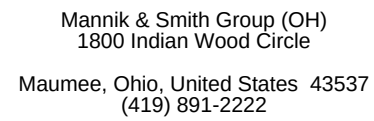


Mannik & Smith Group (OH)
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(419) 891-2222

Count Name: S 7th Street & Park Avenue
Site Code:
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Turning Movement Peak Hour Data (11:45 AM)

Start Time	Park Avenue Southbound					S 7th Street Westbound		Park Avenue Northbound					S 7th Street Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:45 AM	98	29	0	1	127	5	0	9	126	0	1	135	3	0	6	2	9	271
12:00 PM	113	22	0	0	135	1	0	4	166	0	0	170	6	4	11	0	21	326
12:15 PM	124	26	0	0	150	1	0	3	128	0	0	131	6	3	7	0	16	297
12:30 PM	103	19	0	0	122	0	0	5	132	0	0	137	3	2	10	0	15	274
Total	438	96	0	1	534	7	0	21	552	0	1	573	18	9	34	2	61	1168
Approach %	82.0	18.0	0.0	-	-	-	-	3.7	96.3	0.0	-	-	29.5	14.8	55.7	-	-	-
Total %	37.5	8.2	0.0	-	45.7	-	0.0	1.8	47.3	0.0	-	49.1	1.5	0.8	2.9	-	5.2	-
PHF	0.883	0.828	0.000	-	0.890	-	0.000	0.583	0.831	0.000	-	0.843	0.750	0.563	0.773	-	0.726	0.896
Lights	428	95	0	-	523	-	0	20	543	0	-	563	18	9	34	-	61	1147
% Lights	97.7	99.0	-	-	97.9	-	-	95.2	98.4	-	-	98.3	100.0	100.0	100.0	-	100.0	98.2
Other Vehicles	10	1	0	-	11	-	0	1	9	0	-	10	0	0	0	-	0	21
% Other Vehicles	2.3	1.0	-	-	2.1	-	-	4.8	1.6	-	-	1.7	0.0	0.0	0.0	-	0.0	1.8
Bicycles on Crosswalk	-	-	-	0	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	7	-	-	-	-	1	-	-	-	-	2	-	-
% Pedestrians	-	-	-	100.0	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-





Mannik & Smith Group (OH)
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Count Name: S 8th Street & Park Avenue
Site Code:
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Page No: 1

Turning Movement Data

Start Time	Park Avenue Southbound						S 8th Avenue Westbound						Park Avenue Northbound						S 8th Avenue Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
1:45 PM	14	123	2	0	0	139	11	2	3	0	0	16	4	120	1	0	1	125	4	0	6	0	0	10	290
Hourly Total	14	123	2	0	0	139	11	2	3	0	0	16	4	120	1	0	1	125	4	0	6	0	0	10	290
2:00 PM	12	129	1	0	1	142	19	4	0	0	0	23	2	156	1	0	0	159	7	3	2	0	1	12	336
2:15 PM	9	127	1	0	0	137	16	1	4	0	5	21	4	135	1	0	0	140	5	0	3	0	0	8	306
2:30 PM	13	123	1	0	2	137	22	2	3	0	1	27	3	166	2	0	1	171	4	1	3	0	0	8	343
2:45 PM	23	148	1	0	0	172	26	1	2	0	0	29	2	143	2	0	1	147	2	0	4	0	0	6	354
Hourly Total	57	527	4	0	3	588	83	8	9	0	6	100	11	600	6	0	2	617	18	4	12	0	1	34	1339
3:00 PM	16	131	1	0	1	148	19	4	3	0	0	26	1	171	4	0	2	176	5	3	5	0	2	13	363
3:15 PM	21	136	2	0	0	159	18	2	2	0	5	22	1	156	3	0	1	160	7	1	2	0	0	10	351
3:30 PM	22	146	1	0	0	169	18	1	2	0	2	21	4	180	4	0	0	188	6	0	4	0	0	10	388
3:45 PM	16	161	0	0	1	177	10	4	1	0	0	15	1	175	1	0	0	177	3	0	3	0	0	6	375
Hourly Total	75	574	4	0	2	653	65	11	8	0	7	84	7	682	12	0	3	701	21	4	14	0	2	39	1477
4:00 PM	19	127	3	0	1	149	24	3	0	0	1	27	3	186	3	0	2	192	3	1	8	0	0	12	380
4:15 PM	13	146	2	0	1	161	12	2	1	0	1	15	0	191	4	0	3	195	4	1	5	0	0	10	381
4:30 PM	17	126	0	0	2	143	16	3	0	0	0	19	5	201	3	0	0	209	5	4	5	0	3	14	385
4:45 PM	11	123	2	0	0	136	20	6	2	0	3	28	2	160	2	0	0	164	1	4	4	0	0	9	337
Hourly Total	60	522	7	0	4	589	72	14	3	0	5	89	10	738	12	0	5	760	13	10	22	0	3	45	1483
5:00 PM	11	120	0	0	0	131	26	4	0	0	1	30	2	186	3	0	0	191	5	2	5	0	0	12	364
5:15 PM	11	140	5	0	0	156	17	3	3	0	1	23	2	155	4	0	2	161	7	0	4	0	0	11	351
5:30 PM	14	132	2	0	0	148	19	5	1	0	0	25	3	154	2	0	0	159	3	1	6	0	0	10	342
5:45 PM	10	123	2	0	4	135	17	3	1	0	0	21	1	112	0	0	2	113	1	1	8	0	0	10	279
Hourly Total	46	515	9	0	4	570	79	15	5	0	2	99	8	607	9	0	4	624	16	4	23	0	0	43	1336
6:00 PM	18	118	0	0	1	136	16	4	0	0	3	20	1	117	6	0	0	124	0	0	2	0	1	2	282
6:15 PM	10	100	0	0	0	110	13	2	0	0	2	15	1	105	4	0	2	110	2	3	4	0	1	9	244
6:30 PM	15	101	1	0	0	117	9	3	1	0	2	13	0	120	1	0	2	121	2	0	4	0	0	6	257
6:45 PM	8	100	0	0	0	108	9	2	1	0	1	12	2	97	3	0	1	102	2	1	4	0	0	7	229
Hourly Total	51	419	1	0	1	471	47	11	2	0	8	60	4	439	14	0	5	457	6	4	14	0	2	24	1012
7:00 PM	8	94	3	0	0	105	10	7	1	0	3	18	0	106	2	0	0	108	4	2	4	0	0	10	241
7:15 PM	11	72	1	0	3	84	10	2	2	0	0	14	3	104	5	0	0	112	1	0	3	0	0	4	214
7:30 PM	10	71	1	0	0	82	7	4	2	0	1	13	0	88	0	0	0	88	3	0	4	0	0	7	190
7:45 PM	7	69	0	0	0	76	7	2	1	0	0	10	0	77	0	0	0	77	1	2	5	0	0	8	171
Hourly Total	36	306	5	0	3	347	34	15	6	0	4	55	3	375	7	0	0	385	9	4	16	0	0	29	816
8:00 PM	9	64	1	0	1	74	10	6	1	0	0	17	1	101	0	0	0	102	1	2	4	0	0	7	200
8:15 PM	9	57	2	0	0	68	11	2	1	0	1	14	2	64	0	0	1	66	2	1	2	0	0	5	153
8:30 PM	8	43	0	0	0	51	11	2	2	0	0	15	4	72	0	0	0	76	0	3	2	0	0	5	147
8:45 PM	7	35	2	0	4	44	8	2	2	0	0	12	1	49	3	0	0	53	2	1	4	0	0	7	116
Hourly Total	33	199	5	0	5	237	40	12	6	0	1	58	8	286	3	0	1	297	5	7	12	0	0	24	616

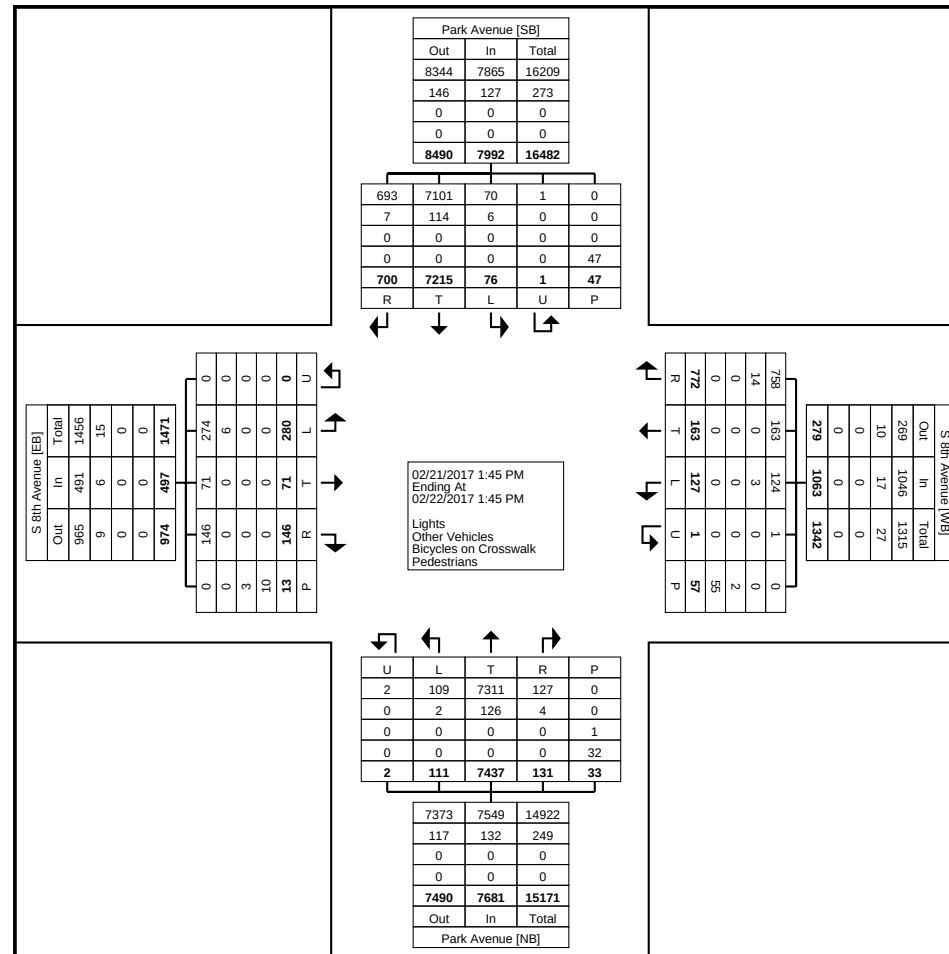
9:00 PM	5	39	0	0	0	44	1	6	0	0	0	7	2	50	1	0	0	53	2	1	3	0	0	6	110
9:15 PM	5	45	0	0	0	50	3	0	4	0	0	7	0	40	1	0	0	41	1	1	2	0	0	4	102
9:30 PM	7	34	0	0	0	41	10	1	2	0	0	13	0	43	1	0	0	44	1	1	3	0	0	5	103
9:45 PM	3	34	1	0	0	38	6	0	4	0	1	10	1	48	0	0	0	49	0	1	3	0	0	4	101
Hourly Total	20	152	1	0	0	173	20	7	10	0	1	37	3	181	3	0	0	187	4	4	11	0	0	19	416
10:00 PM	3	39	1	0	0	43	4	3	0	0	0	7	2	38	0	0	0	40	0	0	2	0	0	2	92
10:15 PM	3	37	0	0	0	40	6	2	1	0	2	9	0	34	1	0	1	35	1	0	1	0	0	2	86
10:30 PM	2	28	0	0	0	30	4	1	7	0	1	12	0	27	1	0	0	28	0	0	2	0	0	2	72
10:45 PM	2	20	0	0	0	22	3	0	1	0	0	4	0	22	0	0	0	22	0	0	2	0	0	2	50
Hourly Total	10	124	1	0	0	135	17	6	9	0	3	32	2	121	2	0	1	125	1	0	7	0	0	8	300
11:00 PM	4	19	0	0	1	23	2	0	0	0	3	2	1	26	0	0	0	27	0	1	1	0	0	2	54
11:15 PM	4	26	0	0	2	30	0	0	0	0	0	0	0	25	0	0	0	25	0	0	2	0	0	2	57
11:30 PM	1	17	1	0	6	19	3	1	0	0	0	4	1	16	0	0	0	17	1	0	0	0	0	1	41
11:45 PM	3	20	0	0	0	23	4	1	3	0	1	8	0	19	0	0	0	19	0	0	4	0	0	4	54
Hourly Total	12	82	1	0	9	95	9	2	3	0	4	14	2	86	0	0	0	88	1	1	7	0	0	9	206
12:00 AM	4	19	0	0	1	23	0	1	0	0	1	1	0	20	0	0	0	20	0	0	0	0	0	0	44
12:15 AM	0	14	0	0	0	14	0	2	2	0	0	4	1	10	0	0	0	11	0	0	0	0	0	0	29
12:30 AM	2	5	0	0	1	7	0	0	0	0	0	0	0	5	0	0	0	5	0	1	1	0	0	2	14
12:45 AM	2	8	0	0	0	10	0	0	0	0	0	0	2	5	0	0	0	7	0	0	0	0	0	0	17
Hourly Total	8	46	0	0	2	54	0	3	2	0	1	5	3	40	0	0	0	43	0	1	1	0	0	2	104
1:00 AM	1	10	0	0	0	11	1	0	1	0	0	2	0	9	0	1	0	10	0	0	4	0	0	4	27
1:15 AM	0	7	0	0	0	7	0	0	1	0	0	1	1	4	0	0	0	5	0	0	0	0	0	0	13
1:30 AM	1	2	1	0	2	4	1	2	0	0	0	3	0	7	1	0	0	8	0	0	0	0	0	0	15
1:45 AM	1	6	0	0	0	7	1	0	0	0	0	1	1	3	0	0	0	3	0	0	1	0	0	1	12
Hourly Total	3	25	1	0	2	29	3	2	2	0	1	7	1	23	1	1	0	26	0	0	5	0	0	5	67
2:00 AM	0	6	0	0	0	6	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	9
2:15 AM	3	5	0	0	0	8	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	11
2:30 AM	1	7	0	0	4	8	0	1	0	0	1	1	0	6	0	0	0	6	0	0	1	0	0	1	16
2:45 AM	0	5	0	0	0	5	1	0	0	0	0	1	0	7	0	0	0	7	0	0	1	0	0	1	14
Hourly Total	4	23	0	0	4	27	1	1	0	0	1	2	0	19	0	0	0	19	0	0	2	0	0	2	50
3:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	3
3:15 AM	1	6	0	0	0	7	0	0	0	0	0	0	1	3	0	0	0	4	0	0	0	0	0	0	11
3:30 AM	0	6	0	0	0	6	1	0	0	0	0	1	0	6	0	0	0	6	0	0	0	0	0	0	13
3:45 AM	0	5	0	0	0	5	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	6
Hourly Total	1	18	0	0	0	19	1	0	0	0	0	1	1	10	0	0	0	11	0	0	2	0	0	2	33
4:00 AM	0	7	0	0	0	7	1	0	0	0	0	1	0	2	0	0	0	2	0	0	0	0	0	0	10
4:15 AM	0	9	0	0	1	9	0	0	0	0	0	0	1	7	0	0	0	8	0	0	0	0	0	0	17
4:30 AM	1	8	0	0	0	9	1	2	0	0	0	3	1	6	0	0	0	7	0	1	1	0	0	2	21
4:45 AM	1	4	0	0	0	5	2	0	0	0	0	2	1	16	2	0	0	19	0	1	0	0	0	1	27
Hourly Total	2	28	0	0	1	30	4	2	0	0	0	6	3	31	2	0	0	36	0	2	1	0	0	3	75
5:00 AM	1	13	0	0	0	14	0	0	0	0	0	0	1	8	0	0	0	9	0	0	1	0	0	1	24
5:15 AM	0	25	0	1	0	26	1	1	0	0	0	2	1	15	0	0	0	16	1	1	1	0	0	3	47
5:30 AM	2	32	0	0	0	34	3	0	1	0	0	4	1	29	0	0	0	30	2	1	1	0	0	4	72
5:45 AM	2	30	0	0	0	32	1	1	2	0	0	4	0	33	1	0	0	34	1	0	1	0	0	2	72
Hourly Total	5	100	0	1	0	106	5	2	3	0	0	10	3	85	1	0	0	89	4	2	4	0	0	10	215
6:00 AM	0	40	0	0	0	40	2	1	1	0	0	4	1	30	0	0	0	31	0	0	2	0	0	2	77
6:15 AM	3	42	0	0	0	45	2	0	0	0	1	2	2	31	0	0	0	33	0	3	2	0	0	5	85
6:30 AM	3	58	0	0	0	61	3	0	0	0	0	3	0	47	0	0	0	47	1	1	3	0	0	5	116
6:45 AM	4	85	1	0	0	90	2	1	0	0	0	3	0	41	1	0	0	42	0	2	8	0	0	10	145
Hourly Total	10	225	1	0	0	236	9	2	1	0	1	12	3	149	1	0	0	153	1	6	15	0	0	22	423
7:00 AM	6	58	1	0	1	65	7	2	1	0	0	10	0	53	1	0	0	54	0	1	3	0	0	4	133
7:15 AM	9	83	1	0	0	93	14	2	2	0	1	18	2	67	0	0	0	69	2	1	1	0	0	4	184

7:30 AM	4	156	0	0	0	160	18	2	0	0	3	20	3	90	0	0	0	93	4	1	9	0	0	14	287
7:45 AM	20	187	3	0	0	210	7	3	0	0	0	10	1	109	0	0	0	110	0	3	6	0	0	9	339
Hourly Total	39	484	5	0	1	528	46	9	3	0	4	58	6	319	1	0	0	326	6	6	19	0	0	31	943
8:00 AM	11	132	1	0	2	144	7	3	1	0	1	11	0	108	1	0	2	109	0	3	5	0	0	8	272
8:15 AM	16	130	2	0	0	148	7	3	3	0	1	13	2	92	3	0	1	97	1	1	2	0	0	4	262
8:30 AM	11	149	3	0	0	163	7	0	2	0	0	9	2	88	0	0	0	90	1	2	5	0	0	8	270
8:45 AM	17	132	0	0	0	149	9	1	0	0	0	10	0	67	1	0	0	68	2	0	4	0	0	6	233
Hourly Total	55	543	6	0	2	604	30	7	6	0	2	43	4	355	5	0	3	364	4	6	16	0	0	26	1037
9:00 AM	3	107	1	0	1	111	2	2	2	0	0	6	1	80	2	0	0	83	0	0	4	0	0	4	204
9:15 AM	9	111	0	0	0	120	7	1	5	0	0	13	1	90	1	0	0	92	0	1	2	0	0	3	228
9:30 AM	6	105	2	0	0	113	6	0	3	0	0	9	0	100	1	0	0	101	0	0	3	0	0	3	226
9:45 AM	3	107	5	0	1	115	10	2	2	0	1	14	1	92	2	0	1	95	1	0	2	0	0	3	227
Hourly Total	21	430	8	0	2	459	25	5	12	0	1	42	3	362	6	0	1	371	1	1	11	0	0	13	885
10:00 AM	6	92	3	0	0	101	11	1	3	0	2	15	1	104	0	0	1	105	2	1	5	0	0	8	229
10:15 AM	11	107	1	0	0	119	7	3	3	0	0	13	3	102	0	0	0	105	4	0	1	0	0	5	242
10:30 AM	7	104	2	0	0	113	5	3	0	0	0	8	3	100	0	0	0	103	1	0	3	0	0	4	228
10:45 AM	8	103	3	0	0	114	8	2	0	0	0	10	3	103	2	0	0	108	0	0	4	0	0	4	236
Hourly Total	32	406	9	0	0	447	31	9	6	0	2	46	10	409	2	0	1	421	7	1	13	0	0	21	935
11:00 AM	10	92	0	0	0	102	13	1	3	0	0	17	1	126	0	0	0	127	1	0	3	0	0	4	250
11:15 AM	7	131	0	0	0	138	14	0	3	0	0	17	1	124	2	0	0	127	3	0	1	0	1	4	286
11:30 AM	9	110	1	0	0	120	17	4	3	0	0	24	3	129	4	0	0	136	5	1	4	0	1	10	290
11:45 AM	8	128	2	0	0	138	14	0	2	0	0	16	6	126	0	0	1	132	3	1	2	0	2	6	292
Hourly Total	34	461	3	0	0	498	58	5	11	0	0	74	11	505	6	0	1	522	12	2	10	0	4	24	1118
12:00 PM	11	127	1	0	0	139	7	5	3	1	0	16	4	165	1	1	0	171	1	1	3	0	0	5	331
12:15 PM	9	139	0	0	0	148	12	1	5	0	0	18	3	124	3	0	1	130	4	0	6	0	0	10	306
12:30 PM	9	115	0	0	0	124	18	3	4	0	0	25	3	133	2	0	2	138	2	1	3	0	0	6	293
12:45 PM	13	115	0	0	0	128	15	1	2	0	2	18	2	107	5	0	0	114	2	0	3	0	0	5	265
Hourly Total	42	496	1	0	0	539	52	10	14	1	2	77	12	529	11	1	3	553	9	2	15	0	0	26	1195
1:00 PM	9	145	0	0	2	154	8	1	0	0	1	9	2	119	2	0	1	123	1	0	8	0	0	9	295
1:15 PM	12	118	2	0	0	132	15	2	0	0	0	17	5	125	2	0	0	132	3	0	7	0	0	10	291
1:30 PM	9	124	0	0	0	133	7	0	3	0	0	10	2	122	2	0	1	126	0	0	7	0	1	7	276
Grand Total	700	7215	76	1	47	7992	772	163	127	1	57	1063	131	7437	111	2	33	7681	146	71	280	0	13	497	17233
Approach %	8.8	90.3	1.0	0.0	-	-	72.6	15.3	11.9	0.1	-	-	1.7	96.8	1.4	0.0	-	-	29.4	14.3	56.3	0.0	-	-	-
Total %	4.1	41.9	0.4	0.0	-	46.4	4.5	0.9	0.7	0.0	-	6.2	0.8	43.2	0.6	0.0	-	44.6	0.8	0.4	1.6	0.0	-	2.9	-
Lights	693	7101	70	1	-	7865	758	163	124	1	-	1046	127	7311	109	2	-	7549	146	71	274	0	-	491	16951
% Lights	99.0	98.4	92.1	100.0	-	98.4	98.2	100.0	97.6	100.0	-	98.4	96.9	98.3	98.2	100.0	-	98.3	100.0	100.0	97.9	-	-	98.8	98.4
Other Vehicles	7	114	6	0	-	127	14	0	3	0	-	17	4	126	2	0	-	132	0	0	6	0	-	6	282
% Other Vehicles	1.0	1.6	7.9	0.0	-	1.6	1.8	0.0	2.4	0.0	-	1.6	3.1	1.7	1.8	0.0	-	1.7	0.0	0.0	2.1	-	-	1.2	1.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	3.5	-	-	-	-	-	3.0	-	-	-	-	-	23.1	-	-
Pedestrians	-	-	-	-	47	-	-	-	-	-	55	-	-	-	-	-	32	-	-	-	-	-	10	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	96.5	-	-	-	-	-	97.0	-	-	-	-	-	76.9	-	-



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Turning Movement Data Plot



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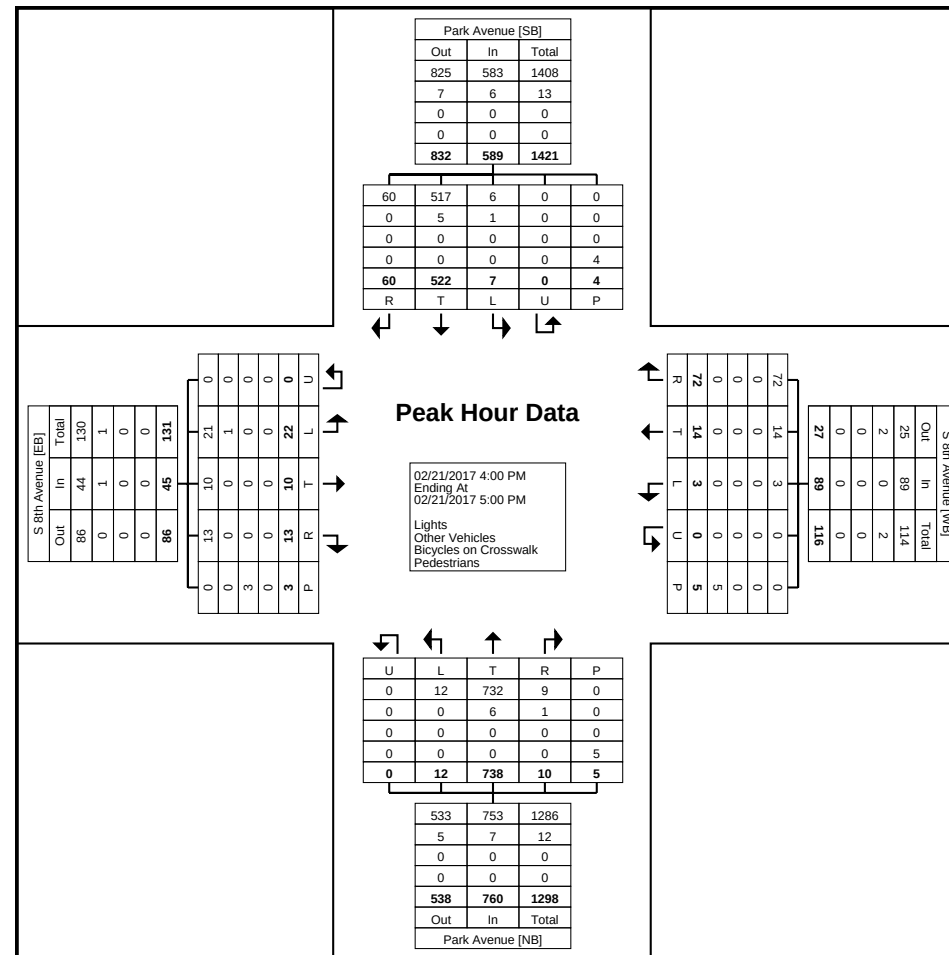
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Park Avenue Southbound						S 8th Avenue Westbound						Park Avenue Northbound						S 8th Avenue Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:00 PM	19	127	3	0	1	149	24	3	0	0	1	27	3	186	3	0	2	192	3	1	8	0	0	12	380
4:15 PM	13	146	2	0	1	161	12	2	1	0	1	15	0	191	4	0	3	195	4	1	5	0	0	10	381
4:30 PM	17	126	0	0	2	143	16	3	0	0	0	19	5	201	3	0	0	209	5	4	5	0	3	14	385
4:45 PM	11	123	2	0	0	136	20	6	2	0	3	28	2	160	2	0	0	164	1	4	4	0	0	9	337
Total	60	522	7	0	4	589	72	14	3	0	5	89	10	738	12	0	5	760	13	10	22	0	3	45	1483
Approach %	10.2	88.6	1.2	0.0	-	-	80.9	15.7	3.4	0.0	-	-	1.3	97.1	1.6	0.0	-	-	28.9	22.2	48.9	0.0	-	-	-
Total %	4.0	35.2	0.5	0.0	-	39.7	4.9	0.9	0.2	0.0	-	6.0	0.7	49.8	0.8	0.0	-	51.2	0.9	0.7	1.5	0.0	-	3.0	-
PHF	0.789	0.894	0.583	0.000	-	0.915	0.750	0.583	0.375	0.000	-	0.795	0.500	0.918	0.750	0.000	-	0.909	0.650	0.625	0.688	0.000	-	0.804	0.963
Lights	60	517	6	0	-	583	72	14	3	0	-	89	9	732	12	0	-	753	13	10	21	0	-	44	1469
% Lights	100.0	99.0	85.7	-	-	99.0	100.0	100.0	100.0	-	-	100.0	90.0	99.2	100.0	-	-	99.1	100.0	100.0	95.5	-	-	97.8	99.1
Other Vehicles	0	5	1	0	-	6	0	0	0	0	-	0	1	6	0	0	-	7	0	0	1	0	-	1	14
% Other Vehicles	0.0	1.0	14.3	-	-	1.0	0.0	0.0	0.0	-	-	0.0	10.0	0.8	0.0	-	-	0.9	0.0	0.0	4.5	-	-	2.2	0.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	5	-	-	-	-	-	5	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	0.0	-	-



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Turning Movement Peak Hour Data Plot (4:00 PM)



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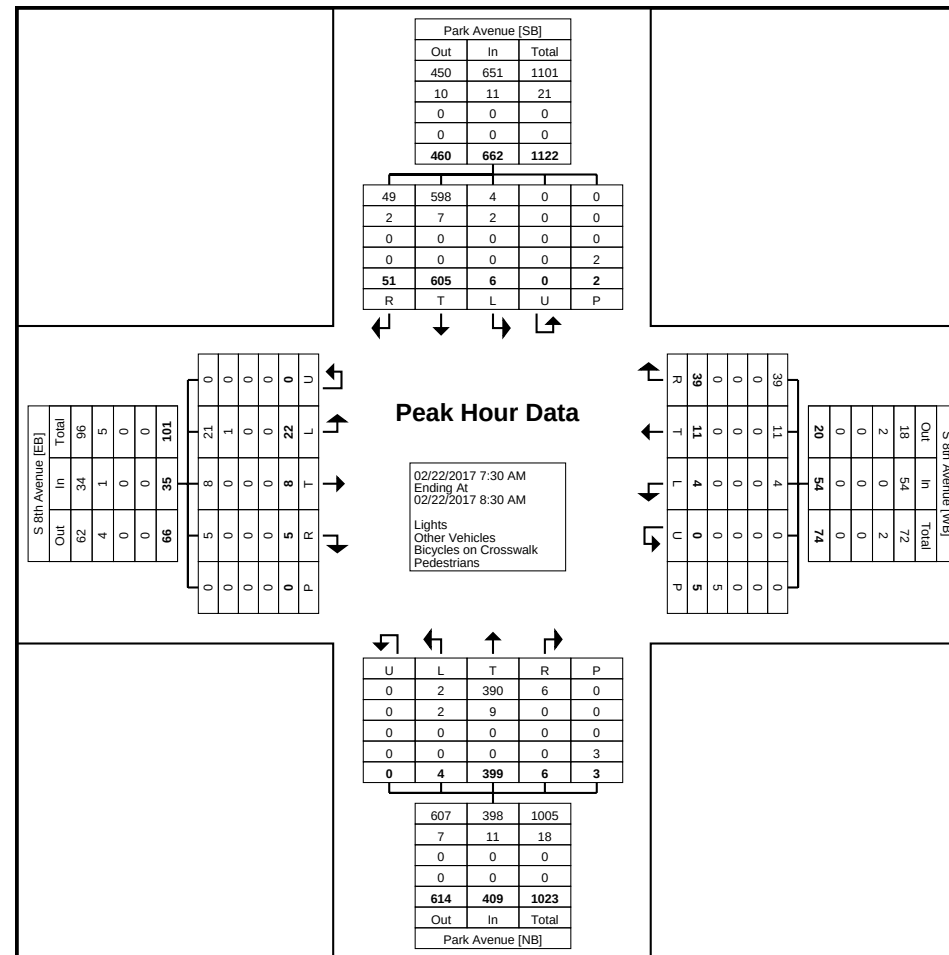
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Park Avenue Southbound						S 8th Avenue Westbound						Park Avenue Northbound						S 8th Avenue Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:30 AM	4	156	0	0	0	160	18	2	0	0	3	20	3	90	0	0	0	93	4	1	9	0	0	14	287
7:45 AM	20	187	3	0	0	210	7	3	0	0	0	10	1	109	0	0	0	110	0	3	6	0	0	9	339
8:00 AM	11	132	1	0	2	144	7	3	1	0	1	11	0	108	1	0	2	109	0	3	5	0	0	8	272
8:15 AM	16	130	2	0	0	148	7	3	3	0	1	13	2	92	3	0	1	97	1	1	2	0	0	4	262
Total	51	605	6	0	2	662	39	11	4	0	5	54	6	399	4	0	3	409	5	8	22	0	0	35	1160
Approach %	7.7	91.4	0.9	0.0	-	-	72.2	20.4	7.4	0.0	-	-	1.5	97.6	1.0	0.0	-	-	14.3	22.9	62.9	0.0	-	-	-
Total %	4.4	52.2	0.5	0.0	-	57.1	3.4	0.9	0.3	0.0	-	4.7	0.5	34.4	0.3	0.0	-	35.3	0.4	0.7	1.9	0.0	-	3.0	-
PHF	0.638	0.809	0.500	0.000	-	0.788	0.542	0.917	0.333	0.000	-	0.675	0.500	0.915	0.333	0.000	-	0.930	0.313	0.667	0.611	0.000	-	0.625	0.855
Lights	49	598	4	0	-	651	39	11	4	0	-	54	6	390	2	0	-	398	5	8	21	0	-	34	1137
% Lights	96.1	98.8	66.7	-	-	98.3	100.0	100.0	100.0	-	-	100.0	100.0	97.7	50.0	-	-	97.3	100.0	100.0	95.5	-	-	97.1	98.0
Other Vehicles	2	7	2	0	-	11	0	0	0	0	-	0	0	9	2	0	-	11	0	0	1	0	-	1	23
% Other Vehicles	3.9	1.2	33.3	-	-	1.7	0.0	0.0	0.0	-	-	0.0	0.0	2.3	50.0	-	-	2.7	0.0	0.0	4.5	-	-	2.9	2.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	5	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



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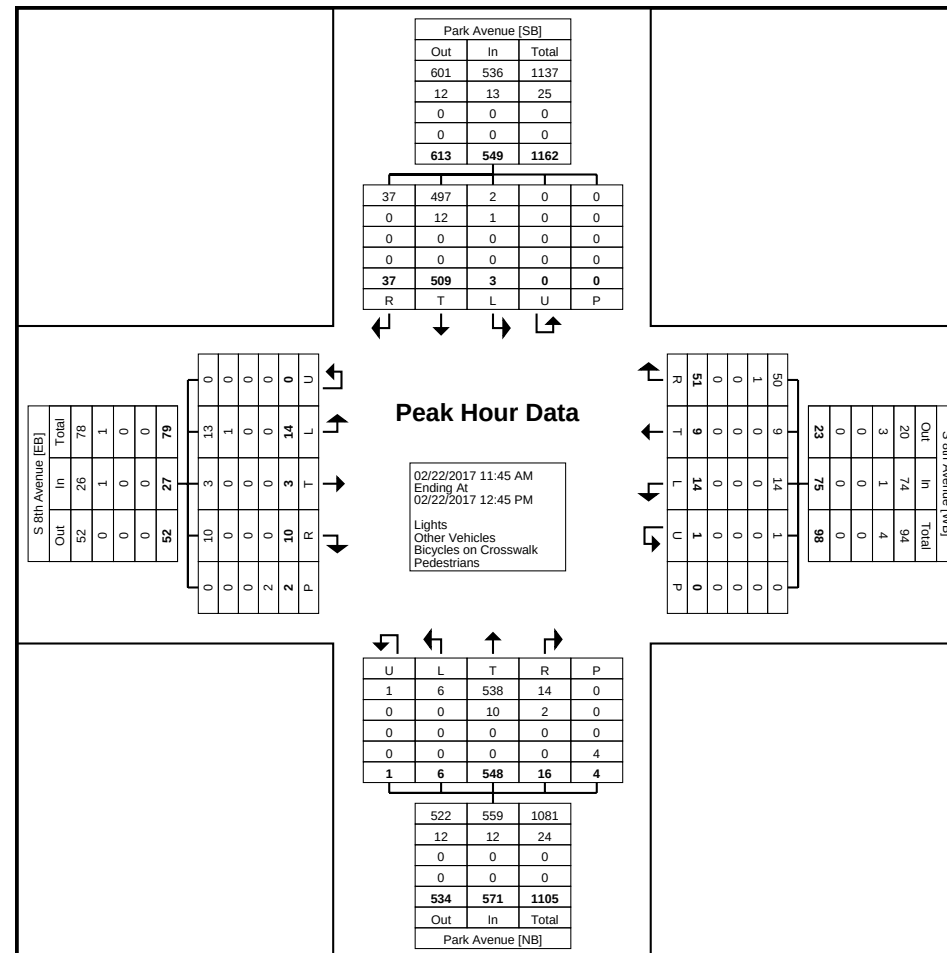
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Park Avenue Southbound						S 8th Avenue Westbound						Park Avenue Northbound						S 8th Avenue Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
11:45 AM	8	128	2	0	0	138	14	0	2	0	0	16	6	126	0	0	1	132	3	1	2	0	2	6	292
12:00 PM	11	127	1	0	0	139	7	5	3	1	0	16	4	165	1	1	0	171	1	1	3	0	0	5	331
12:15 PM	9	139	0	0	0	148	12	1	5	0	0	18	3	124	3	0	1	130	4	0	6	0	0	10	306
12:30 PM	9	115	0	0	0	124	18	3	4	0	0	25	3	133	2	0	2	138	2	1	3	0	0	6	293
Total	37	509	3	0	0	549	51	9	14	1	0	75	16	548	6	1	4	571	10	3	14	0	2	27	1222
Approach %	6.7	92.7	0.5	0.0	-	-	68.0	12.0	18.7	1.3	-	-	2.8	96.0	1.1	0.2	-	-	37.0	11.1	51.9	0.0	-	-	-
Total %	3.0	41.7	0.2	0.0	-	44.9	4.2	0.7	1.1	0.1	-	6.1	1.3	44.8	0.5	0.1	-	46.7	0.8	0.2	1.1	0.0	-	2.2	-
PHF	0.841	0.915	0.375	0.000	-	0.927	0.708	0.450	0.700	0.250	-	0.750	0.667	0.830	0.500	0.250	-	0.835	0.625	0.750	0.583	0.000	-	0.675	0.923
Lights	37	497	2	0	-	536	50	9	14	1	-	74	14	538	6	1	-	559	10	3	13	0	-	26	1195
% Lights	100.0	97.6	66.7	-	-	97.6	98.0	100.0	100.0	100.0	-	98.7	87.5	98.2	100.0	100.0	-	97.9	100.0	100.0	92.9	-	-	96.3	97.8
Other Vehicles	0	12	1	0	-	13	1	0	0	0	-	1	2	10	0	0	-	12	0	0	1	0	-	1	27
% Other Vehicles	0.0	2.4	33.3	-	-	2.4	2.0	0.0	0.0	0.0	-	1.3	12.5	1.8	0.0	0.0	-	2.1	0.0	0.0	7.1	-	-	3.7	2.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Turning Movement Peak Hour Data Plot (11:45 AM)



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Turning Movement Data

Start Time	Park Avenue Southbound						S 9th Street Westbound						Park Avenue Northbound						S 9th Street Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
2:15 PM	1	139	16	0	0	156	18	0	3	0	0	21	10	148	1	0	0	159	0	0	0	0	0	0	336
2:30 PM	2	143	10	0	0	155	27	1	4	0	0	32	18	161	3	0	0	182	0	0	1	0	0	1	370
2:45 PM	0	178	23	0	0	201	21	0	3	0	0	24	11	161	1	0	0	173	0	0	0	0	0	0	398
Hourly Total	3	460	49	0	0	512	66	1	10	0	0	77	39	470	5	0	0	514	0	0	1	0	0	1	1104
3:00 PM	1	158	19	0	0	178	22	0	0	0	0	22	11	182	2	0	0	195	0	0	1	0	1	1	396
3:15 PM	2	160	20	0	0	182	26	1	5	0	0	32	16	163	3	0	2	182	0	0	1	0	0	1	397
3:30 PM	1	169	15	0	0	185	26	0	6	0	1	32	15	176	3	0	4	194	1	0	0	0	0	1	412
3:45 PM	0	184	27	0	1	211	24	1	2	0	2	27	14	177	1	0	0	192	1	0	0	0	0	1	431
Hourly Total	4	671	81	0	1	756	98	2	13	0	3	113	56	698	9	0	6	763	2	0	2	0	1	4	1636
4:00 PM	2	151	11	0	1	164	20	0	3	0	0	23	8	209	0	0	0	217	0	0	2	0	0	2	406
4:15 PM	3	160	22	0	0	185	12	0	4	0	4	16	11	186	2	0	0	199	1	0	0	0	0	1	401
4:30 PM	1	138	19	0	0	158	30	0	0	0	0	30	14	211	1	0	0	226	1	0	1	0	3	2	416
4:45 PM	2	145	18	0	0	165	14	0	3	0	0	17	7	179	1	0	0	187	0	0	0	0	0	0	369
Hourly Total	8	594	70	0	1	672	76	0	10	0	4	86	40	785	4	0	0	829	2	0	3	0	3	5	1592
5:00 PM	2	134	17	0	0	153	28	0	2	0	2	30	9	205	2	0	1	216	1	0	1	0	0	2	401
5:15 PM	0	157	23	0	1	180	27	0	2	0	1	29	8	170	1	0	0	179	1	0	0	0	0	1	389
5:30 PM	0	152	22	0	1	174	33	0	5	0	0	38	7	171	4	0	0	182	1	0	0	0	0	1	395
5:45 PM	1	138	15	0	0	154	22	1	6	0	0	29	12	127	1	0	0	140	0	0	0	0	0	0	323
Hourly Total	3	581	77	0	2	661	110	1	15	0	3	126	36	673	8	0	1	717	3	0	1	0	0	4	1508
6:00 PM	0	137	21	0	0	158	25	0	1	1	0	27	12	133	1	0	0	146	0	0	0	0	1	0	331
6:15 PM	0	111	13	0	0	124	15	1	2	0	1	18	9	112	1	0	4	122	2	1	1	0	1	4	268
6:30 PM	3	122	14	0	0	139	19	0	3	0	0	22	10	123	2	0	0	135	0	0	1	0	0	1	297
6:45 PM	2	110	18	0	0	130	15	0	7	0	0	22	9	113	0	0	1	122	3	0	1	0	0	4	278
Hourly Total	5	480	66	0	0	551	74	1	13	1	1	89	40	481	4	0	5	525	5	1	3	0	2	9	1174
7:00 PM	2	101	16	0	0	119	12	1	3	0	1	16	11	104	0	0	0	115	1	0	0	0	0	1	251
7:15 PM	0	87	8	0	0	95	11	2	1	0	0	14	3	111	0	0	0	114	1	0	0	0	2	1	224
7:30 PM	0	78	12	0	0	90	18	0	1	0	0	19	13	92	0	0	0	105	2	0	0	0	3	2	216
7:45 PM	0	88	18	0	0	106	12	0	2	0	6	14	6	82	1	0	0	89	0	0	1	0	0	1	210
Hourly Total	2	354	54	0	0	410	53	3	7	0	7	63	33	389	1	0	0	423	4	0	1	0	5	5	901
8:00 PM	3	66	11	0	0	80	11	0	3	0	2	14	8	102	1	0	0	111	1	0	0	0	0	1	206
8:15 PM	0	63	8	0	1	71	16	1	6	0	0	23	11	73	0	0	0	84	0	0	0	0	0	0	178
8:30 PM	2	56	14	0	0	72	11	1	4	0	0	16	10	73	0	0	4	83	1	0	0	0	0	1	172
8:45 PM	1	43	9	0	0	53	12	2	2	0	0	16	7	62	1	0	0	70	0	1	2	0	0	3	142
Hourly Total	6	228	42	0	1	276	50	4	15	0	2	69	36	310	2	0	4	348	2	1	2	0	0	5	698
9:00 PM	3	47	12	0	1	62	9	1	3	0	1	13	5	48	1	0	1	54	0	0	0	0	2	0	129
9:15 PM	2	53	12	0	0	67	8	0	1	0	0	9	5	41	0	0	0	46	1	1	1	0	1	3	125
9:30 PM	0	39	8	0	0	47	5	0	2	0	0	7	4	54	1	0	2	59	0	0	0	0	0	0	113

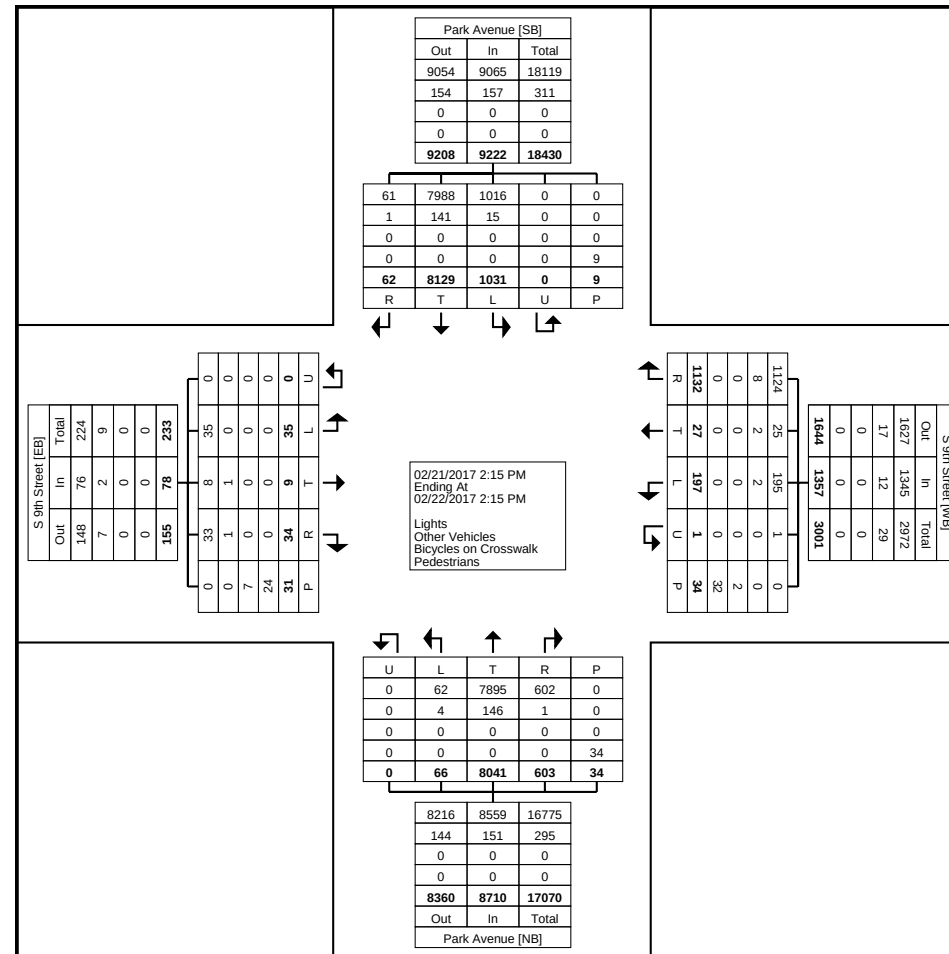
9:45 PM	0	38	7	0	0	45	8	1	3	0	0	12	4	59	2	0	0	65	0	0	1	0	0	1	123
Hourly Total	5	177	39	0	1	221	30	2	9	0	1	41	18	202	4	0	3	224	1	1	2	0	3	4	490
10:00 PM	1	42	8	0	0	51	17	1	2	0	0	20	1	48	0	0	0	49	2	0	1	0	1	3	123
10:15 PM	2	44	2	0	0	48	5	0	1	0	2	6	4	40	0	0	0	44	0	0	1	0	0	1	99
10:30 PM	2	34	11	0	0	47	10	0	0	0	0	10	4	29	1	0	0	34	1	0	0	0	0	1	92
10:45 PM	0	27	5	0	0	32	2	1	1	0	0	4	4	27	0	0	1	31	0	0	0	0	0	0	67
Hourly Total	5	147	26	0	0	178	34	2	4	0	2	40	13	144	1	0	1	158	3	0	2	0	1	5	381
11:00 PM	0	21	2	0	0	23	4	0	2	0	0	6	3	20	1	0	0	24	0	0	0	0	0	0	53
11:15 PM	0	23	2	0	0	25	4	0	3	0	0	7	3	27	0	0	1	30	0	0	1	0	0	1	63
11:30 PM	0	17	4	0	1	21	4	1	2	0	2	7	1	17	0	0	0	18	0	0	0	0	0	0	46
11:45 PM	1	21	1	0	0	23	5	0	3	0	0	8	2	23	0	0	0	25	0	0	0	0	0	0	56
Hourly Total	1	82	9	0	1	92	17	1	10	0	2	28	9	87	1	0	1	97	0	0	1	0	0	1	218
12:00 AM	0	20	1	0	0	21	1	0	0	0	0	1	2	20	0	0	5	22	0	0	1	0	1	1	45
12:15 AM	1	18	1	0	0	20	4	0	0	0	0	4	2	12	0	0	0	14	0	0	0	0	0	0	38
12:30 AM	0	8	6	0	0	14	4	0	1	0	0	5	1	8	0	0	0	9	0	0	0	0	0	0	28
12:45 AM	1	8	2	0	0	11	2	0	4	0	0	6	0	7	0	0	0	7	0	0	0	0	1	0	24
Hourly Total	2	54	10	0	0	66	11	0	5	0	0	16	5	47	0	0	5	52	0	0	1	0	2	1	135
1:00 AM	0	8	1	0	0	9	0	0	2	0	0	2	1	16	0	0	0	17	0	0	0	0	0	0	28
1:15 AM	0	9	1	0	0	10	0	0	0	0	0	0	2	4	0	0	0	6	0	0	0	0	1	0	16
1:30 AM	0	3	1	0	0	4	2	0	0	0	0	2	0	9	0	0	0	9	0	0	0	0	0	0	15
1:45 AM	0	6	0	0	0	6	0	0	0	0	0	0	3	6	0	0	0	9	0	0	0	0	0	0	15
Hourly Total	0	26	3	0	0	29	2	0	2	0	0	4	6	35	0	0	0	41	0	0	0	0	1	0	74
2:00 AM	0	10	0	0	0	10	0	0	0	0	0	0	1	7	0	0	0	8	0	0	0	0	0	0	18
2:15 AM	0	8	0	0	0	8	0	0	0	0	0	0	0	3	0	0	2	3	0	0	0	0	0	0	11
2:30 AM	0	7	0	0	0	7	0	0	0	0	0	0	1	6	0	0	0	7	0	0	0	0	1	0	14
2:45 AM	0	7	1	0	0	8	3	0	2	0	0	5	0	10	3	0	0	13	0	1	0	0	0	1	27
Hourly Total	0	32	1	0	0	33	3	0	2	0	0	5	2	26	3	0	2	31	0	1	0	0	1	1	70
3:00 AM	0	2	1	0	1	3	0	0	0	0	0	0	1	3	0	0	0	4	0	0	0	0	0	0	7
3:15 AM	0	6	0	0	0	6	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	8
3:30 AM	0	8	0	0	0	8	1	0	0	0	0	1	1	11	0	0	0	12	0	0	0	0	0	0	21
3:45 AM	0	5	0	0	0	5	1	0	0	0	0	1	0	3	0	0	2	3	0	0	0	0	0	0	9
Hourly Total	0	21	1	0	1	22	2	0	0	0	0	2	2	19	0	0	2	21	0	0	0	0	0	0	45
4:00 AM	0	8	0	0	0	8	2	0	0	0	1	2	0	6	0	0	0	6	0	0	0	0	0	0	16
4:15 AM	0	12	0	0	0	12	1	1	0	0	0	2	0	11	0	0	0	11	0	0	0	0	0	0	25
4:30 AM	0	6	1	0	0	7	0	0	0	0	0	0	1	9	0	0	0	10	0	0	0	0	2	0	17
4:45 AM	0	10	2	0	0	12	1	0	0	0	1	1	0	19	0	0	0	19	0	0	0	0	0	0	32
Hourly Total	0	36	3	0	0	39	4	1	0	0	2	5	1	45	0	0	0	46	0	0	0	0	2	0	90
5:00 AM	0	14	2	0	0	16	0	0	1	0	0	1	0	11	0	0	0	11	0	0	0	0	0	0	28
5:15 AM	0	30	1	0	0	31	2	0	0	0	0	2	0	22	0	0	0	22	0	0	0	0	0	0	55
5:30 AM	0	33	1	0	0	34	2	0	0	0	0	2	2	30	0	0	0	32	0	0	0	0	1	0	68
5:45 AM	0	32	3	0	1	35	4	0	0	0	0	4	1	35	0	0	0	36	0	0	0	0	0	0	75
Hourly Total	0	109	7	0	1	116	8	0	1	0	0	9	3	98	0	0	0	101	0	0	0	0	1	0	226
6:00 AM	0	41	2	0	0	43	13	0	1	0	0	14	2	40	0	0	0	42	0	0	0	0	0	0	99
6:15 AM	0	44	6	0	0	50	2	0	3	0	1	5	0	36	0	0	0	36	0	0	0	0	0	0	91
6:30 AM	0	67	6	0	0	73	10	0	1	0	0	11	1	56	0	0	0	57	0	0	0	0	0	0	141
6:45 AM	1	93	10	0	0	104	10	0	4	0	0	14	3	57	0	0	0	60	0	0	0	0	1	0	178
Hourly Total	1	245	24	0	0	270	35	0	9	0	1	44	6	189	0	0	0	195	0	0	0	0	1	0	509
7:00 AM	0	67	11	0	0	78	13	0	2	0	0	15	5	58	0	0	0	63	0	0	2	0	0	2	158
7:15 AM	1	91	12	0	0	104	18	0	3	0	0	21	4	92	3	0	0	99	0	0	0	0	0	0	224
7:30 AM	0	161	20	0	0	181	11	0	2	0	0	13	8	103	0	0	0	111	1	0	0	0	0	1	306
7:45 AM	1	218	34	0	0	253	10	0	1	0	0	11	16	117	1	0	0	134	0	1	2	0	0	3	401
Hourly Total	2	537	77	0	0	616	52	0	8	0	0	60	33	370	4	0	0	407	1	1	4	0	0	6	1089

8:00 AM	0	157	27	0	0	184	13	0	1	0	0	14	7	117	0	0	0	124	0	0	0	0	0	0	322
8:15 AM	1	140	17	0	0	158	18	0	7	0	1	25	11	84	3	0	0	98	1	0	0	0	0	1	282
8:30 AM	2	163	23	0	0	188	14	0	1	0	0	15	10	93	1	0	0	104	1	0	1	0	1	2	309
8:45 AM	0	160	18	0	0	178	16	1	1	0	0	18	3	85	2	0	0	90	0	0	0	0	0	0	286
Hourly Total	3	620	85	0	0	708	61	1	10	0	1	72	31	379	6	0	0	416	2	0	1	0	1	3	1199
9:00 AM	1	115	20	0	0	136	15	1	1	0	0	17	9	86	0	0	1	95	1	0	0	0	2	1	249
9:15 AM	1	123	13	0	0	137	18	0	2	0	0	20	14	91	0	0	1	105	0	0	1	0	1	1	263
9:30 AM	0	126	13	0	0	139	9	0	2	0	0	11	8	101	0	0	1	109	0	0	1	0	0	1	260
9:45 AM	0	119	14	0	0	133	16	0	0	0	0	16	12	98	0	0	0	110	0	0	0	0	0	0	259
Hourly Total	2	483	60	0	0	545	58	1	5	0	0	64	43	376	0	0	3	419	1	0	2	0	3	3	1031
10:00 AM	0	95	12	0	0	107	12	0	2	0	0	14	8	120	1	0	0	129	0	1	1	0	0	2	252
10:15 AM	0	122	17	0	0	139	16	0	2	0	1	18	12	110	1	0	0	123	1	1	0	0	0	2	282
10:30 AM	1	117	16	0	0	134	13	1	4	0	0	18	9	102	0	0	1	111	1	0	1	0	0	2	265
10:45 AM	0	115	12	0	0	127	13	1	3	0	0	17	7	113	0	0	0	120	0	1	0	0	0	1	265
Hourly Total	1	449	57	0	0	507	54	2	11	0	1	67	36	445	2	0	1	483	2	3	2	0	0	7	1064
11:00 AM	1	103	10	0	0	114	8	0	1	0	0	9	0	129	1	0	0	130	1	0	1	0	0	2	255
11:15 AM	1	137	9	0	0	147	16	1	1	0	0	18	9	136	0	0	0	145	0	0	0	0	0	0	310
11:30 AM	0	122	17	0	0	139	22	0	0	0	0	22	7	140	0	0	0	147	0	0	1	0	2	1	309
11:45 AM	0	139	24	0	0	163	23	1	4	0	1	28	11	121	3	0	0	135	1	0	0	0	0	1	327
Hourly Total	2	501	60	0	0	563	69	2	6	0	1	77	27	526	4	0	0	557	2	0	2	0	2	4	1201
12:00 PM	1	140	14	0	0	155	19	0	4	0	0	23	21	165	1	0	0	187	0	0	0	0	0	0	365
12:15 PM	1	158	10	0	0	169	31	0	1	0	0	32	5	133	0	0	0	138	0	0	0	0	0	0	339
12:30 PM	0	129	18	0	0	147	12	0	4	0	0	16	11	150	1	0	0	162	2	0	2	0	0	4	329
12:45 PM	0	131	12	0	0	143	10	0	0	0	1	10	3	124	2	0	0	129	1	1	0	0	0	2	284
Hourly Total	2	558	54	0	0	614	72	0	9	0	1	81	40	572	4	0	0	616	3	1	2	0	0	6	1317
1:00 PM	0	155	12	0	0	167	19	0	7	0	0	26	14	117	2	0	0	133	0	0	0	0	0	0	326
1:15 PM	1	135	20	0	0	156	23	0	6	0	0	29	7	147	0	0	0	154	0	0	1	0	0	1	340
1:30 PM	0	131	13	0	0	144	17	0	2	0	1	19	14	133	2	0	0	149	1	0	0	0	1	1	313
1:45 PM	1	134	10	0	0	145	17	1	4	0	1	22	5	154	0	0	0	159	0	0	0	0	1	0	326
Hourly Total	2	555	55	0	0	612	76	1	19	0	2	96	40	551	4	0	0	595	1	0	1	0	2	2	1305
2:00 PM	3	129	21	0	0	153	17	2	4	0	0	23	8	124	0	0	0	132	0	0	2	0	0	2	310
Grand Total	62	8129	1031	0	9	9222	1132	27	197	1	34	1357	603	8041	66	0	34	8710	34	9	35	0	31	78	19367
Approach %	0.7	88.1	11.2	0.0	-	-	83.4	2.0	14.5	0.1	-	-	6.9	92.3	0.8	0.0	-	-	43.6	11.5	44.9	0.0	-	-	-
Total %	0.3	42.0	5.3	0.0	-	47.6	5.8	0.1	1.0	0.0	-	7.0	3.1	41.5	0.3	0.0	-	45.0	0.2	0.0	0.2	0.0	-	0.4	-
Lights	61	7988	1016	0	-	9065	1124	25	195	1	-	1345	602	7895	62	0	-	8559	33	8	35	0	-	76	19045
% Lights	98.4	98.3	98.5	-	-	98.3	99.3	92.6	99.0	100.0	-	99.1	99.8	98.2	93.9	-	-	98.3	97.1	88.9	100.0	-	-	97.4	98.3
Other Vehicles	1	141	15	0	-	157	8	2	2	0	-	12	1	146	4	0	-	151	1	1	0	0	-	2	322
% Other Vehicles	1.6	1.7	1.5	-	-	1.7	0.7	7.4	1.0	0.0	-	0.9	0.2	1.8	6.1	-	-	1.7	2.9	11.1	0.0	-	-	2.6	1.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	7	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	5.9	-	-	-	-	-	0.0	-	-	-	-	-	22.6	-	-
Pedestrians	-	-	-	-	9	-	-	-	-	-	32	-	-	-	-	-	34	-	-	-	-	-	24	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	94.1	-	-	-	-	-	100.0	-	-	-	-	-	77.4	-	-



Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: S 9th Street & Park Avenue
Site Code:
Start Date: 02/21/2017
Page No: 4

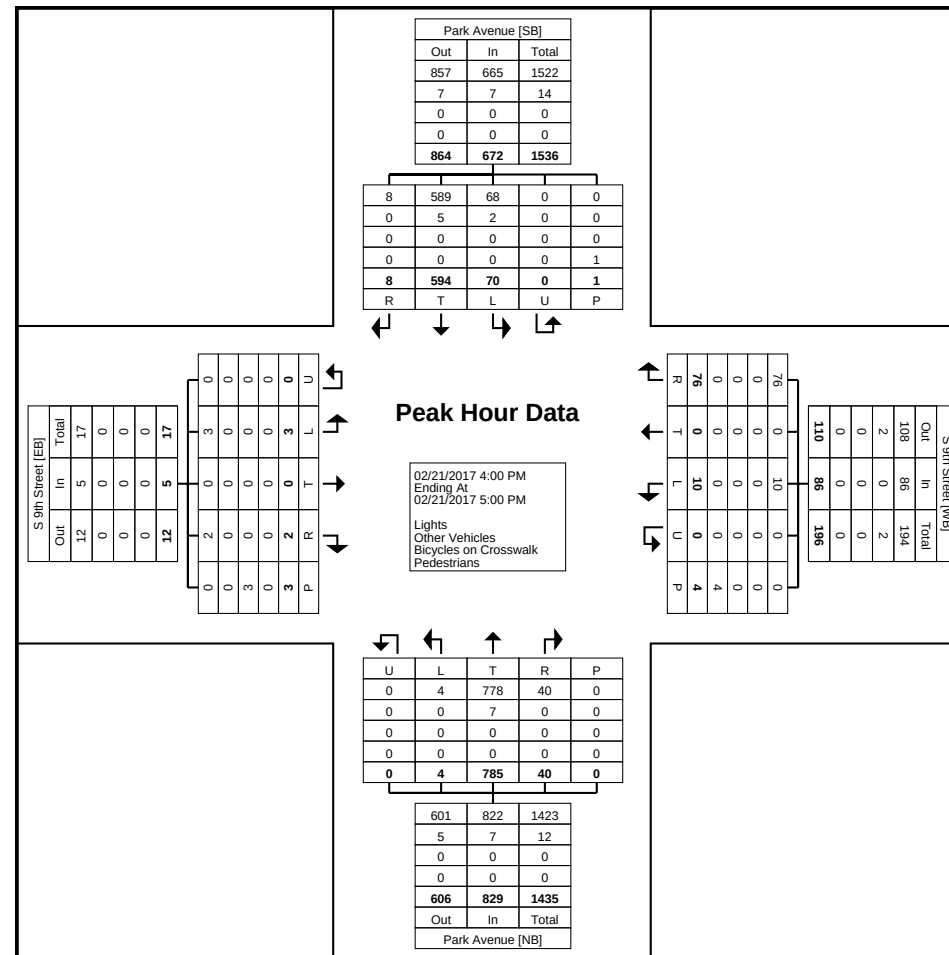


Turning Movement Data Plot



Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: S 9th Street & Park Avenue
Site Code:
Start Date: 02/21/2017
Page No: 6



Turning Movement Peak Hour Data Plot (4:00 PM)

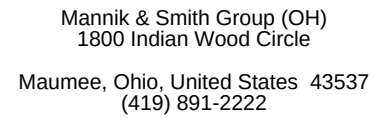


Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: S 9th Street & Park Avenue
Site Code:
Start Date: 02/21/2017
Page No: 7

Turning Movement Peak Hour Data (7:45 AM)

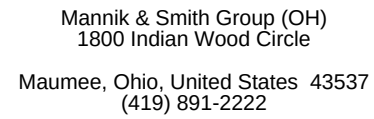
Start Time	Park Avenue Southbound						S 9th Street Westbound						Park Avenue Northbound						S 9th Street Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:45 AM	1	218	34	0	0	253	10	0	1	0	0	11	16	117	1	0	0	134	0	1	2	0	0	3	401
8:00 AM	0	157	27	0	0	184	13	0	1	0	0	14	7	117	0	0	0	124	0	0	0	0	0	0	322
8:15 AM	1	140	17	0	0	158	18	0	7	0	1	25	11	84	3	0	0	98	1	0	0	0	0	1	282
8:30 AM	2	163	23	0	0	188	14	0	1	0	0	15	10	93	1	0	0	104	1	0	1	0	1	2	309
Total	4	678	101	0	0	783	55	0	10	0	1	65	44	411	5	0	0	460	2	1	3	0	1	6	1314
Approach %	0.5	86.6	12.9	0.0	-	-	84.6	0.0	15.4	0.0	-	-	9.6	89.3	1.1	0.0	-	-	33.3	16.7	50.0	0.0	-	-	-
Total %	0.3	51.6	7.7	0.0	-	59.6	4.2	0.0	0.8	0.0	-	4.9	3.3	31.3	0.4	0.0	-	35.0	0.2	0.1	0.2	0.0	-	0.5	-
PHF	0.500	0.778	0.743	0.000	-	0.774	0.764	0.000	0.357	0.000	-	0.650	0.688	0.878	0.417	0.000	-	0.858	0.500	0.250	0.375	0.000	-	0.500	0.819
Lights	4	665	99	0	-	768	55	0	10	0	-	65	44	392	5	0	-	441	2	0	3	0	-	5	1279
% Lights	100.0	98.1	98.0	-	-	98.1	100.0	-	100.0	-	-	100.0	100.0	95.4	100.0	-	-	95.9	100.0	0.0	100.0	-	-	83.3	97.3
Other Vehicles	0	13	2	0	-	15	0	0	0	0	-	0	0	19	0	0	-	19	0	1	0	0	-	1	35
% Other Vehicles	0.0	1.9	2.0	-	-	1.9	0.0	-	0.0	-	-	0.0	0.0	4.6	0.0	-	-	4.1	0.0	100.0	0.0	-	-	16.7	2.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-





Turning Movement Peak Hour Data (11:45 AM)

Start Time	Park Avenue Southbound						S 9th Street Westbound						Park Avenue Northbound						S 9th Street Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
11:45 AM	0	139	24	0	0	163	23	1	4	0	1	28	11	121	3	0	0	135	1	0	0	0	0	1	327
12:00 PM	1	140	14	0	0	155	19	0	4	0	0	23	21	165	1	0	0	187	0	0	0	0	0	0	365
12:15 PM	1	158	10	0	0	169	31	0	1	0	0	32	5	133	0	0	0	138	0	0	0	0	0	0	339
12:30 PM	0	129	18	0	0	147	12	0	4	0	0	16	11	150	1	0	0	162	2	0	2	0	0	4	329
Total	2	566	66	0	0	634	85	1	13	0	1	99	48	569	5	0	0	622	3	0	2	0	0	5	1360
Approach %	0.3	89.3	10.4	0.0	-	-	85.9	1.0	13.1	0.0	-	-	7.7	91.5	0.8	0.0	-	-	60.0	0.0	40.0	0.0	-	-	-
Total %	0.1	41.6	4.9	0.0	-	46.6	6.3	0.1	1.0	0.0	-	7.3	3.5	41.8	0.4	0.0	-	45.7	0.2	0.0	0.1	0.0	-	0.4	-
PHF	0.500	0.896	0.688	0.000	-	0.938	0.685	0.250	0.813	0.000	-	0.773	0.571	0.862	0.417	0.000	-	0.832	0.375	0.000	0.250	0.000	-	0.313	0.932
Lights	2	552	65	0	-	619	83	1	13	0	-	97	48	558	5	0	-	611	3	0	2	0	-	5	1332
% Lights	100.0	97.5	98.5	-	-	97.6	97.6	100.0	100.0	-	-	98.0	100.0	98.1	100.0	-	-	98.2	100.0	-	100.0	-	-	100.0	97.9
Other Vehicles	0	14	1	0	-	15	2	0	0	0	-	2	0	11	0	0	-	11	0	0	0	0	-	0	28
% Other Vehicles	0.0	2.5	1.5	-	-	2.4	2.4	0.0	0.0	-	-	2.0	0.0	1.9	0.0	-	-	1.8	0.0	-	0.0	-	-	0.0	2.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-





Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: WB 52 On Ramp Off Ramp
Site Code:
Start Date: 02/22/2017
Page No: 1

Turning Movement Data

Start Time	Park Drive/93 Southbound					On Ramp Westbound		Park Drive/93 Northbound				Off Ramp Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Peds	App. Total	Thru	U-Turn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
1:45 PM	107	7	0	0	114	0	0	88	0	0	88	48	0	29	0	77	279
Hourly Total	107	7	0	0	114	0	0	88	0	0	88	48	0	29	0	77	279
2:00 PM	110	6	0	0	116	0	0	81	0	0	81	52	0	46	0	98	295
2:15 PM	122	12	0	0	134	0	0	107	0	0	107	45	0	46	2	91	332
2:30 PM	101	7	0	0	108	0	0	135	0	0	135	62	0	46	3	108	351
2:45 PM	119	15	0	0	134	0	0	136	0	0	136	40	0	41	0	81	351
Hourly Total	452	40	0	0	492	0	0	459	0	0	459	199	0	179	5	378	1329
3:00 PM	133	17	0	0	150	0	0	99	0	0	99	65	0	47	1	112	361
3:15 PM	143	20	0	0	163	0	0	120	0	0	120	72	0	32	0	104	387
3:30 PM	133	12	0	0	145	0	0	125	0	0	125	60	0	39	1	99	369
3:45 PM	124	23	0	0	147	0	0	136	0	0	136	74	0	55	2	129	412
Hourly Total	533	72	0	0	605	0	0	480	0	0	480	271	0	173	4	444	1529
4:00 PM	139	11	0	0	150	0	0	172	0	0	172	51	0	50	2	101	423
4:15 PM	137	13	0	0	150	0	0	145	0	0	145	54	0	42	1	96	391
4:30 PM	145	14	0	0	159	0	0	137	0	0	137	50	0	46	1	96	392
4:45 PM	104	16	0	0	120	0	0	137	0	0	137	57	0	54	0	111	368
Hourly Total	525	54	0	0	579	0	0	591	0	0	591	212	0	192	4	404	1574
5:00 PM	138	11	0	0	149	0	0	149	0	0	149	55	0	46	2	101	399
5:15 PM	126	10	0	0	136	0	0	133	0	0	133	47	0	64	0	111	380
5:30 PM	107	10	0	0	117	0	0	125	0	0	125	59	0	63	2	122	364
5:45 PM	130	21	0	0	151	0	0	110	0	0	110	59	0	65	0	124	385
Hourly Total	501	52	0	0	553	0	0	517	0	0	517	220	0	238	4	458	1528
6:00 PM	107	12	0	0	119	0	0	106	0	0	106	37	0	39	1	76	301
6:15 PM	121	16	0	0	137	0	0	110	0	0	110	39	0	42	0	81	328
6:30 PM	120	9	0	0	129	0	0	93	0	0	93	33	0	43	0	76	298
6:45 PM	98	7	0	0	105	0	0	90	0	0	90	42	0	29	0	71	266
Hourly Total	446	44	0	0	490	0	0	399	0	0	399	151	0	153	1	304	1193
7:00 PM	88	10	0	0	98	0	0	99	0	0	99	33	0	51	0	84	281
7:15 PM	85	9	0	0	94	0	0	87	0	0	87	18	0	31	0	49	230
7:30 PM	81	10	0	0	91	0	0	91	0	0	91	24	0	25	0	49	231
7:45 PM	75	10	0	0	85	0	0	69	0	0	69	32	0	23	0	55	209
Hourly Total	329	39	0	0	368	0	0	346	0	0	346	107	0	130	0	237	951
8:00 PM	90	7	0	0	97	0	0	84	0	0	84	27	0	24	0	51	232
8:15 PM	67	13	0	0	80	0	0	69	0	0	69	28	0	27	0	55	204
8:30 PM	72	4	0	0	76	0	0	76	0	0	76	21	0	24	0	45	197
8:45 PM	65	5	0	0	70	0	0	57	0	0	57	17	0	17	2	34	161
Hourly Total	294	29	0	0	323	0	0	286	0	0	286	93	0	92	2	185	794
9:00 PM	64	6	0	0	70	0	0	54	0	0	54	18	0	26	0	44	168

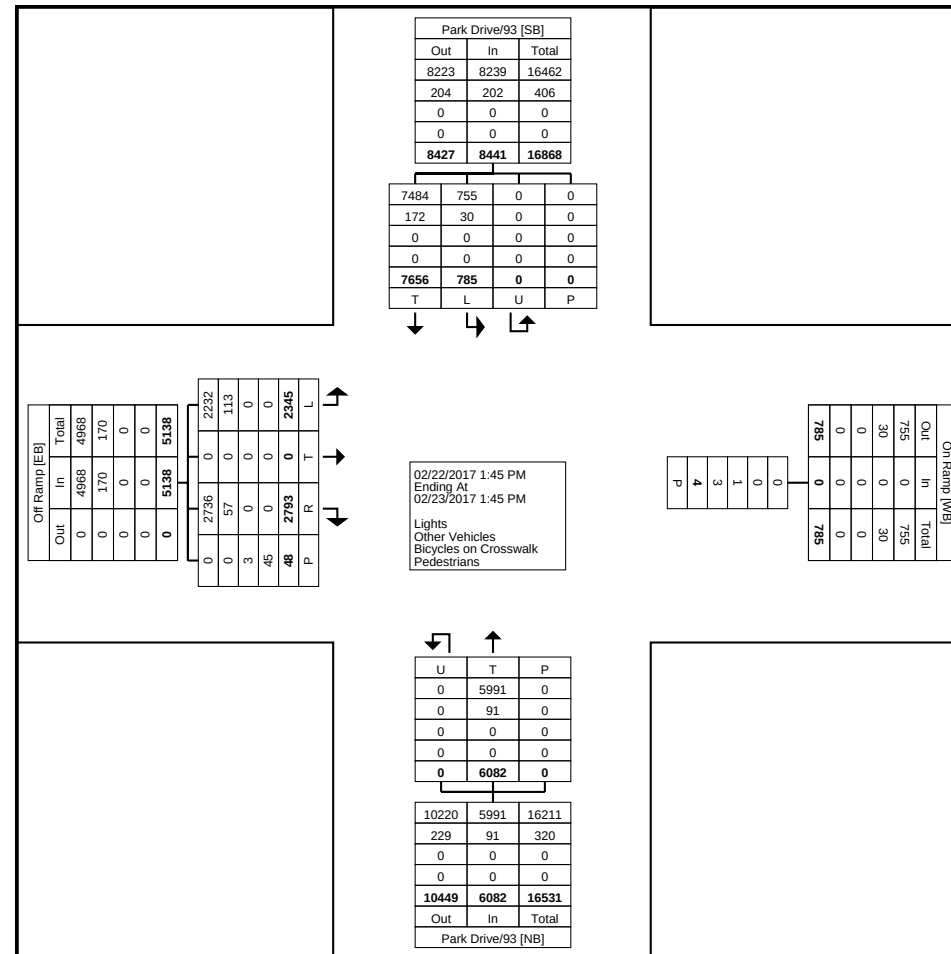
9:15 PM	50	6	0	0	56	0	0	43	0	0	43	17	0	20	0	37	136
9:30 PM	50	5	0	0	55	0	0	43	0	0	43	16	0	11	2	27	125
9:45 PM	36	5	0	0	41	0	0	48	0	0	48	21	0	17	0	38	127
Hourly Total	200	22	0	0	222	0	0	188	0	0	188	72	0	74	2	146	556
10:00 PM	51	6	0	0	57	0	0	37	0	0	37	11	0	18	0	29	123
10:15 PM	55	8	0	0	63	0	0	35	0	0	35	7	0	6	0	13	111
10:30 PM	29	3	0	0	32	0	0	30	0	0	30	7	0	8	0	15	77
10:45 PM	34	5	0	0	39	0	0	18	0	0	18	11	0	14	0	25	82
Hourly Total	169	22	0	0	191	0	0	120	0	0	120	36	0	46	0	82	393
11:00 PM	23	4	0	0	27	0	0	24	0	0	24	6	0	7	1	13	64
11:15 PM	19	2	0	0	21	0	0	22	0	0	22	11	0	9	0	20	63
11:30 PM	15	0	0	0	15	0	0	16	0	0	16	6	0	6	0	12	43
11:45 PM	9	2	0	0	11	0	0	15	0	0	15	8	0	7	0	15	41
Hourly Total	66	8	0	0	74	0	0	77	0	0	77	31	0	29	1	60	211
12:00 AM	16	2	0	0	18	0	0	13	0	0	13	4	0	3	0	7	38
12:15 AM	14	1	0	0	15	0	0	12	0	0	12	3	0	3	0	6	33
12:30 AM	11	1	0	0	12	0	0	16	0	0	16	4	0	5	0	9	37
12:45 AM	14	1	0	0	15	0	0	11	0	0	11	1	0	5	0	6	32
Hourly Total	55	5	0	0	60	0	0	52	0	0	52	12	0	16	0	28	140
1:00 AM	13	2	0	0	15	0	0	4	0	0	4	2	0	2	0	4	23
1:15 AM	9	0	0	0	9	0	0	8	0	0	8	1	0	3	0	4	21
1:30 AM	10	1	0	0	11	0	0	1	0	0	1	1	0	4	0	5	17
1:45 AM	7	0	0	0	7	0	0	11	0	0	11	4	0	1	0	5	23
Hourly Total	39	3	0	0	42	0	0	24	0	0	24	8	0	10	0	18	84
2:00 AM	11	3	0	0	14	0	0	6	0	0	6	2	0	1	0	3	23
2:15 AM	5	0	0	0	5	0	0	5	0	0	5	3	0	1	0	4	14
2:30 AM	6	1	0	0	7	0	0	4	0	0	4	3	0	1	0	4	15
2:45 AM	4	0	0	0	4	0	0	2	0	0	2	3	0	2	0	5	11
Hourly Total	26	4	0	0	30	0	0	17	0	0	17	11	0	5	0	16	63
3:00 AM	6	1	0	0	7	0	0	4	0	0	4	3	0	3	1	6	17
3:15 AM	6	0	0	0	6	0	0	1	0	0	1	1	0	1	0	2	9
3:30 AM	7	0	0	0	7	0	0	5	0	0	5	2	0	1	1	3	15
3:45 AM	5	0	0	0	5	0	0	6	0	0	6	1	0	3	0	4	15
Hourly Total	24	1	0	0	25	0	0	16	0	0	16	7	0	8	2	15	56
4:00 AM	13	4	0	0	17	0	0	4	0	0	4	3	0	3	0	6	27
4:15 AM	12	3	0	0	15	0	0	2	0	0	2	0	0	2	0	2	19
4:30 AM	10	3	0	0	13	0	0	3	0	0	3	3	0	0	0	3	19
4:45 AM	20	2	0	0	22	0	0	8	0	0	8	1	0	2	0	3	33
Hourly Total	55	12	0	0	67	0	0	17	0	0	17	7	0	7	0	14	98
5:00 AM	17	2	0	0	19	0	0	7	0	0	7	3	0	4	0	7	33
5:15 AM	34	9	0	0	43	0	0	10	0	0	10	7	0	15	0	22	75
5:30 AM	43	7	0	0	50	0	0	19	0	0	19	1	0	5	0	6	75
5:45 AM	48	6	0	0	54	0	0	18	0	0	18	2	0	16	1	18	90
Hourly Total	142	24	0	0	166	0	0	54	0	0	54	13	0	40	1	53	273
6:00 AM	38	9	0	0	47	0	0	21	0	0	21	9	0	7	0	16	84
6:15 AM	68	12	0	0	80	0	0	17	0	0	17	6	0	15	0	21	118
6:30 AM	93	7	0	0	100	0	0	31	0	0	31	12	0	17	0	29	160
6:45 AM	88	8	0	0	96	0	0	33	0	0	33	22	0	19	0	41	170
Hourly Total	287	36	0	0	323	0	0	102	0	0	102	49	0	58	0	107	532
7:00 AM	89	10	0	0	99	0	0	48	0	0	48	22	0	32	0	54	201
7:15 AM	120	16	0	0	136	0	0	50	0	0	50	31	0	33	0	64	250
7:30 AM	143	19	0	0	162	0	0	66	0	0	66	58	0	32	1	90	318

7:45 AM	190	19	0	0	209	0	0	73	0	0	73	63	0	46	0	109	391
Hourly Total	542	64	0	0	606	0	0	237	0	0	237	174	0	143	1	317	1160
8:00 AM	127	17	0	0	144	0	0	72	0	0	72	50	0	38	0	88	304
8:15 AM	118	14	0	0	132	0	0	76	0	0	76	45	0	49	0	94	302
8:30 AM	146	12	0	0	158	0	0	61	0	0	61	45	0	26	1	71	290
8:45 AM	145	16	0	0	161	0	0	64	0	0	64	42	0	38	0	80	305
Hourly Total	536	59	0	0	595	0	0	273	0	0	273	182	0	151	1	333	1201
9:00 AM	123	5	0	0	128	0	0	61	0	0	61	44	0	19	1	63	252
9:15 AM	121	7	0	0	128	0	0	56	0	0	56	31	0	32	0	63	247
9:30 AM	115	13	0	0	128	0	0	60	0	0	60	46	0	23	0	69	257
9:45 AM	122	3	0	0	125	0	0	64	0	0	64	39	0	21	2	60	249
Hourly Total	481	28	0	0	509	0	0	241	0	0	241	160	0	95	3	255	1005
10:00 AM	87	11	0	0	98	0	0	61	0	0	61	44	0	26	0	70	229
10:15 AM	101	7	0	0	108	0	0	77	0	0	77	44	0	19	2	63	248
10:30 AM	104	10	0	0	114	1	0	76	0	0	76	44	0	20	4	64	254
10:45 AM	110	10	0	0	120	1	0	89	0	0	89	49	0	29	0	78	287
Hourly Total	402	38	0	0	440	2	0	303	0	0	303	181	0	94	6	275	1018
11:00 AM	132	7	0	0	139	1	0	110	0	0	110	37	0	24	3	61	310
11:15 AM	138	10	0	0	148	0	0	117	0	0	117	58	0	34	0	92	357
11:30 AM	127	14	0	0	141	1	0	76	0	0	76	50	0	36	0	86	303
11:45 AM	139	12	0	0	151	0	0	102	0	0	102	42	0	37	2	79	332
Hourly Total	536	43	0	0	579	2	0	405	0	0	405	187	0	131	5	318	1302
12:00 PM	130	7	0	0	137	0	0	120	0	0	120	57	0	42	0	99	356
12:15 PM	142	12	0	0	154	0	0	115	0	0	115	53	0	41	1	94	363
12:30 PM	143	14	0	0	157	0	0	111	0	0	111	49	0	35	0	84	352
12:45 PM	116	14	0	0	130	0	0	111	0	0	111	55	0	38	3	93	334
Hourly Total	531	47	0	0	578	0	0	457	0	0	457	214	0	156	4	370	1405
1:00 PM	130	15	0	0	145	0	0	107	0	0	107	56	0	31	1	87	339
1:15 PM	115	11	0	0	126	0	0	103	0	0	103	41	0	39	0	80	309
1:30 PM	133	6	0	0	139	0	0	123	0	0	123	51	0	26	1	77	339
Grand Total	7656	785	0	0	8441	4	0	6082	0	0	6082	2793	0	2345	48	5138	19661
Approach %	90.7	9.3	0.0	-	-	-	-	100.0	0.0	-	-	54.4	0.0	45.6	-	-	-
Total %	38.9	4.0	0.0	-	42.9	-	0.0	30.9	0.0	-	30.9	14.2	0.0	11.9	-	26.1	-
Lights	7484	755	0	-	8239	-	0	5991	0	-	5991	2736	0	2232	-	4968	19198
% Lights	97.8	96.2	-	-	97.6	-	-	98.5	-	-	98.5	98.0	-	95.2	-	96.7	97.6
Other Vehicles	172	30	0	-	202	-	0	91	0	-	91	57	0	113	-	170	463
% Other Vehicles	2.2	3.8	-	-	2.4	-	-	1.5	-	-	1.5	2.0	-	4.8	-	3.3	2.4
Bicycles on Crosswalk	-	-	-	0	-	1	-	-	-	0	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	-	25.0	-	-	-	-	-	-	-	-	6.3	-	-
Pedestrians	-	-	-	0	-	3	-	-	-	0	-	-	-	-	45	-	-
% Pedestrians	-	-	-	-	-	75.0	-	-	-	-	-	-	-	-	93.8	-	-



Mannik & Smith Group (OH)
1800 Indian Wood Circle
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Count Name: WB 52 On Ramp Off Ramp
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Turning Movement Data Plot



Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: WB 52 On Ramp Off Ramp
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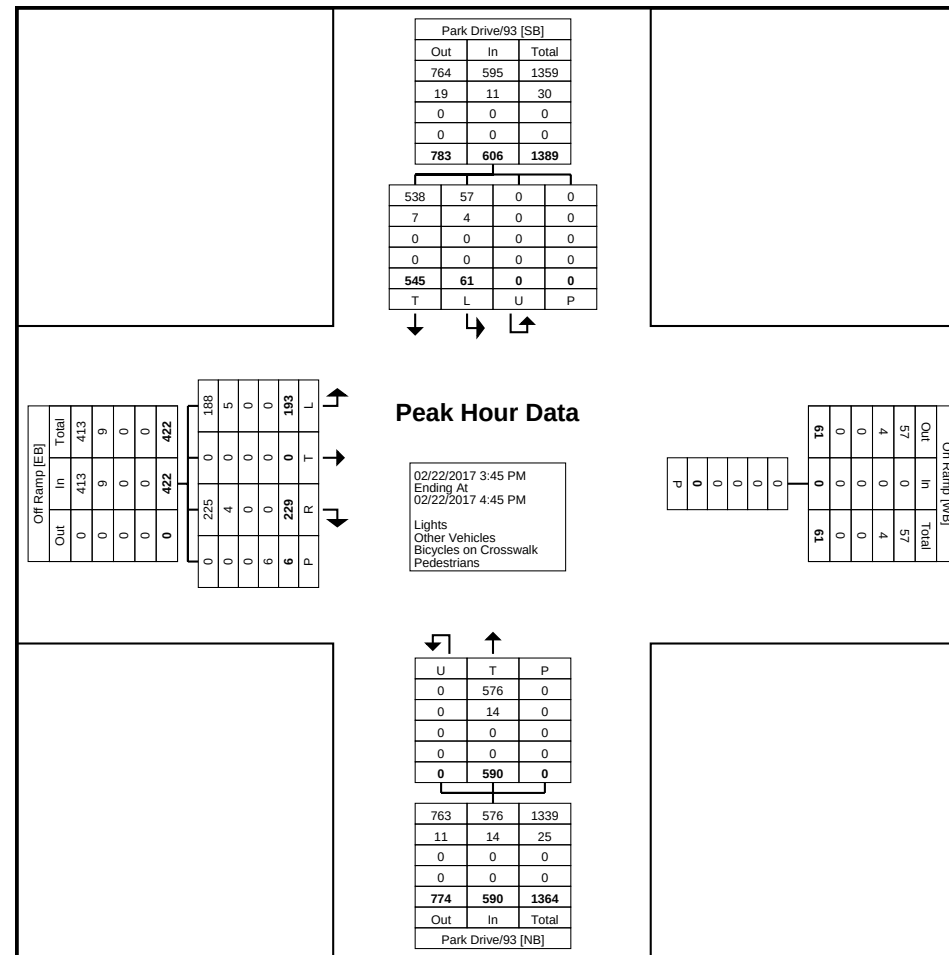
Turning Movement Peak Hour Data (3:45 PM)

Start Time	Park Drive/93 Southbound					On Ramp Westbound		Park Drive/93 Northbound				Off Ramp Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Peds	App. Total	Thru	U-Turn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
3:45 PM	124	23	0	0	147	0	0	136	0	0	136	74	0	55	2	129	412
4:00 PM	139	11	0	0	150	0	0	172	0	0	172	51	0	50	2	101	423
4:15 PM	137	13	0	0	150	0	0	145	0	0	145	54	0	42	1	96	391
4:30 PM	145	14	0	0	159	0	0	137	0	0	137	50	0	46	1	96	392
Total	545	61	0	0	606	0	0	590	0	0	590	229	0	193	6	422	1618
Approach %	89.9	10.1	0.0	-	-	-	-	100.0	0.0	-	-	54.3	0.0	45.7	-	-	-
Total %	33.7	3.8	0.0	-	37.5	-	0.0	36.5	0.0	-	36.5	14.2	0.0	11.9	-	26.1	-
PHF	0.940	0.663	0.000	-	0.953	-	0.000	0.858	0.000	-	0.858	0.774	0.000	0.877	-	0.818	0.956
Lights	538	57	0	-	595	-	0	576	0	-	576	225	0	188	-	413	1584
% Lights	98.7	93.4	-	-	98.2	-	-	97.6	-	-	97.6	98.3	-	97.4	-	97.9	97.9
Other Vehicles	7	4	0	-	11	-	0	14	0	-	14	4	0	5	-	9	34
% Other Vehicles	1.3	6.6	-	-	1.8	-	-	2.4	-	-	2.4	1.7	-	2.6	-	2.1	2.1
Bicycles on Crosswalk	-	-	-	0	-	0	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	0	-	-	-	0	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Count Name: WB 52 On Ramp Off Ramp
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Turning Movement Peak Hour Data Plot (3:45 PM)



Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
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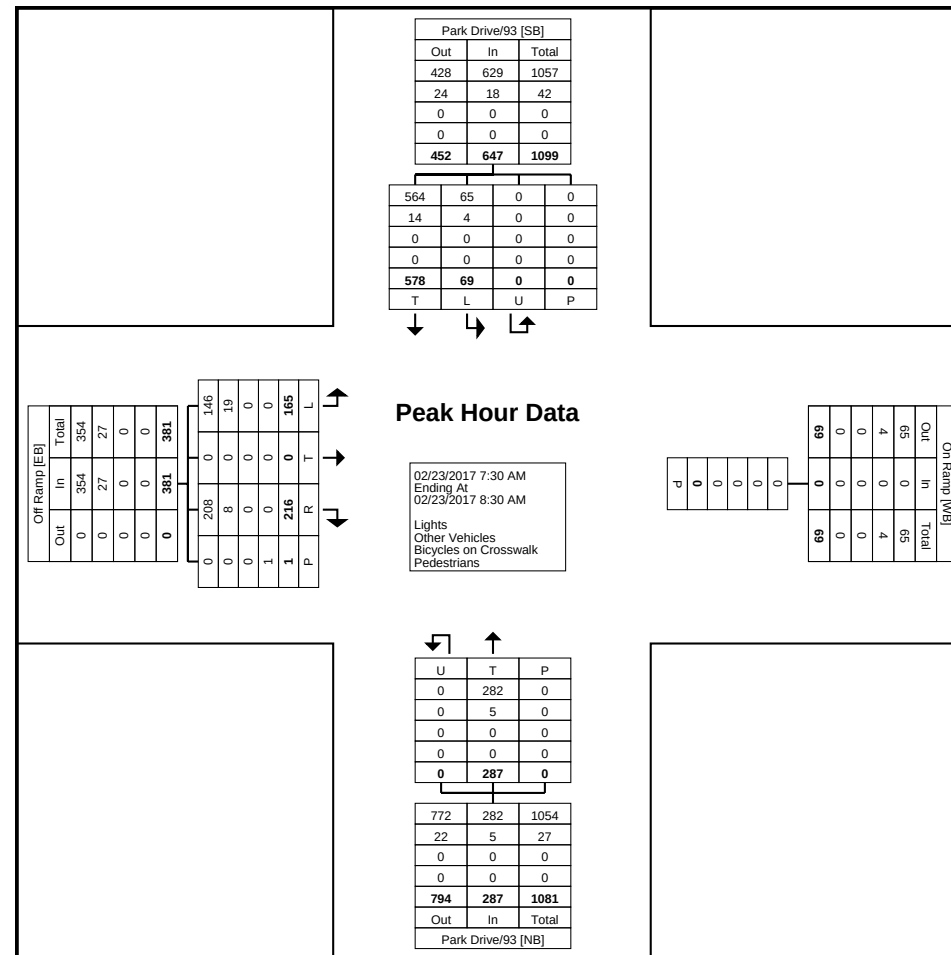
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Park Drive/93 Southbound					On Ramp Westbound		Park Drive/93 Northbound				Off Ramp Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Peds	App. Total	Thru	U-Turn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
7:30 AM	143	19	0	0	162	0	0	66	0	0	66	58	0	32	1	90	318
7:45 AM	190	19	0	0	209	0	0	73	0	0	73	63	0	46	0	109	391
8:00 AM	127	17	0	0	144	0	0	72	0	0	72	50	0	38	0	88	304
8:15 AM	118	14	0	0	132	0	0	76	0	0	76	45	0	49	0	94	302
Total	578	69	0	0	647	0	0	287	0	0	287	216	0	165	1	381	1315
Approach %	89.3	10.7	0.0	-	-	-	-	100.0	0.0	-	-	56.7	0.0	43.3	-	-	-
Total %	44.0	5.2	0.0	-	49.2	-	0.0	21.8	0.0	-	21.8	16.4	0.0	12.5	-	29.0	-
PHF	0.761	0.908	0.000	-	0.774	-	0.000	0.944	0.000	-	0.944	0.857	0.000	0.842	-	0.874	0.841
Lights	564	65	0	-	629	-	0	282	0	-	282	208	0	146	-	354	1265
% Lights	97.6	94.2	-	-	97.2	-	-	98.3	-	-	98.3	96.3	-	88.5	-	92.9	96.2
Other Vehicles	14	4	0	-	18	-	0	5	0	-	5	8	0	19	-	27	50
% Other Vehicles	2.4	5.8	-	-	2.8	-	-	1.7	-	-	1.7	3.7	-	11.5	-	7.1	3.8
Bicycles on Crosswalk	-	-	-	0	-	0	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	0	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: WB 52 On Ramp Off Ramp
Site Code:
Start Date: 02/22/2017
Page No: 8

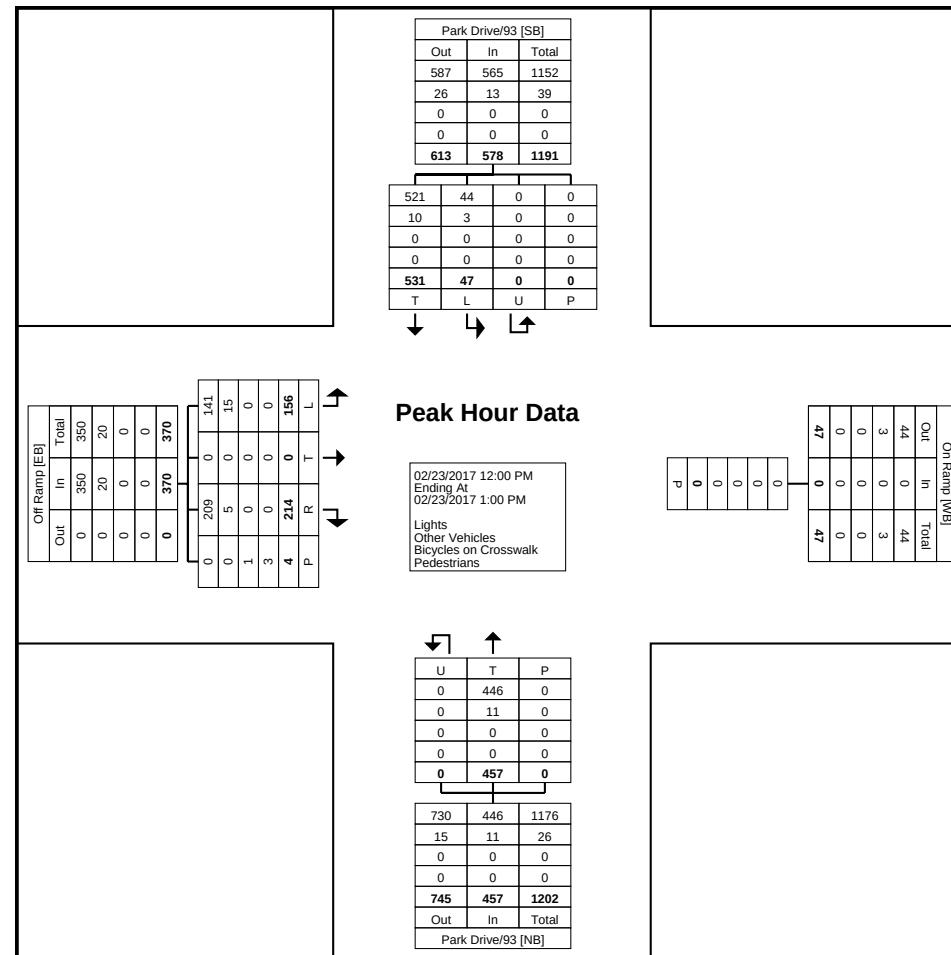


Turning Movement Peak Hour Data Plot (7:30 AM)



Mannik & Smith Group (OH)
1800 Indian Wood Circle
Maumee, Ohio, United States 43537
(419) 891-2222

Count Name: WB 52 On Ramp Off Ramp
Site Code:
Start Date: 02/22/2017
Page No: 10



Turning Movement Peak Hour Data Plot (12:00 PM)

APPENDIX B
TURN LANE WARRANTS/TRAFFIC SIGNAL WARRANTS



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Signal Warrants - Summary Proposed

Major Street Approaches

Northbound: Park Ave

Number of Lanes: **1**
85% Speed > 40 MPH.
Total Approach Volume: **6,168**

Southbound: Park Ave

Number of Lanes: **1**
85% Speed > 40 MPH.
Total Approach Volume: **6,209**

Minor Street Approaches

Eastbound: S. 6th St

Number of Lanes: **1**

Total Approach Volume: **0**

Westbound: S. 6th St

Number of Lanes: **1**

Total Approach Volume: **3,322**

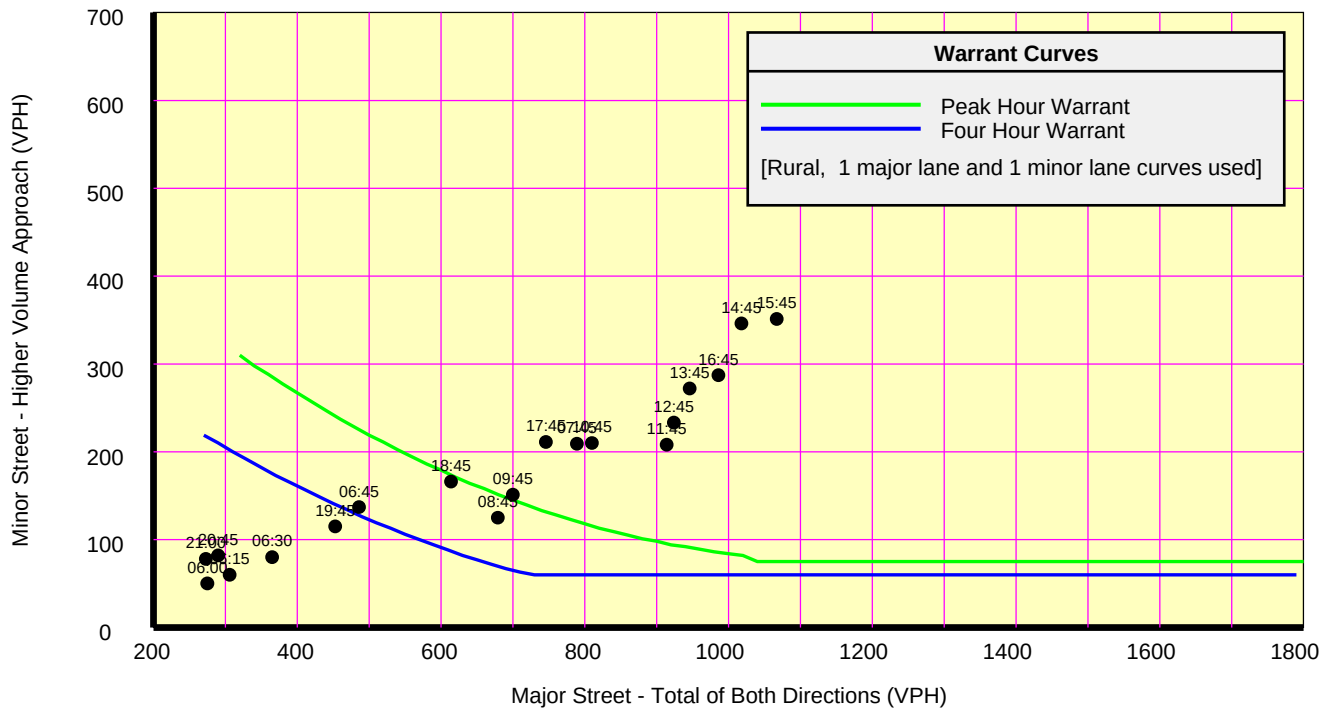
Warrant Summary (Rural values apply.)

Warrant 1 - Eight Hour Vehicular Volumes	Satisfied
Warrant 1A - Minimum Vehicular VolumeSatisfied	
Required volumes reached for 14 hours, 8 are needed	
Warrant 1B - Interruption of Continuous TrafficSatisfied	
Required volumes reached for 13 hours, 8 are needed	
Warrant 1C - Combination of WarrantsSatisfied	
Required 1A volumes reached for 14 hours, 8 are needed	
Required 1B volumes reached for 13 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Satisfied
Number of hours (13) volumes exceed minimum >= minimum required (4).	
Warrant 3 - Peak Hour	Satisfied
Warrant 3A - Peak Hour DelaySatisfied	
Number of hours (47) volumes exceed minimum >= required (1). Delay data not evaluated.	
Warrant 3B - Peak Hour VolumesSatisfied	
Volumes exceed minimums for at least one hour.	
Warrant 4 - Pedestrian Volumes	Not Evaluated
Warrant 5 - School Crossing	Not Evaluated
Warrant 6 - Coordinated Signal System	Not Evaluated
Warrant 7 - Crash Experience	Not Evaluated
Warrant 8 - Roadway Network	Not Evaluated
Warrant 9 - Intersection Near a Grade Crossing	Not Evaluated

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Signal Warrants - Summary Proposed



Analysis of 8-Hour Volume Warrants:

War 1A-Minimum Volume

War 1B-Interruption of Traffic

War 1C-Combination of Warrants

Hour Begin	Major Total	Minor Vol Dir	Maj 350	Min 105	Hour Begin	Major Total	Minor Vol Dir	Maj 525	Min 53	Hour Begin	Major Total	Minor Vol Dir	1A Met	1B Met
15:45	1,067	351 W	Yes	Yes	15:00	1,052	354 W	Yes	Yes	15:45	1,067	351 W	Yes	Yes
14:45	1,018	346 W	Yes	Yes	16:00	1,044	354 W	Yes	Yes	14:45	1,018	346 W	Yes	Yes
16:45	986	287 W	Yes	Yes	14:00	1,003	273 W	Yes	Yes	16:45	986	287 W	Yes	Yes
13:45	946	272 W	Yes	Yes	17:00	929	254 W	Yes	Yes	13:45	946	272 W	Yes	Yes
12:45	924	233 W	Yes	Yes	13:00	915	244 W	Yes	Yes	12:45	924	233 W	Yes	Yes
11:45	914	208 W	Yes	Yes	12:00	904	206 W	Yes	Yes	11:45	914	208 W	Yes	Yes
10:45	810	210 W	Yes	Yes	11:00	838	222 W	Yes	Yes	10:45	810	210 W	Yes	Yes
07:45	789	209 W	Yes	Yes	08:00	717	160 W	Yes	Yes	07:45	789	209 W	Yes	Yes
17:45	746	211 W	Yes	Yes	18:00	712	216 W	Yes	Yes	17:45	746	211 W	Yes	Yes
09:45	700	151 W	Yes	Yes	10:00	706	171 W	Yes	Yes	09:45	700	151 W	Yes	Yes
08:45	679	125 W	Yes	Yes	09:00	701	127 W	Yes	Yes	08:45	679	125 W	Yes	Yes
18:45	614	166 W	Yes	Yes	07:00	623	195 W	Yes	Yes	18:45	614	166 W	Yes	Yes
06:45	486	137 W	Yes	Yes	19:00	564	140 W	Yes	Yes	06:45	486	137 W	Yes	Yes
19:45	453	115 W	Yes	Yes	06:45	486	137 W	No	Yes	19:45	453	115 W	Yes	Yes
06:30	365	80 W	Yes	No	20:00	412	108 W	No	Yes	06:30	365	80 W	No	No
06:15	306	60 W	No	No	06:30	365	80 W	No	Yes	06:15	306	60 W	No	No
20:45	290	82 W	No	No	20:15	354	86 W	No	Yes	20:45	290	82 W	No	No
06:00	275	50 W	No	No	20:30	322	79 W	No	Yes	06:00	275	50 W	No	No
21:00	273	78 W	No	No	06:15	306	60 W	No	Yes	21:00	273	78 W	No	No
21:15	263	85 W	No	No	20:45	290	82 W	No	Yes	21:15	263	85 W	No	No
21:30	247	77 W	No	No	06:00	275	50 W	No	No	21:30	247	77 W	No	No
21:45	244	57 W	No	No	21:00	273	78 W	No	Yes	21:45	244	57 W	No	No
05:45	225	50 W	No	No	21:15	263	85 W	No	Yes	05:45	225	50 W	No	No
22:00	218	52 W	No	No	21:30	247	77 W	No	Yes	22:00	218	52 W	No	No

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Signal Warrants - Summary Proposed

Major Street Approaches

Northbound: PARK AVE

Number of Lanes: 1

85% Speed < 40 MPH.

Total Approach Volume: 7,757

Southbound: PARK AVE

Number of Lanes: 1

85% Speed < 40 MPH.

Total Approach Volume: 7,441

Minor Street Approaches

Eastbound: S 7TH ST

Number of Lanes: 1

Total Approach Volume: 837

Westbound: S 7TH ST

Number of Lanes: 1

Total Approach Volume: 0

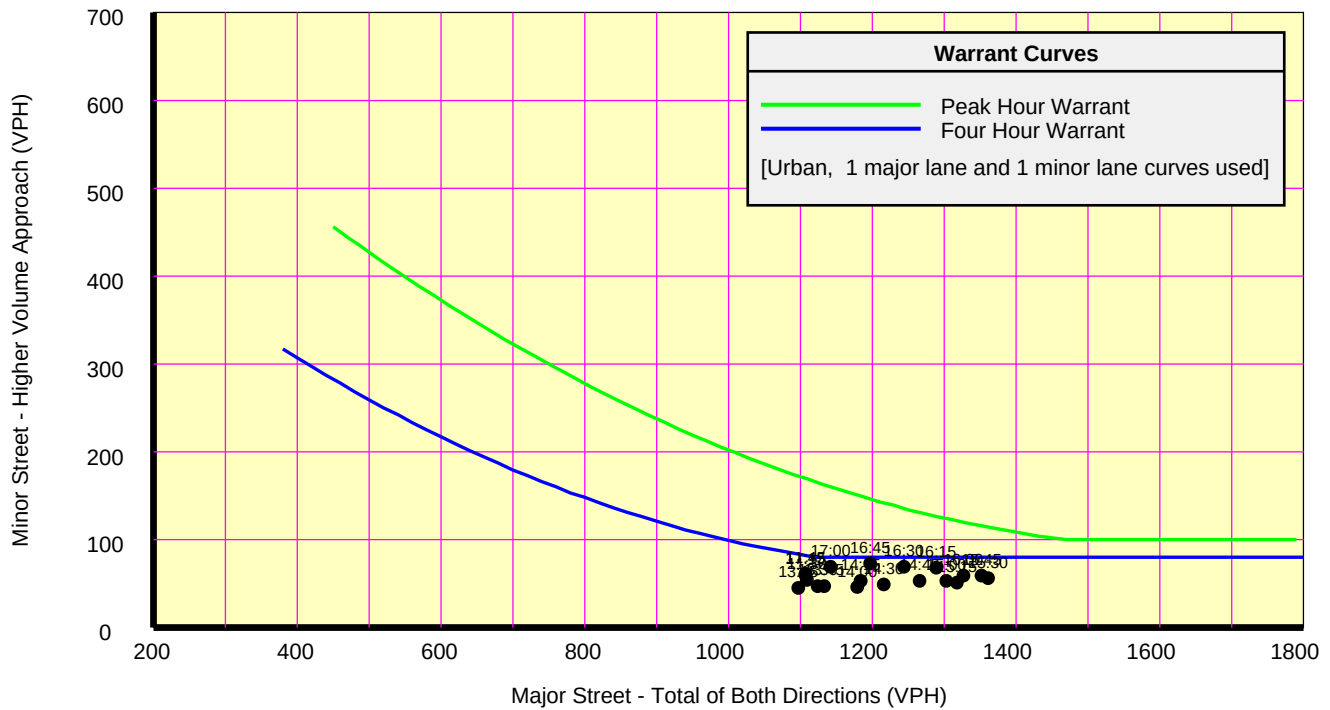
Warrant Summary (Urban values apply.)

Warrant 1 - Eight Hour Vehicular Volumes	Not Satisfied
Warrant 1A - Minimum Vehicular Volume Not Satisfied	
Required volumes reached for 0 hours, 8 are needed	
Warrant 1B - Interruption of Continuous Traffic Not Satisfied	
Required volumes reached for 0 hours, 8 are needed	
Warrant 1C - Combination of Warrants Not Satisfied	
Required 1A volumes reached for 0 hours, 8 are needed	
Required 1B volumes reached for 2 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Not Satisfied
Number of hours (0) volumes exceed minimum < minimum required (4).	
Warrant 3 - Peak Hour	Not Satisfied
Warrant 3A - Peak Hour Delay Not Satisfied	
Approach volumes on minor street don't exceed minimums for any hour. Delay data not evaluated.	
Warrant 3B - Peak Hour Volumes Not Satisfied	
Volumes do not exceed minimums for any hour.	
Warrant 4 - Pedestrian Volumes	Not Evaluated
Warrant 5 - School Crossing	Not Evaluated
Warrant 6 - Coordinated Signal System	Not Evaluated
Warrant 7 - Crash Experience	Not Evaluated
Warrant 8 - Roadway Network	Not Evaluated
Warrant 9 - Intersection Near a Grade Crossing	Not Evaluated

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Signal Warrants - Summary Proposed



Analysis of 8-Hour Volume Warrants:

War 1A-Minimum Volume

War 1B-Interruption of Traffic

War 1C-Combination of Warrants

Hour Begin	Major Total	Minor Vol	Dir	Maj 500	Min 150	Hour Begin	Major Total	Minor Vol	Dir	Maj 750	Min 75	Hour Begin	Major Total	Minor Vol	Dir	1A Met	1B Met
15:30	1,361	56	EB	Yes	No	15:30	1,361	56	EB	Yes	No	16:15	1,289	68	EB	No	Yes
15:45	1,352	59	EB	Yes	No	15:45	1,352	59	EB	Yes	No	17:15	1,107	60	EB	No	Yes
16:00	1,327	59	EB	Yes	No	16:00	1,327	59	EB	Yes	No	11:45	1,107	61	EB	No	Yes
15:15	1,318	51	EB	Yes	No	15:15	1,318	51	EB	Yes	No	18:15	844	64	EB	No	Yes
15:00	1,303	53	EB	Yes	No	15:00	1,303	53	EB	Yes	No	15:30	1,361	56	EB	No	No
16:15	1,289	68	EB	Yes	No	16:15	1,289	68	EB	Yes	No	15:45	1,352	59	EB	No	No
14:45	1,266	53	EB	Yes	No	14:45	1,266	53	EB	Yes	No	16:00	1,327	59	EB	No	No
16:30	1,244	69	EB	Yes	No	16:30	1,244	69	EB	Yes	No	15:15	1,318	51	EB	No	No
14:30	1,216	49	EB	Yes	No	14:30	1,216	49	EB	Yes	No	15:00	1,303	53	EB	No	No
16:45	1,197	73	EB	Yes	No	16:45	1,197	73	EB	Yes	No	14:45	1,266	53	EB	No	No
14:15	1,184	53	EB	Yes	No	14:15	1,184	53	EB	Yes	No	16:30	1,244	69	EB	No	-
14:00	1,179	46	EB	Yes	No	14:00	1,179	46	EB	Yes	No	14:30	1,216	49	EB	No	No
17:00	1,142	69	EB	Yes	No	17:00	1,142	69	EB	Yes	No	16:45	1,197	73	EB	No	-
13:45	1,133	47	EB	Yes	No	13:45	1,133	47	EB	Yes	No	14:15	1,184	53	EB	No	No
13:30	1,124	47	EB	Yes	No	13:30	1,124	47	EB	Yes	No	14:00	1,179	46	EB	No	No
11:30	1,109	54	EB	Yes	No	11:30	1,109	54	EB	Yes	No	17:00	1,142	69	EB	No	-
17:15	1,107	60	EB	Yes	No	17:15	1,107	60	EB	Yes	No	13:45	1,133	47	EB	No	No
11:45	1,107	61	EB	Yes	No	11:45	1,107	61	EB	Yes	No	13:30	1,124	47	EB	No	No
13:15	1,097	45	EB	Yes	No	13:15	1,097	45	EB	Yes	No	11:30	1,109	54	EB	No	No
11:15	1,091	51	EB	Yes	No	11:15	1,091	51	EB	Yes	No	13:15	1,097	45	EB	No	No
12:00	1,088	68	EB	Yes	No	12:00	1,088	68	EB	Yes	No	11:15	1,091	51	EB	No	No
13:00	1,055	48	EB	Yes	No	13:00	1,055	48	EB	Yes	No	12:00	1,088	68	EB	No	-
12:45	1,041	51	EB	Yes	No	12:45	1,041	51	EB	Yes	No	13:00	1,055	48	EB	No	No
12:15	1,041	61	EB	Yes	No	12:15	1,041	61	EB	Yes	No	12:45	1,041	51	EB	No	No

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Signal Warrants - Summary Proposed

Major Street Approaches

Northbound: PARK AVE

Number of Lanes: 1

85% Speed < 40 MPH.

Total Approach Volume: 7,679

Southbound: PARK AVE

Number of Lanes: 1

85% Speed < 40 MPH.

Total Approach Volume: 7,991

Minor Street Approaches

Eastbound: S 8TH ST

Number of Lanes: 1

Total Approach Volume: 497

Westbound: S 8TH ST

Number of Lanes: 1

Total Approach Volume: 1,062

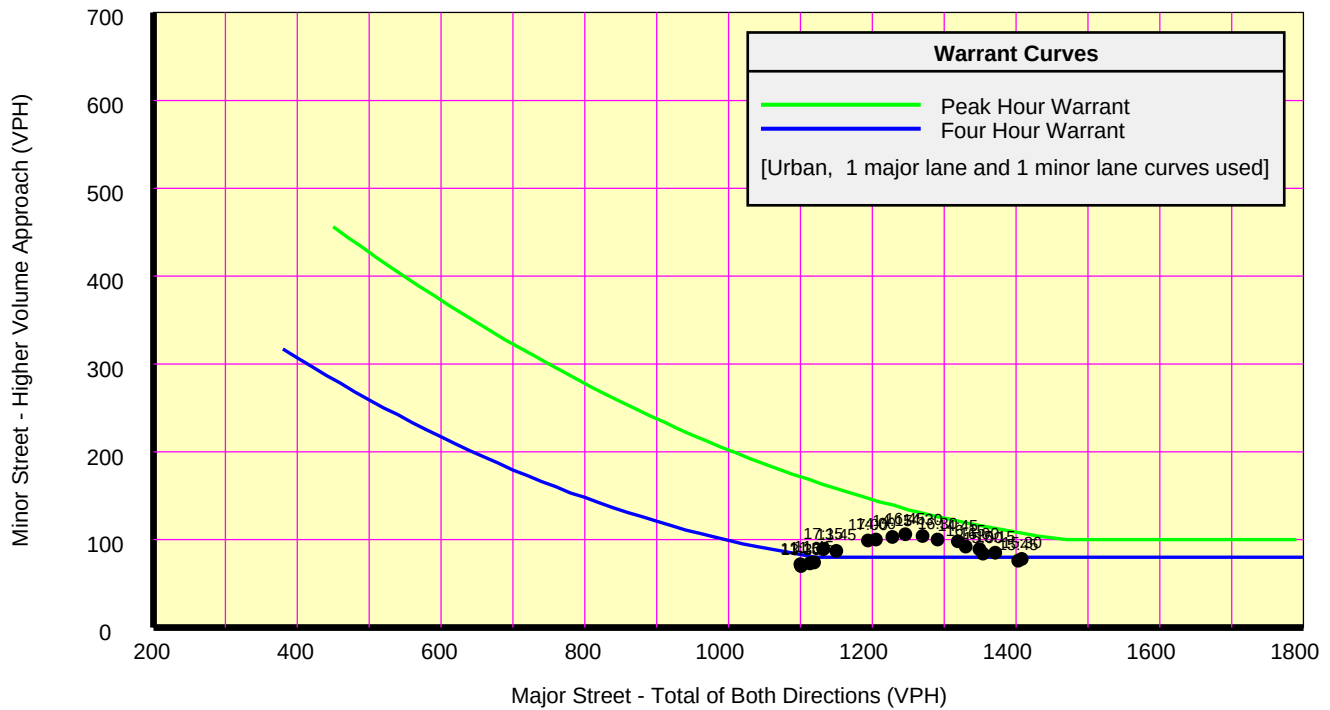
Warrant Summary (Urban values apply.)

Warrant 1 - Eight Hour Vehicular Volumes	Not Satisfied
Warrant 1A - Minimum Vehicular Volume Not Satisfied	
Required volumes reached for 0 hours, 8 are needed	
Warrant 1B - Interruption of Continuous Traffic Not Satisfied	
Required volumes reached for 5 hours, 8 are needed	
Warrant 1C - Combination of Warrants Not Satisfied	
Required 1A volumes reached for 0 hours, 8 are needed	
Required 1B volumes reached for 7 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Satisfied
Number of hours (4) volumes exceed minimum >= minimum required (4).	
Warrant 3 - Peak Hour	Satisfied
Warrant 3A - Peak Hour Delay Satisfied	
Number of hours (5) volumes exceed minimum >= required (1). Delay data not evaluated.	
Warrant 3B - Peak Hour Volumes Not Satisfied	
Volumes do not exceed minimums for any hour.	
Warrant 4 - Pedestrian Volumes	Not Evaluated
Warrant 5 - School Crossing	Not Evaluated
Warrant 6 - Coordinated Signal System	Not Evaluated
Warrant 7 - Crash Experience	Not Evaluated
Warrant 8 - Roadway Network	Not Evaluated
Warrant 9 - Intersection Near a Grade Crossing	Not Evaluated

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Signal Warrants - Summary Proposed



Analysis of 8-Hour Volume Warrants:

War 1A-Minimum Volume

War 1B-Interruption of Traffic

War 1C-Combination of Warrants

Hour Begin	Major Total	Minor Vol Dir	Maj 500	Min 150	Hour Begin	Major Total	Minor Vol Dir	Maj 750	Min 75	Hour Begin	Major Total	Minor Vol Dir	1A Met	1B Met
15:30	1,408	78 W	Yes	No	15:45	1,403	76 W	Yes	Yes	15:15	1,371	85 W	No	Yes
15:45	1,403	76 W	Yes	No	14:45	1,319	98 W	Yes	Yes	16:15	1,330	92 W	No	Yes
15:15	1,371	85 W	Yes	No	16:45	1,246	106 W	Yes	Yes	14:15	1,228	103 W	No	Yes
15:00	1,354	84 W	Yes	No	13:45	1,150	87 W	Yes	Yes	17:15	1,132	89 W	No	Yes
16:00	1,349	89 W	Yes	No	12:00	1,091	76 W	Yes	Yes	11:45	1,119	74 W	No	Yes
16:15	1,330	92 W	Yes	No	11:45	1,119	74 W	Yes	No	13:15	1,088	66 W	No	Yes
14:45	1,319	98 W	Yes	No	11:30	1,113	73 W	Yes	No	10:45	972	68 W	No	Yes
16:30	1,291	100 W	Yes	No	13:30	1,101	70 W	Yes	No	15:30	1,408	78 W	No	-
14:30	1,270	104 W	Yes	No	11:15	1,100	72 W	Yes	No	15:45	1,403	76 W	No	-
16:45	1,246	106 W	Yes	No	13:15	1,088	66 W	Yes	No	15:00	1,354	84 W	No	-
14:15	1,228	103 W	Yes	No	07:45	1,071	43 W	Yes	No	16:00	1,349	89 W	No	-
14:00	1,205	100 W	Yes	No	07:30	1,071	54 W	Yes	No	14:45	1,319	98 W	No	-
17:00	1,194	99 W	Yes	No	13:00	1,064	52 W	Yes	No	16:30	1,291	100 W	No	-
13:45	1,150	87 W	Yes	No	11:00	1,020	74 W	Yes	No	14:30	1,270	104 W	No	-
17:15	1,132	89 W	Yes	No	07:15	988	59 W	Yes	No	16:45	1,246	106 W	No	-
11:45	1,119	74 W	Yes	No	10:45	972	68 W	Yes	No	14:00	1,205	100 W	No	-
11:30	1,113	73 W	Yes	No	08:00	968	43 W	Yes	No	17:00	1,194	99 W	No	-
13:30	1,101	70 W	Yes	No	17:45	966	69 W	Yes	No	13:45	1,150	87 W	No	-
11:15	1,100	72 W	Yes	No	10:30	932	52 W	Yes	No	11:30	1,113	73 W	No	-
12:00	1,091	76 W	Yes	No	18:00	928	60 W	Yes	No	13:30	1,101	70 W	No	-
13:15	1,088	66 W	Yes	No	08:15	909	38 W	Yes	No	11:15	1,100	72 W	No	-
07:45	1,071	43 W	Yes	No	10:15	891	48 W	Yes	No	12:00	1,091	76 W	No	-
07:30	1,071	54 W	Yes	No	18:15	881	58 W	Yes	No	07:45	1,071	43 W	No	No
13:00	1,064	52 W	Yes	No	08:30	876	38 W	Yes	No	07:30	1,071	54 W	No	No

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Signal Warrants - Summary Proposed

Major Street Approaches

Northbound: PARK AVE

Number of Lanes: 1
85% Speed < 40 MPH.
Total Approach Volume: 8,710

Southbound: PARK AVE

Number of Lanes: 1
85% Speed < 40 MPH.
Total Approach Volume: 9,222

Minor Street Approaches

Eastbound: S 9TH ST

Number of Lanes: 1

Total Approach Volume: 78

Westbound: S 9TH ST

Number of Lanes: 1

Total Approach Volume: 1,356

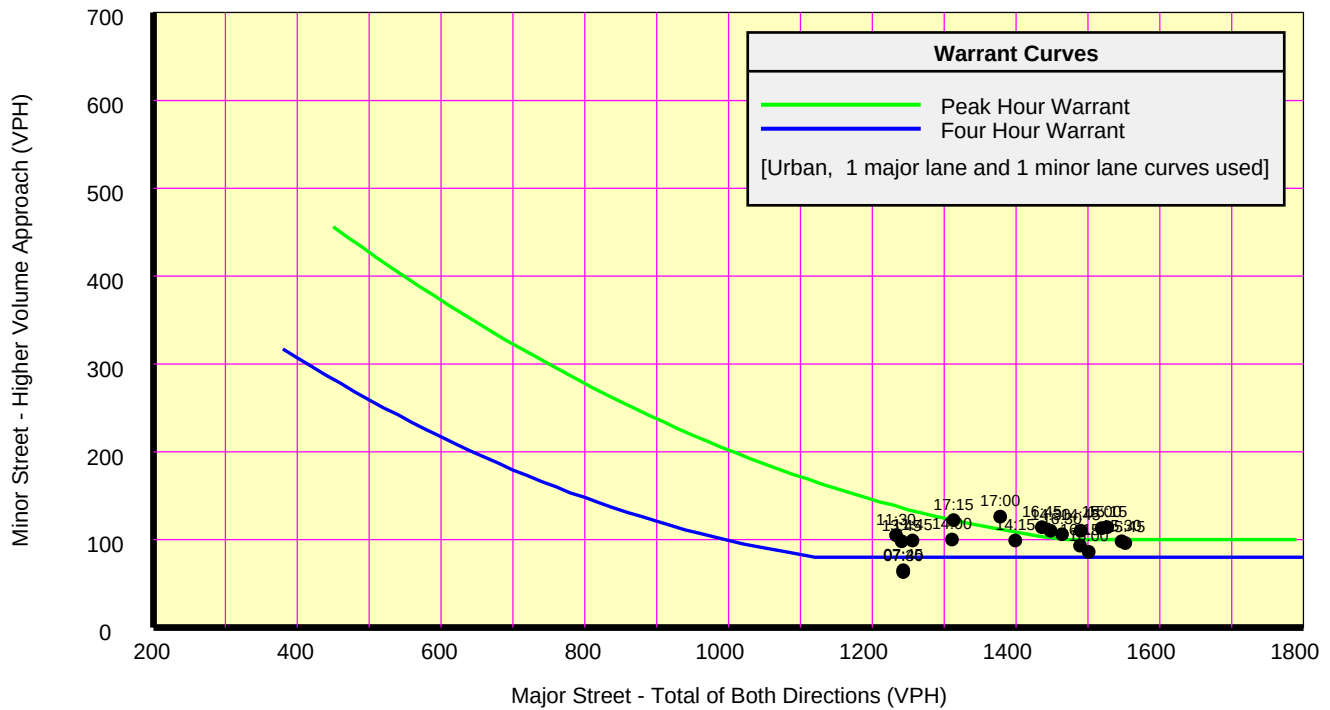
Warrant Summary (Urban values apply.)

Warrant 1 - Eight Hour Vehicular Volumes	Satisfied
Warrant 1A - Minimum Vehicular Volume Not Satisfied	
Required volumes reached for 0 hours, 8 are needed	
Warrant 1B - Interruption of Continuous Traffic Satisfied	
Required volumes reached for 9 hours, 8 are needed	
Warrant 1C - Combination of Warrants Not Satisfied	
Required 1A volumes reached for 1 hours, 8 are needed	
Required 1B volumes reached for 14 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Satisfied
Number of hours (7) volumes exceed minimum >= minimum required (4).	
Warrant 3 - Peak Hour	Satisfied
Warrant 3A - Peak Hour Delay Satisfied	
Number of hours (11) volumes exceed minimum >= required (1). Delay data not evaluated.	
Warrant 3B - Peak Hour Volumes Satisfied	
Volumes exceed minimums for at least one hour.	
Warrant 4 - Pedestrian Volumes	Not Evaluated
Warrant 5 - School Crossing	Not Evaluated
Warrant 6 - Coordinated Signal System	Not Evaluated
Warrant 7 - Crash Experience	Not Evaluated
Warrant 8 - Roadway Network	Not Evaluated
Warrant 9 - Intersection Near a Grade Crossing	Not Evaluated

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Signal Warrants - Summary Proposed



Analysis of 8-Hour Volume Warrants:

War 1A-Minimum Volume

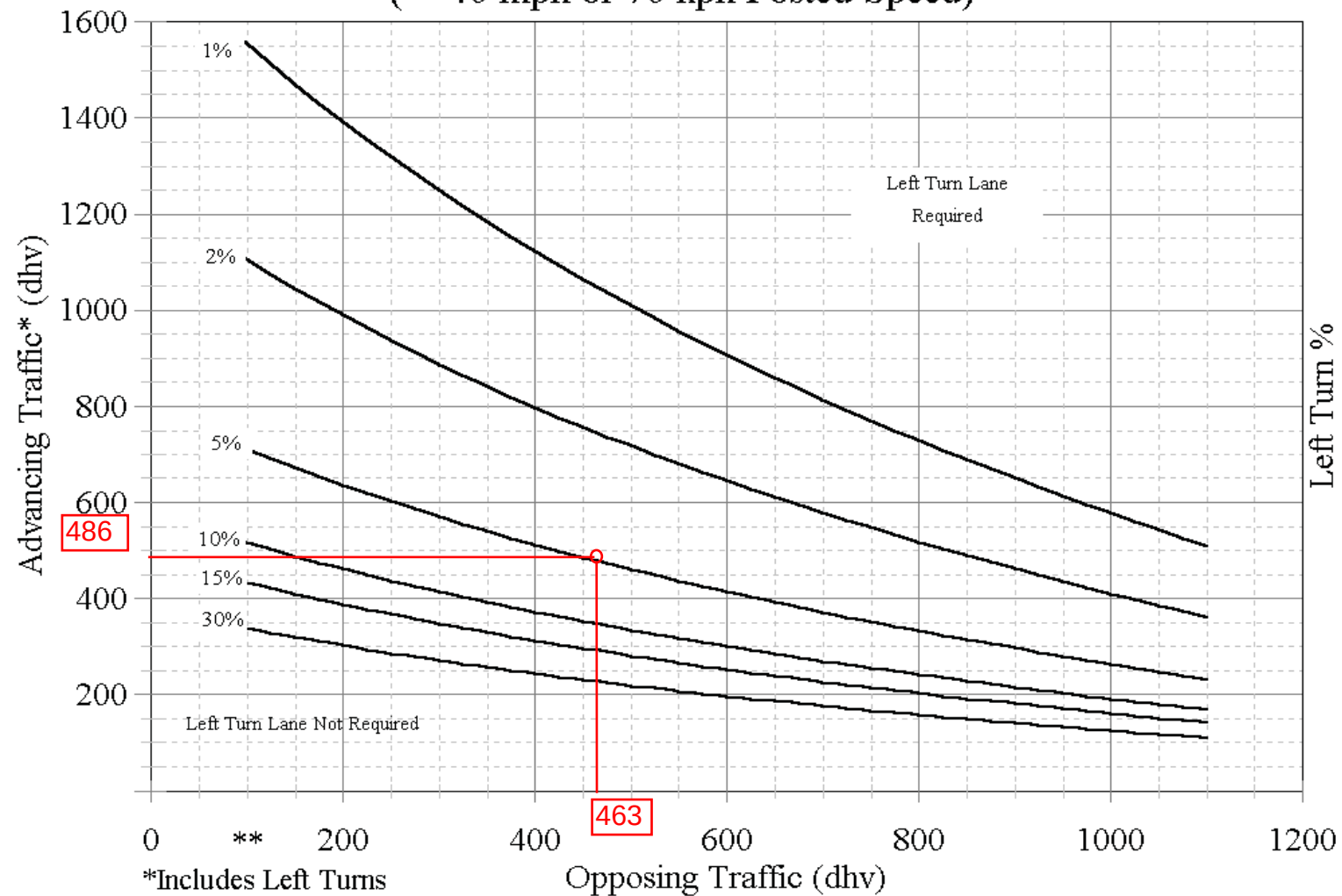
War 1B-Interruption of Traffic

War 1C-Combination of Warrants

Hour Begin	Major Total	Minor Vol Dir	Maj 500	Min 150	Hour Begin	Major Total	Minor Vol Dir	Maj 750	Min 75	Hour Begin	Major Total	Minor Vol Dir	1A Met	1B Met
15:45	1,552	96 W	Yes	No	15:00	1,519	113 W	Yes	Yes	15:45	1,552	96 W	No	Yes
15:30	1,547	98 W	Yes	No	16:00	1,501	86 W	Yes	Yes	14:45	1,490	110 W	No	Yes
15:15	1,527	114 W	Yes	No	17:00	1,378	126 W	Yes	Yes	16:45	1,436	114 W	No	Yes
15:00	1,519	113 W	Yes	No	14:00	1,311	100 W	Yes	Yes	17:00	1,378	126 W	Yes	-
16:00	1,501	86 W	Yes	No	12:00	1,230	81 W	Yes	Yes	11:45	1,256	99 W	No	Yes
14:45	1,490	110 W	Yes	No	13:00	1,207	96 W	Yes	Yes	07:30	1,243	63 W	No	Yes
16:15	1,489	93 W	Yes	No	11:00	1,120	77 W	Yes	Yes	13:45	1,241	98 W	No	Yes
16:30	1,464	106 W	Yes	No	18:00	1,076	88 W	Yes	Yes	12:45	1,175	84 W	No	Yes
14:30	1,448	110 W	Yes	No	08:15	1,047	75 W	Yes	Yes	17:45	1,118	95 W	-	Yes
16:45	1,436	114 W	Yes	No	07:45	1,243	65 W	Yes	No	10:45	1,069	66 W	No	Yes
14:15	1,399	99 W	Yes	No	07:30	1,243	63 W	Yes	No	08:30	1,033	70 W	No	Yes
17:00	1,378	126 W	Yes	No	07:15	1,190	59 W	Yes	No	09:45	986	66 W	No	Yes
17:15	1,313	122 W	Yes	No	08:00	1,124	72 W	Yes	No	18:45	890	71 W	No	Yes
14:00	1,311	100 W	Yes	No	10:45	1,069	66 W	Yes	No	19:45	696	67 W	No	Yes
11:45	1,256	99 W	Yes	No	10:30	1,028	62 W	Yes	No	06:30	638	61 W	No	Yes
07:45	1,243	65 W	Yes	No	07:00	1,023	60 W	Yes	No	15:30	1,547	98 W	No	-
07:30	1,243	63 W	Yes	No	10:15	998	62 W	Yes	No	15:15	1,527	114 W	No	-
13:45	1,241	98 W	Yes	No	10:00	990	67 W	Yes	No	15:00	1,519	113 W	No	-
11:30	1,233	105 W	Yes	No	09:30	989	59 W	Yes	No	16:00	1,501	86 W	No	-
12:00	1,230	81 W	Yes	No	09:45	986	66 W	Yes	No	16:15	1,489	93 W	No	-
11:15	1,218	91 W	Yes	No	09:15	969	61 W	Yes	No	16:30	1,464	106 W	No	-
13:00	1,207	96 W	Yes	No	19:00	833	63 W	Yes	No	14:30	1,448	110 W	No	-
17:30	1,200	111 W	Yes	No	06:45	800	63 W	Yes	No	14:15	1,399	99 W	No	-
13:30	1,197	85 W	Yes	No	19:15	790	61 W	Yes	No	14:00	1,311	100 W	No	-

East bound left at 6th
street AM - PROPOSED

2-Lane Highway Left Turn Lane Warrant (= ≤ 40 mph or 70 kph Posted Speed)

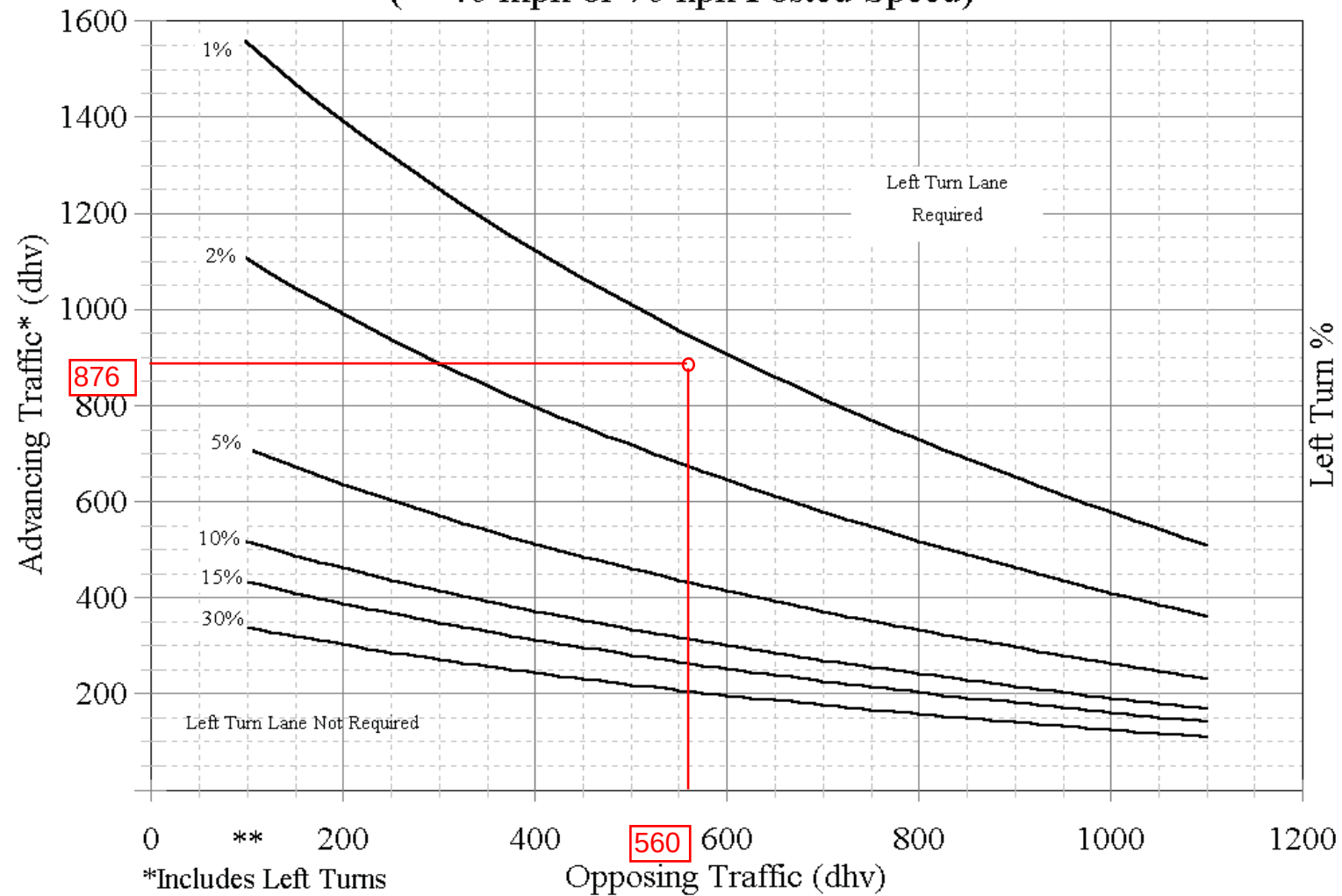


*Includes Left Turns
** There is no minimum number of turns



East bound left at 6th
street PM PROPOSED

2-Lane Highway Left Turn Lane Warrant (= ≤ 40 mph or 70 kph Posted Speed)

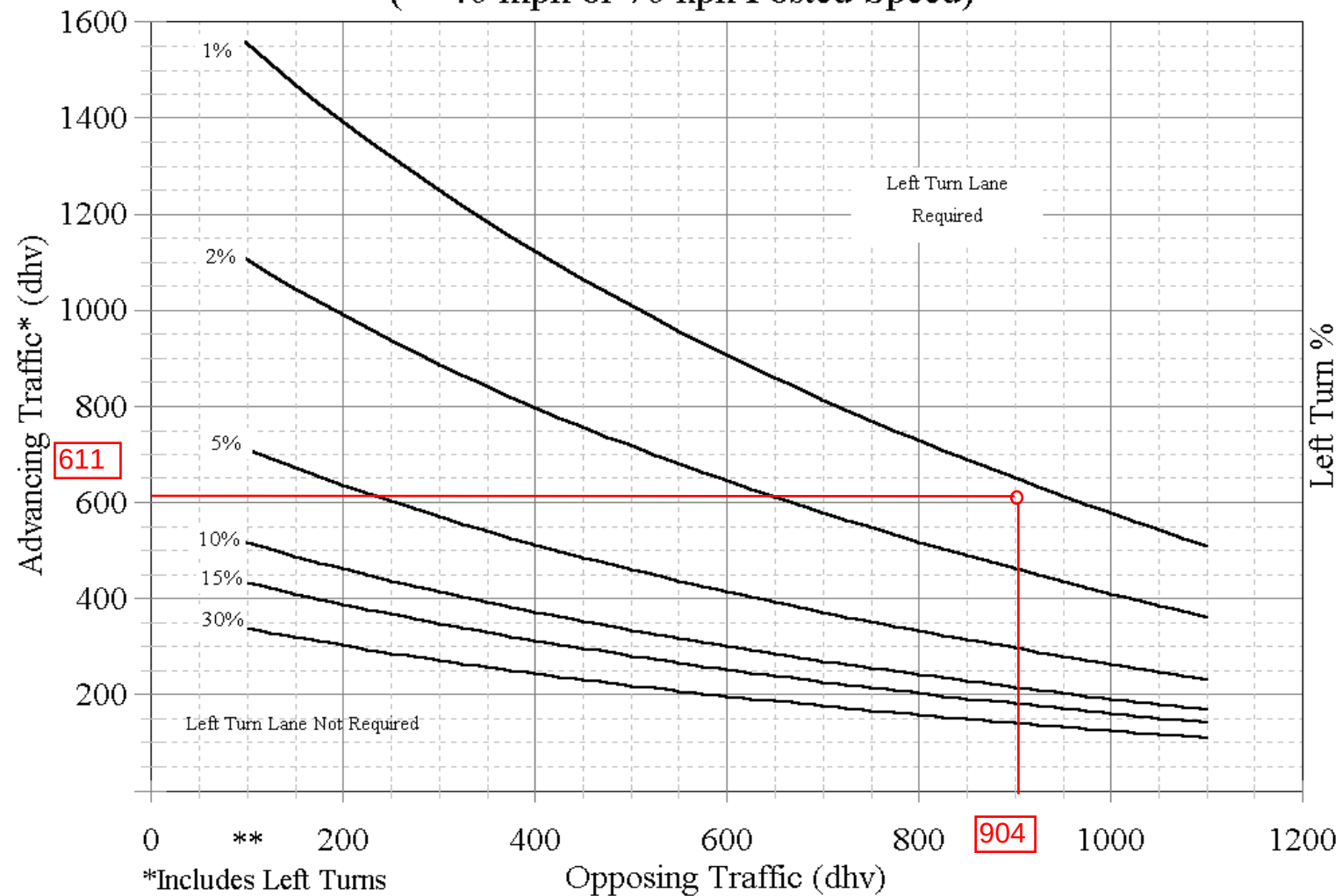


** There is no minimum number of turns



East bound left at 8th
street AM PROPOSED

2-Lane Highway Left Turn Lane Warrant (= ≤ 40 mph or 70 kph Posted Speed)

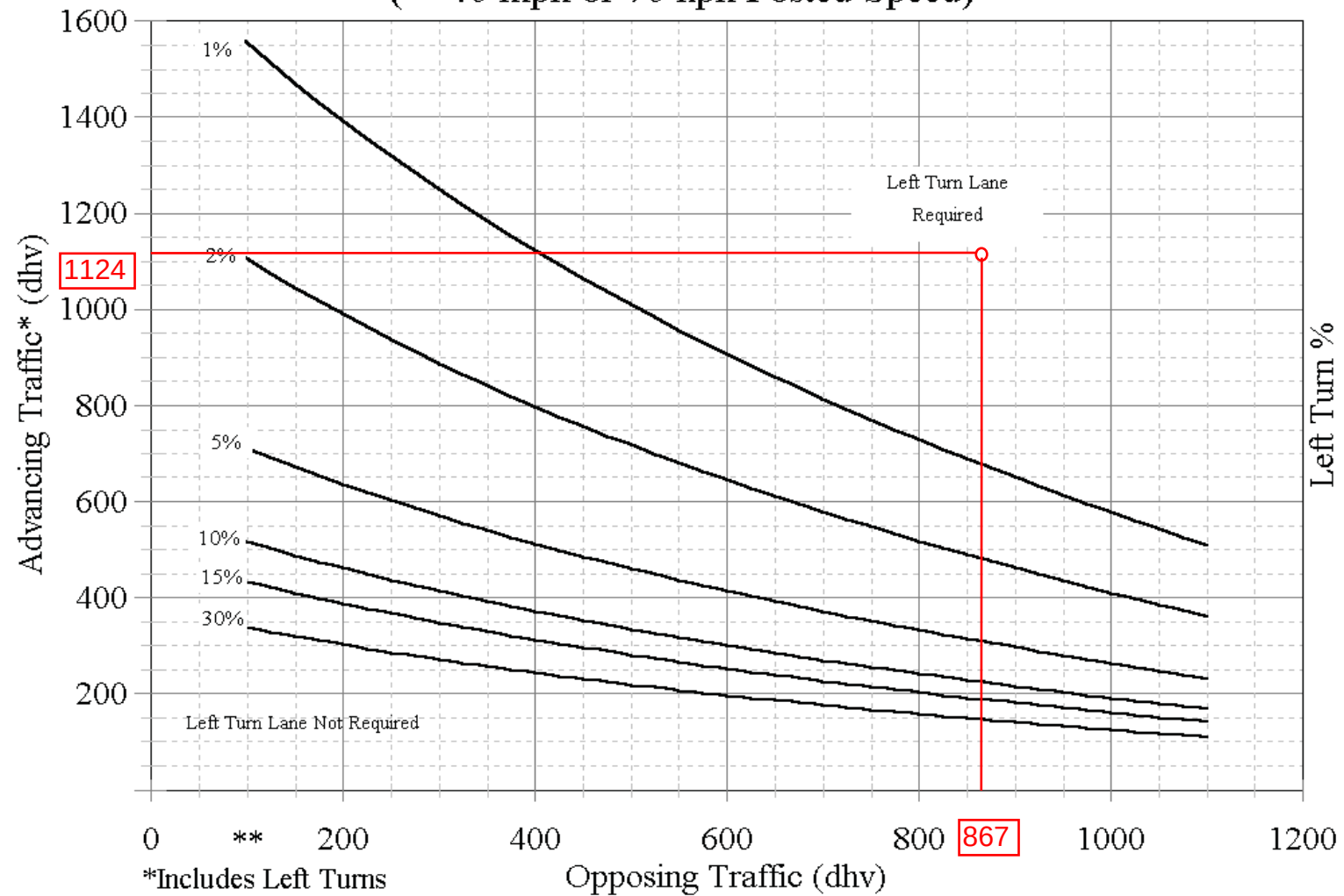


*Includes Left Turns

** There is no minimum number of turns



2-Lane Highway Left Turn Lane Warrant (= ≤ 40 mph or 70 kph Posted Speed)



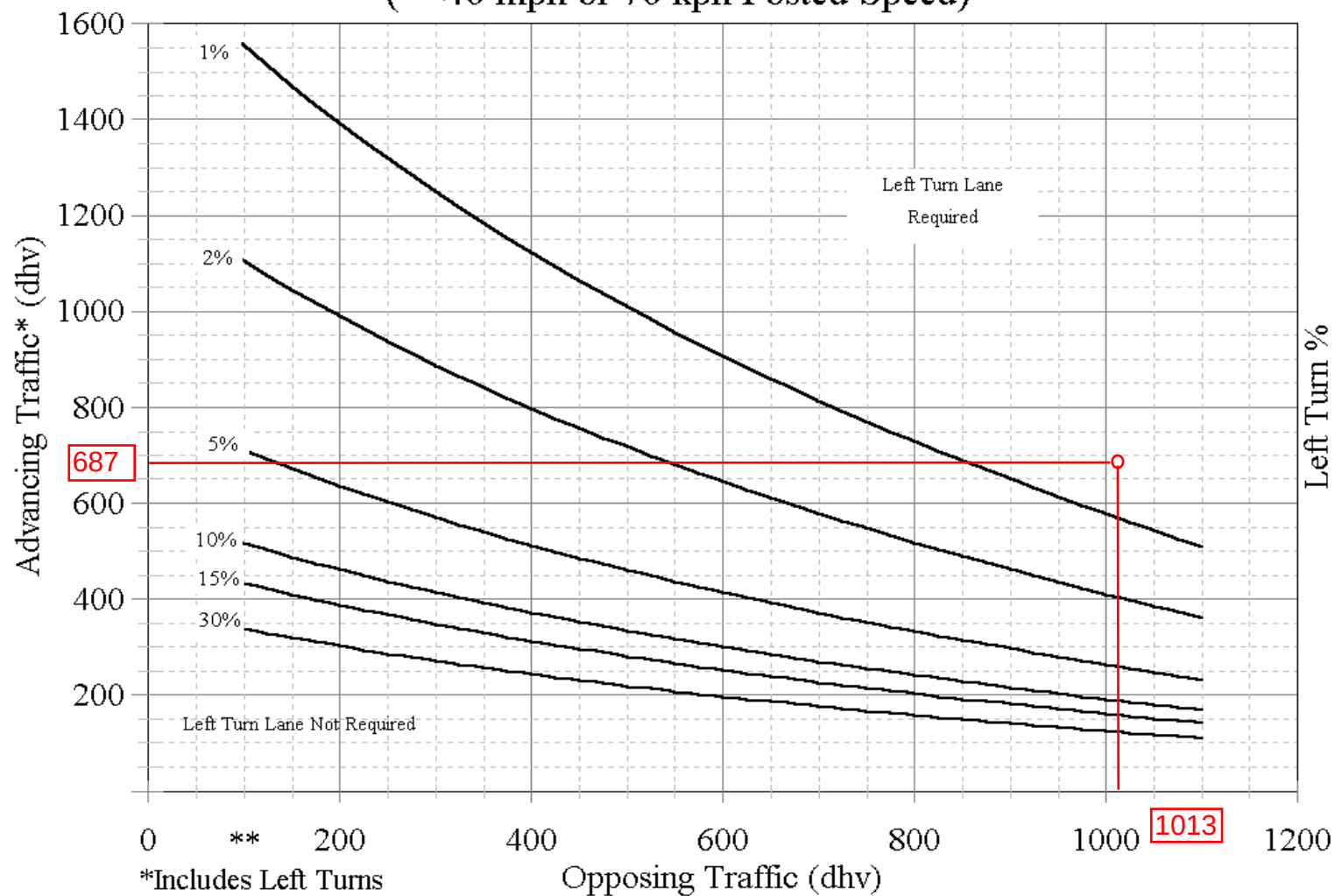
*Includes Left Turns

** There is no minimum number of turns



East bound left at 9th
street AM PROPOSED

2-Lane Highway Left Turn Lane Warrant (= ≤ 40 mph or 70 kph Posted Speed)

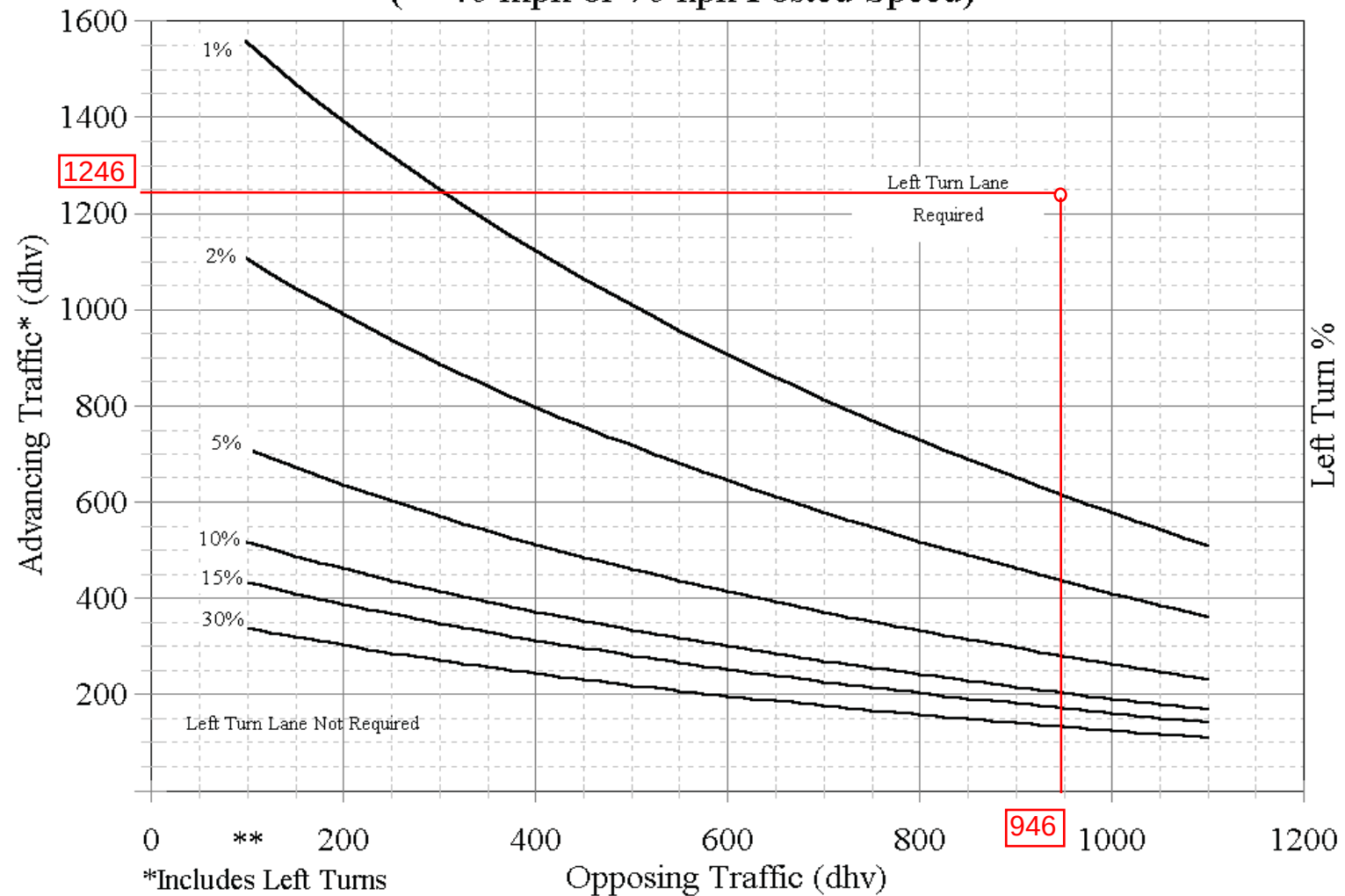


*Includes Left Turns

** There is no minimum number of turns



2-Lane Highway Left Turn Lane Warrant (= ≤ 40 mph or 70 kph Posted Speed)



*Includes Left Turns
** There is no minimum number of turns



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Signal Warrants - Summary Proposed

Major Street Approaches

Northbound: PARK DR

Number of Lanes: 2

85% Speed < 40 MPH.

Total Approach Volume: 9,203

Southbound: PARK DR

Number of Lanes: 2

85% Speed < 40 MPH.

Total Approach Volume: 10,232

Minor Street Approaches

Eastbound: EB OFF RAMP

Number of Lanes: 1

Total Approach Volume: 2,642

Westbound: EB ON RAMP

Number of Lanes: 1

Total Approach Volume: 0

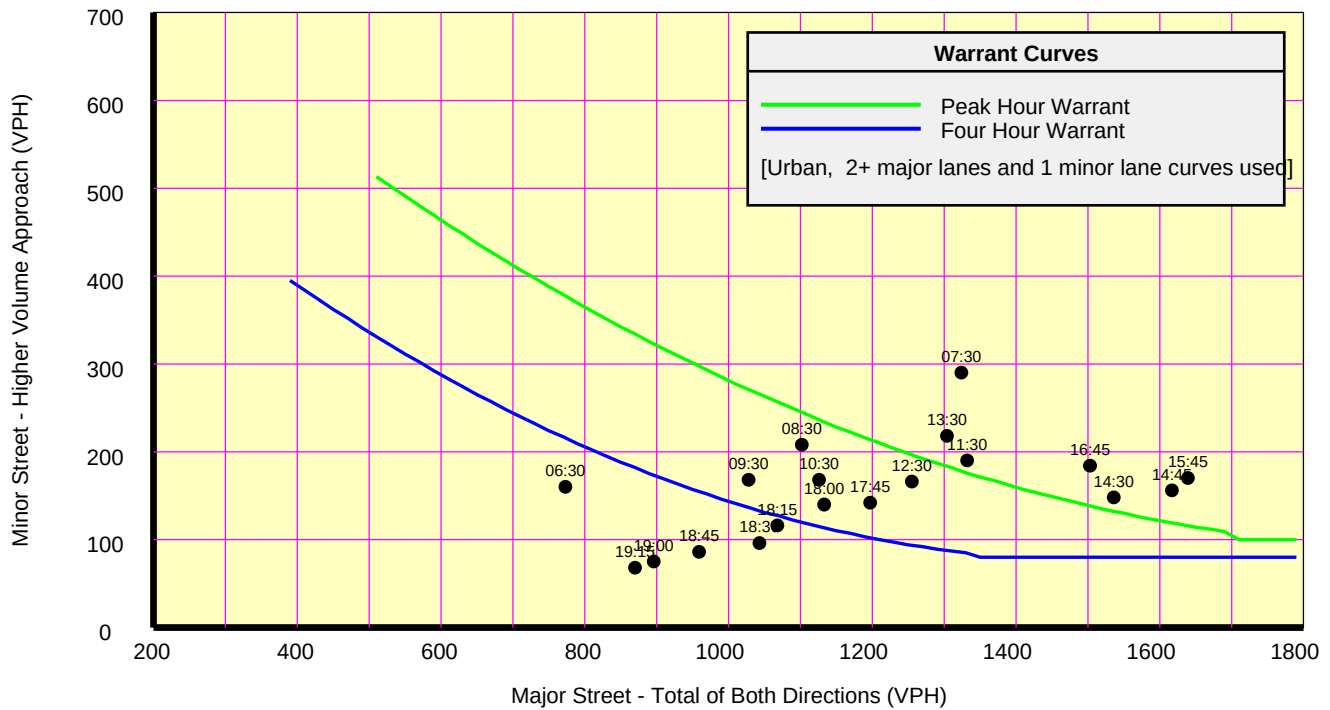
Warrant Summary (Urban values apply.)

Warrant 1 - Eight Hour Vehicular Volumes	Satisfied
Warrant 1A - Minimum Vehicular VolumeSatisfied	
Required volumes reached for 11 hours, 8 are needed	
Warrant 1B - Interruption of Continuous TrafficSatisfied	
Required volumes reached for 13 hours, 8 are needed	
Warrant 1C - Combination of WarrantsSatisfied	
Required 1A volumes reached for 13 hours, 8 are needed	
Required 1B volumes reached for 13 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Satisfied
Number of hours (12) volumes exceed minimum >= minimum required (4).	
Warrant 3 - Peak Hour	Satisfied
Warrant 3A - Peak Hour DelaySatisfied	
Number of hours (48) volumes exceed minimum >= required (1). Delay data not evaluated.	
Warrant 3B - Peak Hour VolumesSatisfied	
Volumes exceed minimums for at least one hour.	
Warrant 4 - Pedestrian Volumes	Not Evaluated
Warrant 5 - School Crossing	Not Evaluated
Warrant 6 - Coordinated Signal System	Not Evaluated
Warrant 7 - Crash Experience	Not Evaluated
Warrant 8 - Roadway Network	Not Evaluated
Warrant 9 - Intersection Near a Grade Crossing	Not Evaluated

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Signal Warrants - Summary Proposed



Analysis of 8-Hour Volume Warrants:

War 1A-Minimum Volume

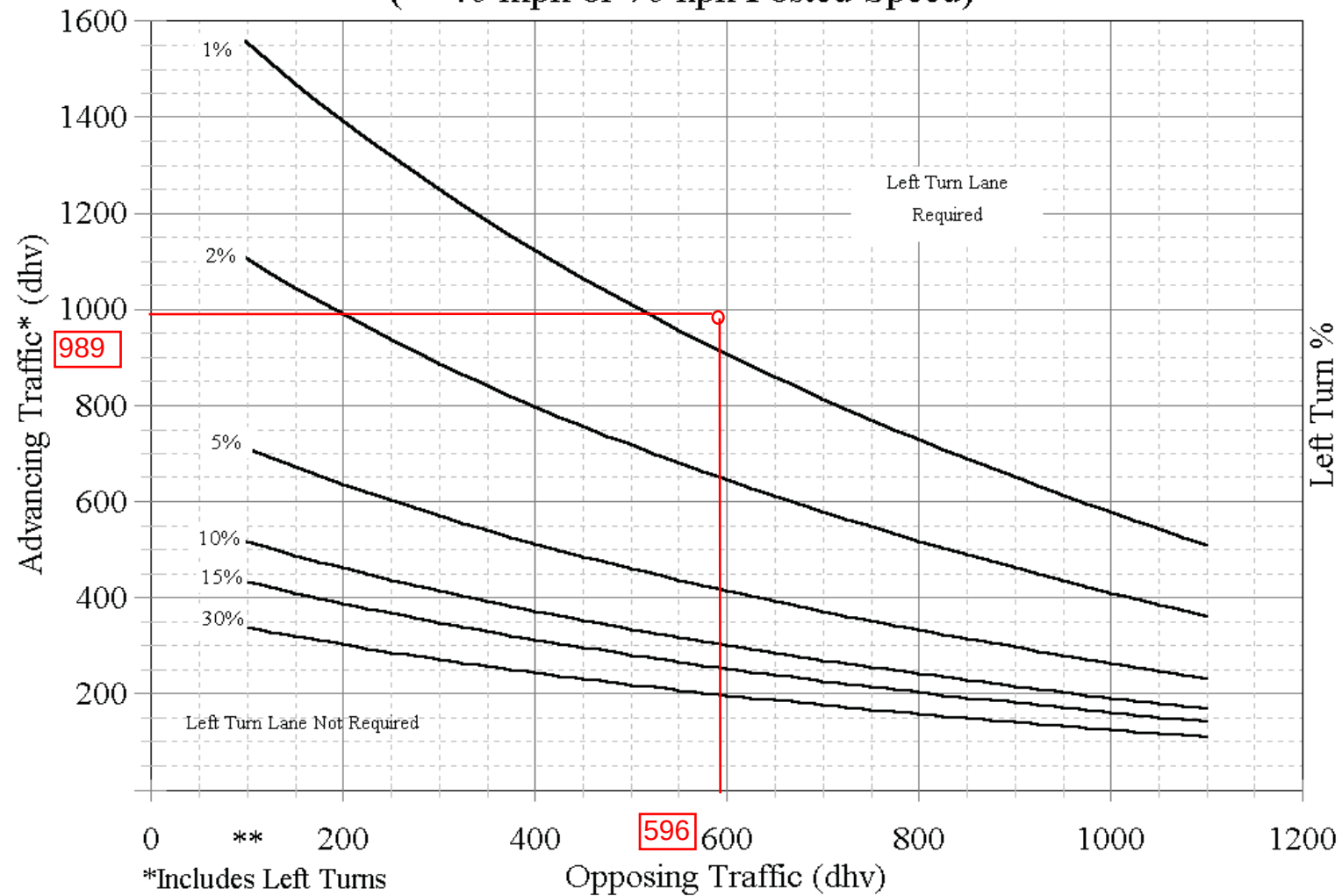
War 1B-Interruption of Traffic

War 1C-Combination of Warrants

Hour Begin	Major Total	Minor Vol Dir	Maj 600	Min 150	Hour Begin	Major Total	Minor Vol Dir	Maj 900	Min 75	Hour Begin	Major Total	Minor Vol Dir	1A Met	1B Met
15:45	1,639	170 EB	Yes	Yes	15:45	1,639	170 EB	Yes	Yes	15:30	1,678	167 EB	-	Yes
14:45	1,617	156 EB	Yes	Yes	14:45	1,617	156 EB	Yes	Yes	15:00	1,638	168 EB	Yes	-
16:45	1,503	184 EB	Yes	Yes	16:45	1,503	184 EB	Yes	Yes	16:00	1,564	167 EB	Yes	-
11:30	1,332	190 EB	Yes	Yes	13:45	1,358	194 EB	Yes	Yes	16:30	1,548	162 EB	-	Yes
07:30	1,324	290 EB	Yes	Yes	11:45	1,344	172 EB	Yes	Yes	14:30	1,536	148 EB	-	Yes
13:30	1,304	218 EB	Yes	Yes	07:45	1,283	274 EB	Yes	Yes	17:00	1,487	169 EB	Yes	-
12:30	1,255	166 EB	Yes	Yes	12:45	1,230	192 EB	Yes	Yes	14:00	1,437	178 EB	Yes	-
10:30	1,126	168 EB	Yes	Yes	17:45	1,197	142 EB	Yes	Yes	11:30	1,332	190 EB	-	Yes
08:30	1,102	208 EB	Yes	Yes	10:45	1,183	166 EB	Yes	Yes	07:30	1,324	290 EB	-	Yes
09:30	1,028	168 EB	Yes	Yes	08:45	1,068	200 EB	Yes	Yes	13:30	1,304	218 EB	-	Yes
06:30	773	160 EB	Yes	Yes	09:45	1,023	158 EB	Yes	Yes	12:00	1,294	164 EB	Yes	-
14:30	1,536	148 EB	Yes	No	18:45	959	86 EB	Yes	Yes	13:00	1,282	204 EB	Yes	-
17:45	1,197	142 EB	Yes	No	06:45	937	200 EB	Yes	Yes	17:30	1,257	171 EB	-	Yes
18:00	1,133	140 EB	Yes	No	06:30	773	160 EB	No	Yes	12:30	1,255	166 EB	-	Yes
18:15	1,068	116 EB	Yes	No	19:45	762	61 EB	No	No	11:00	1,217	170 EB	Yes	-
18:30	1,043	96 EB	Yes	No	20:00	701	51 EB	No	No	08:00	1,183	228 EB	Yes	-
18:45	959	86 EB	Yes	No	06:15	651	144 EB	No	Yes	07:00	1,149	272 EB	Yes	-
19:00	896	75 EB	Yes	No	20:15	620	49 EB	No	No	18:00	1,133	140 EB	Yes	-
19:15	870	68 EB	Yes	No	06:00	579	130 EB	No	Yes	10:30	1,126	168 EB	-	Yes
19:30	806	70 EB	Yes	No	20:30	570	40 EB	No	No	08:30	1,102	208 EB	-	Yes
19:45	762	61 EB	Yes	No	20:45	518	37 EB	No	No	10:00	1,069	172 EB	Yes	-
20:00	701	51 EB	Yes	No	05:45	509	114 EB	No	Yes	18:30	1,043	96 EB	-	Yes
06:15	651	144 EB	Yes	No	21:00	477	37 EB	No	No	09:00	1,033	170 EB	Yes	-
20:15	620	49 EB	Yes	No	21:15	476	29 EB	No	No	09:30	1,028	168 EB	-	Yes

West bound left at 8th
street AM PROPOSED

2-Lane Highway Left Turn Lane Warrant (= ≤ 40 mph or 70 kph Posted Speed)



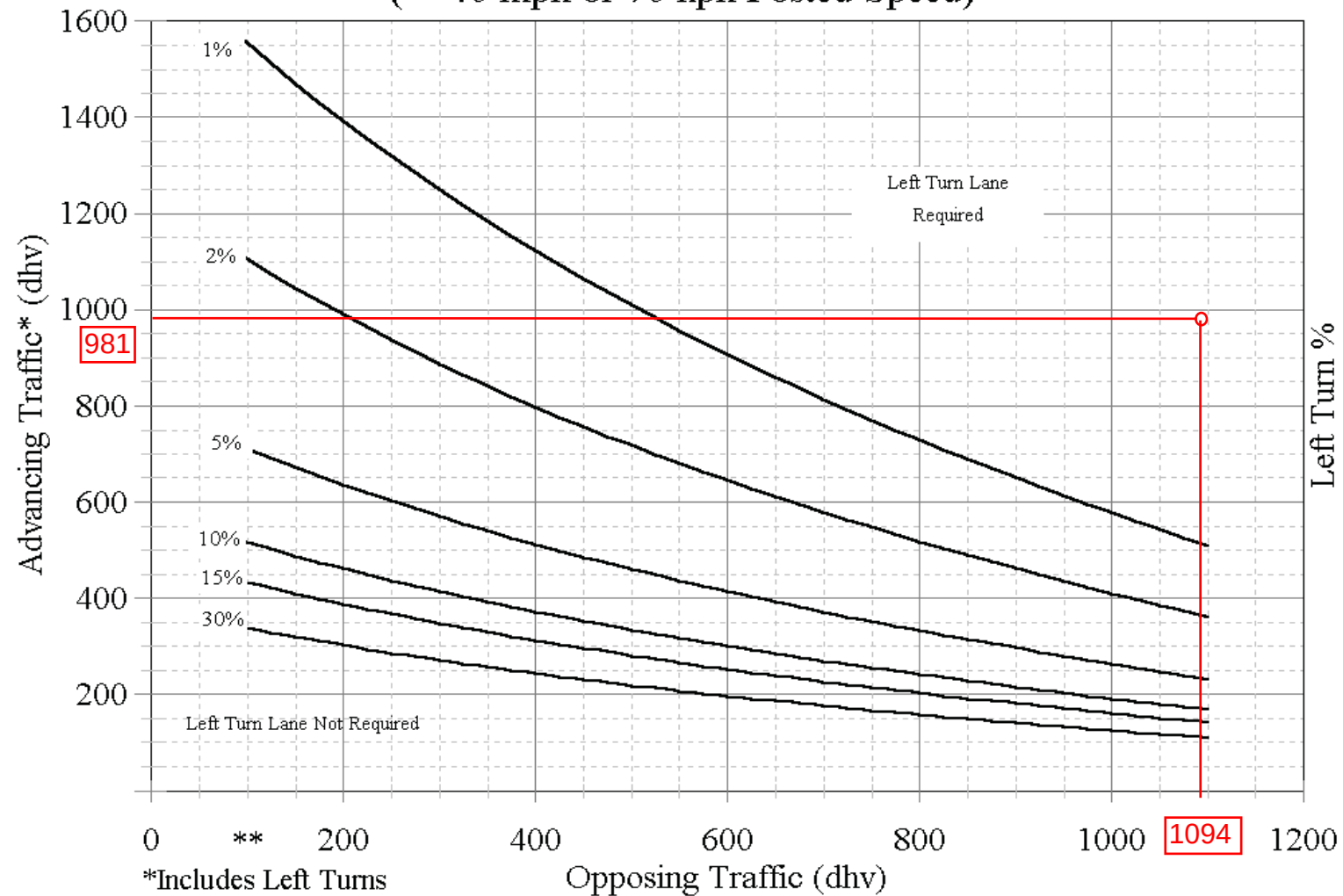
*Includes Left Turns

** There is no minimum number of turns



West bound left at 8th
street PM PROPOSED

2-Lane Highway Left Turn Lane Warrant (= ≤ 40 mph or 70 kph Posted Speed)



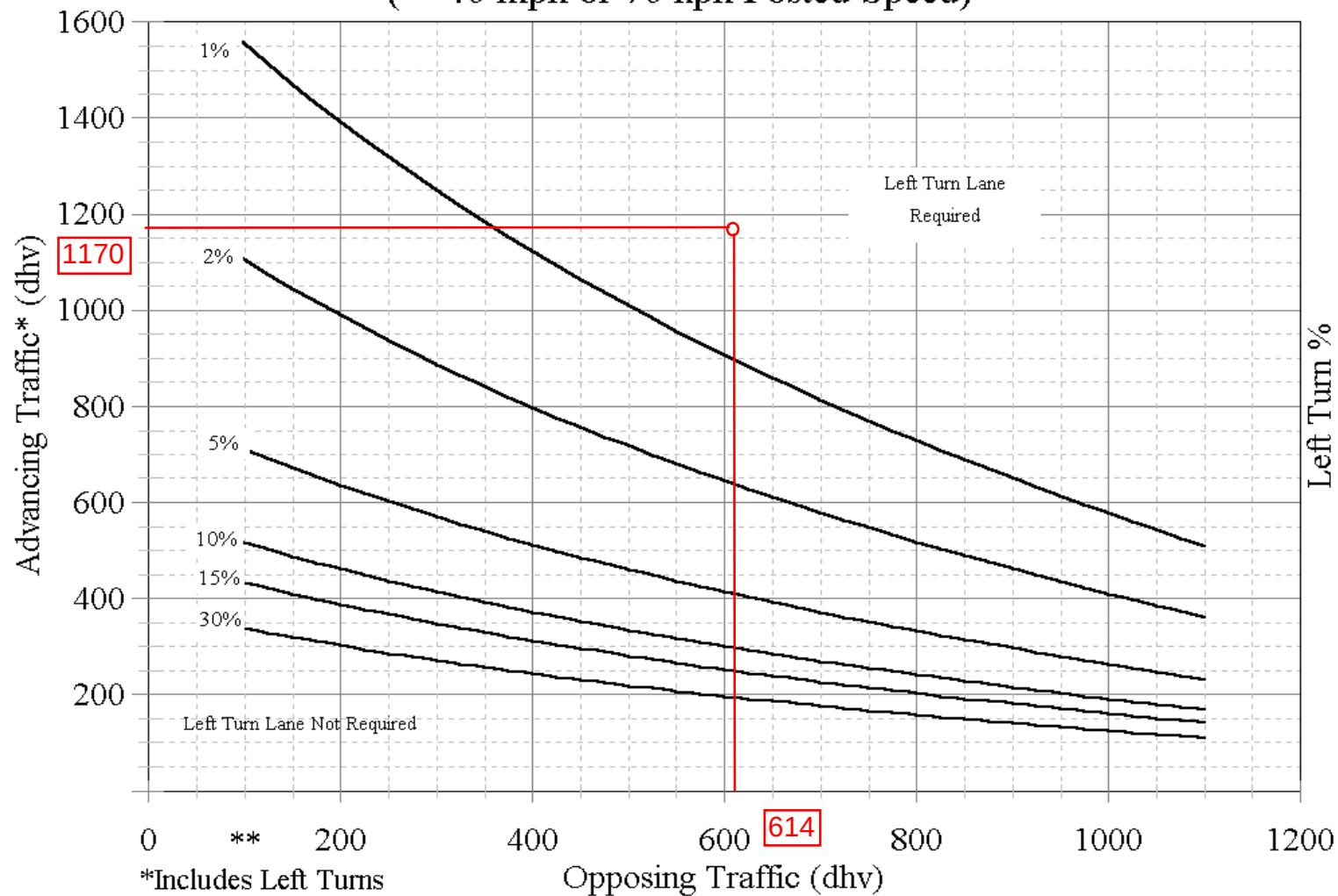
*Includes Left Turns

** There is no minimum number of turns



West bound left at 9th
street AM PROPOSED

2-Lane Highway Left Turn Lane Warrant (= ≤ 40 mph or 70 kph Posted Speed)



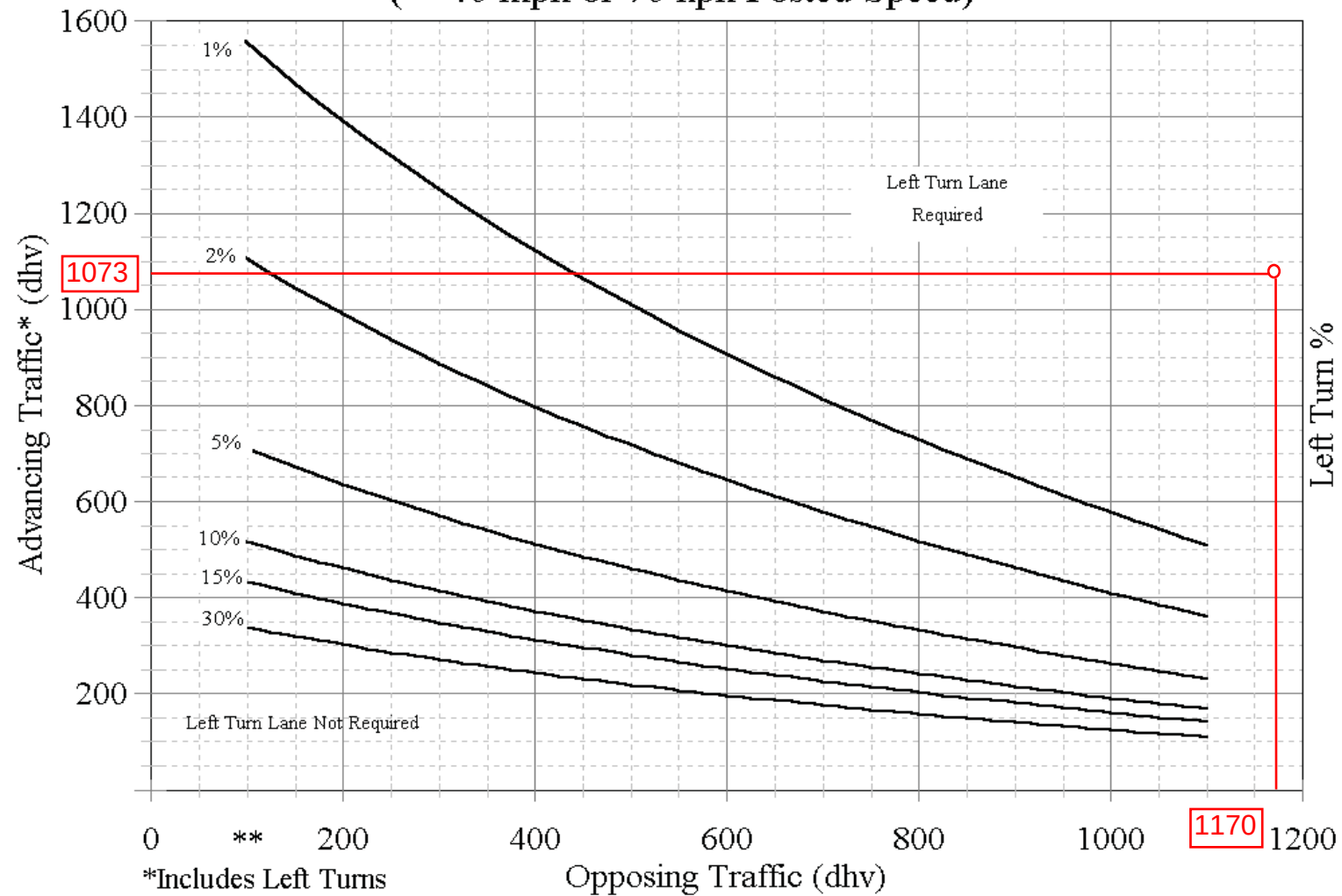
*Includes Left Turns

** There is no minimum number of turns



West bound left at 9th
street PM PROPOSED

2-Lane Highway Left Turn Lane Warrant (= ≤ 40 mph or 70 kph Posted Speed)



*Includes Left Turns

** There is no minimum number of turns



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Signal Warrants - Summary Proposed

Major Street Approaches

Northbound: PARK DR

Number of Lanes: 2

85% Speed < 40 MPH.

Total Approach Volume: 6,082

Southbound: PARK DR

Number of Lanes: 2

85% Speed < 40 MPH.

Total Approach Volume: 8,441

Minor Street Approaches

Eastbound: EB OFF RAMP

Number of Lanes: 1

Total Approach Volume: 5,138

Westbound: EB ON RAMP

Number of Lanes: 1

Total Approach Volume: 0

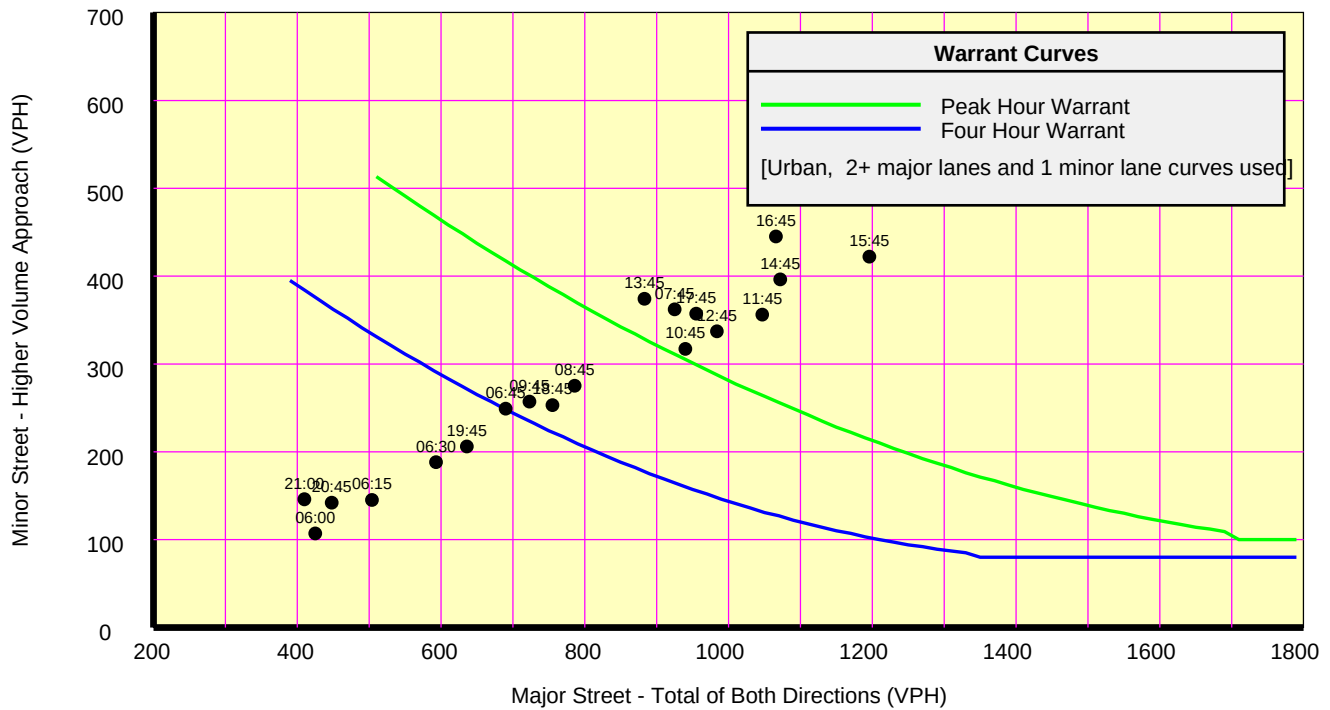
Warrant Summary (Urban values apply.)

Warrant 1 - Eight Hour Vehicular Volumes	Satisfied
Warrant 1A - Minimum Vehicular VolumeSatisfied	
Required volumes reached for 14 hours, 8 are needed	
Warrant 1B - Interruption of Continuous TrafficSatisfied	
Required volumes reached for 9 hours, 8 are needed	
Warrant 1C - Combination of WarrantsSatisfied	
Required 1A volumes reached for 14 hours, 8 are needed	
Required 1B volumes reached for 12 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Satisfied
Number of hours (13) volumes exceed minimum >= minimum required (4).	
Warrant 3 - Peak Hour	Satisfied
Warrant 3A - Peak Hour DelaySatisfied	
Number of hours (53) volumes exceed minimum >= required (1). Delay data not evaluated.	
Warrant 3B - Peak Hour VolumesSatisfied	
Volumes exceed minimums for at least one hour.	
Warrant 4 - Pedestrian Volumes	Not Evaluated
Warrant 5 - School Crossing	Not Evaluated
Warrant 6 - Coordinated Signal System	Not Evaluated
Warrant 7 - Crash Experience	Not Evaluated
Warrant 8 - Roadway Network	Not Evaluated
Warrant 9 - Intersection Near a Grade Crossing	Not Evaluated

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Signal Warrants - Summary Proposed



Analysis of 8-Hour Volume Warrants:

War 1A-Minimum Volume

War 1B-Interruption of Traffic

War 1C-Combination of Warrants

Hour Begin	Major Total	Minor Vol Dir	Maj 600	Min 150	Hour Begin	Major Total	Minor Vol Dir	Maj 900	Min 75	Hour Begin	Major Total	Minor Vol Dir	1A Met	1B Met
15:45	1,196	422 EB	Yes	Yes	15:30	1,170	425 EB	Yes	Yes	16:00	1,170	404 EB	-	Yes
14:45	1,072	396 EB	Yes	Yes	16:30	1,120	419 EB	Yes	Yes	15:15	1,158	433 EB	Yes	-
16:45	1,066	445 EB	Yes	Yes	14:30	1,045	405 EB	Yes	Yes	16:15	1,146	404 EB	Yes	-
11:45	1,047	356 EB	Yes	Yes	11:30	996	358 EB	Yes	Yes	15:00	1,085	444 EB	-	Yes
12:45	984	337 EB	Yes	Yes	12:30	990	344 EB	Yes	Yes	17:00	1,070	458 EB	-	Yes
17:45	955	357 EB	Yes	Yes	17:30	975	403 EB	Yes	Yes	12:00	1,035	370 EB	-	Yes
10:45	940	317 EB	Yes	Yes	10:30	913	295 EB	Yes	Yes	12:15	1,030	358 EB	Yes	-
07:45	925	362 EB	Yes	Yes	07:15	912	351 EB	Yes	Yes	14:15	1,003	392 EB	Yes	-
13:45	883	374 EB	Yes	Yes	13:30	902	343 EB	Yes	Yes	17:15	997	433 EB	Yes	-
08:45	786	275 EB	Yes	Yes	07:00	843	317 EB	No	Yes	11:15	992	356 EB	Yes	-
18:45	755	253 EB	Yes	Yes	08:15	841	308 EB	No	Yes	11:00	984	318 EB	-	Yes
09:45	723	257 EB	Yes	Yes	10:15	833	266 EB	No	Yes	14:00	951	378 EB	-	Yes
06:45	690	249 EB	Yes	Yes	08:30	817	277 EB	No	Yes	13:00	945	321 EB	-	Yes
19:45	636	206 EB	Yes	Yes	18:30	795	280 EB	No	Yes	07:15	912	351 EB	Yes	-
06:30	593	188 EB	No	Yes	08:45	786	275 EB	No	Yes	13:15	890	332 EB	Yes	-
06:15	504	145 EB	No	No	18:45	755	253 EB	No	Yes	18:00	889	304 EB	-	Yes
20:45	448	142 EB	No	No	09:00	750	255 EB	No	Yes	08:00	868	333 EB	-	Yes
06:00	425	107 EB	No	No	10:00	743	275 EB	No	Yes	18:15	861	312 EB	Yes	-
21:00	410	146 EB	No	No	09:45	723	257 EB	No	Yes	07:00	843	317 EB	-	Yes
21:15	380	131 EB	No	No	09:30	721	262 EB	No	Yes	08:15	841	308 EB	Yes	-
21:30	379	107 EB	No	No	09:15	720	262 EB	No	Yes	10:15	833	266 EB	Yes	-
05:45	368	84 EB	No	No	19:00	714	237 EB	No	Yes	09:00	750	255 EB	-	Yes
21:45	343	95 EB	No	No	19:15	698	204 EB	No	Yes	10:00	743	275 EB	-	Yes
22:00	311	82 EB	No	No	06:45	690	249 EB	No	Yes	09:15	720	262 EB	Yes	-

APPENDIX C SYNCHRO REPORTS



HCM 2010 Signalized Intersection Summary
1: 6th St. & Park Ave.

08/01/2017

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								 					
Traffic Volume (veh/h)	10	420	0	0	410	230	20	180	130	0	0	0	
Future Volume (veh/h)	10	420	0	0	410	230	20	180	130	0	0	0	
Number	7	4	14	3	8	18	5	2	12				
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Adj Sat Flow, veh/h/ln	1900	1845	0	0	1881	1900	1900	1837	1900				
Adj Flow Rate, veh/h	20	462	0	0	456	280	36	254	153				
Adj No. of Lanes	1	1	0	0	1	0	0	2	0				
Peak Hour Factor	0.50	0.91	0.92	0.92	0.90	0.82	0.55	0.71	0.85				
Percent Heavy Veh, %	0	3	0	0	1	1	0	6	0				
Cap, veh/h	373	888	0	0	526	323	110	788	499				
Arrive On Green	0.48	0.48	0.00	0.00	0.96	0.96	0.41	0.41	0.41				
Sat Flow, veh/h	733	1845	0	0	1092	671	272	1941	1227				
Grp Volume(v), veh/h	20	462	0	0	0	736	241	0	202				
Grp Sat Flow(s),veh/h/ln	733	1845	0	0	0	1763	1823	0	1617				
Q Serve(g_s), s	1.4	13.9	0.0	0.0	0.0	7.6	7.3	0.0	6.8				
Cycle Q Clear(g_c), s	9.0	13.9	0.0	0.0	0.0	7.6	7.3	0.0	6.8				
Prop In Lane	1.00		0.00	0.00		0.38	0.15		0.76				
Lane Grp Cap(c), veh/h	373	888	0	0	0	848	741	0	657				
V/C Ratio(X)	0.05	0.52	0.00	0.00	0.00	0.87	0.33	0.00	0.31				
Avail Cap(c_a), veh/h	373	888	0	0	0	848	741	0	657				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00				
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00				
Uniform Delay (d), s/veh	15.5	14.4	0.0	0.0	0.0	0.9	16.3	0.0	16.1				
Incr Delay (d2), s/veh	0.3	2.2	0.0	0.0	0.0	11.6	1.2	0.0	1.2				
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
%ile BackOfQ(50%),veh/ln	0.3	7.6	0.0	0.0	0.0	4.4	3.9	0.0	3.2				
LnGrp Delay(d),s/veh	15.8	16.5	0.0	0.0	0.0	12.5	17.4	0.0	17.3				
LnGrp LOS	B	B				B	B		B				
Approach Vol, veh/h	482			736			443						
Approach Delay, s/veh	16.5			12.5			17.4						
Approach LOS	B			B			B						
Timer	1	2	3	4	5	6	7	8					
Assigned Phs	2		4				8						
Phs Duration (G+Y+Rc), s	37.0		43.0				43.0						
Change Period (Y+Rc), s	4.5		4.5				4.5						
Max Green Setting (Gmax), s	32.5		38.5				38.5						
Max Q Clear Time (g_c+I1), s	0.0		0.0				0.0						
Green Ext Time (p_c), s	0.0		0.0				0.0						
Intersection Summary													
HCM 2010 Ctrl Delay	15.0												
HCM 2010 LOS	B												

HCM 2010 TWSC
2: 7th St. & Park Ave.

08/01/2017

Intersection													
Int Delay, s/veh	10.2												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↰		↰	↱						↰↱		
Traffic Vol, veh/h	0	490	40	160	630	0	0	0	0	50	20	10	
Future Vol, veh/h	0	490	40	160	630	0	0	0	0	50	20	10	
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	0	2	0	0	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	92	91	61	82	89	92	92	92	92	80	50	58	
Heavy Vehicles, %	2	2	0	0	2	2	2	2	2	0	0	0	
Mvmt Flow	0	538	66	195	708	0	0	0	0	63	40	17	
Major/Minor													
	Major1			Major2			Minor2						
Conflicting Flow All	-	0	0	606	0	0	1671			1704	708		
Stage 1	-	-	-	-	-	-	1098			1098	-		
Stage 2	-	-	-	-	-	-	573			606	-		
Critical Hdwy	-	-	-	4.1	-	-	6.4			6.5	6.2		
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4			5.5	-		
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4			5.5	-		
Follow-up Hdwy	-	-	-	2.2	-	-	3.5			4	3.3		
Pot Cap-1 Maneuver	0	-	-	982	-	0	107			93	438		
Stage 1	0	-	-	-	-	0	322			291	-		
Stage 2	0	-	-	-	-	0	568			490	-		
Platoon blocked, %	-	-	-	-	-	-							
Mov Cap-1 Maneuver	-	-	-	980	-	-	86			0	438		
Mov Cap-2 Maneuver	-	-	-	-	-	-	86			0	-		
Stage 1	-	-	-	-	-	-	258			0	-		
Stage 2	-	-	-	-	-	-	568			0	-		
Approach													
	EB			WB			SB						
HCM Control Delay, s	0			2.1			123.1						
HCM LOS							F						
Minor Lane/Major Mvmt													
	EBT	EBR	WBL	WBT	SBLn1	SBLn2							
Capacity (veh/h)	-	-	980	-	86	438							
HCM Lane V/C Ratio	-	-	0.199	-	0.959	0.085							
HCM Control Delay (s)	-	-	9.6	-	172.4	14							
HCM Lane LOS	-	-	A	-	F	B							
HCM 95th %tile Q(veh)	-	-	0.7	-	5.3	0.3							

HCM 2010 Signalized Intersection Summary
3: 8th St. & Park Ave.

08/01/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	520	10	10	790	70	10	20	60	30	20	10
Future Volume (veh/h)	10	520	10	10	790	70	10	20	60	30	20	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1267	1864	1900	1429	1876	1900	1900	1900	1900	1900	1859	1900
Adj Flow Rate, veh/h	30	565	20	20	975	109	30	22	111	49	30	32
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.33	0.92	0.50	0.50	0.81	0.64	0.33	0.92	0.54	0.61	0.67	0.31
Percent Heavy Veh, %	50	2	2	33	1	1	0	0	0	0	0	0
Cap, veh/h	258	1019	36	348	944	106	116	101	351	254	155	139
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	352	1789	63	634	1657	185	198	319	1103	594	489	438
Grp Volume(v), veh/h	30	0	585	20	0	1084	163	0	0	111	0	0
Grp Sat Flow(s),veh/h/ln	352	0	1852	634	0	1842	1620	0	0	1521	0	0
Q Serve(g_s), s	3.9	0.0	15.9	0.8	0.0	44.8	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	11.3	0.0	15.9	13.8	0.0	44.8	5.8	0.0	0.0	3.8	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.10	0.18		0.68	0.44		0.29
Lane Grp Cap(c), veh/h	258	0	1055	348	0	1049	568	0	0	548	0	0
V/C Ratio(X)	0.12	0.00	0.55	0.06	0.00	1.03	0.29	0.00	0.00	0.20	0.00	0.00
Avail Cap(c_a), veh/h	284	0	1193	395	0	1186	568	0	0	548	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.21	0.00	0.21	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.0	0.0	10.8	2.0	0.0	0.0	20.6	0.0	0.0	19.9	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.5	0.0	0.0	21.7	1.3	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	8.1	0.1	0.0	6.3	2.9	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	12.2	0.0	11.3	2.0	0.0	21.7	21.9	0.0	0.0	20.7	0.0	0.0
LnGrp LOS	B		B		A		F		C		C	
Approach Vol, veh/h	615			1104			163			111		
Approach Delay, s/veh	11.3			21.3			21.9			20.7		
Approach LOS	B			C			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	27.3		52.7		27.3		52.7					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	19.5		51.5		19.5		51.5					
Max Q Clear Time (g_c+I1), s	7.8		17.9		5.8		46.8					
Green Ext Time (p_c), s	1.3		18.7		1.4		3.9					
Intersection Summary												
HCM 2010 Ctrl Delay	18.2											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary
4: 9th St. & Park Ave.

08/01/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	540	60	140	880	10	20	0	80	10	10	10
Future Volume (veh/h)	10	540	60	140	880	10	20	0	80	10	10	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1820	1900	1863	1863	1900	1900	1900	1900	1900	1297	1900
Adj Flow Rate, veh/h	24	614	87	189	1128	20	56	0	105	26	40	20
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.42	0.88	0.69	0.74	0.78	0.50	0.36	0.92	0.76	0.38	0.25	0.50
Percent Heavy Veh, %	0	5	5	2	2	2	0	0	0	100	100	100
Cap, veh/h	120	799	113	598	1169	21	168	27	252	123	153	66
Arrive On Green	1.00	1.00	1.00	0.07	0.64	0.64	0.25	0.00	0.25	0.25	0.25	0.25
Sat Flow, veh/h	498	1560	221	1774	1825	32	434	111	1022	263	621	268
Grp Volume(v), veh/h	24	0	701	189	0	1148	161	0	0	86	0	0
Grp Sat Flow(s),veh/h/ln	498	0	1781	1774	0	1858	1566	0	0	1152	0	0
Q Serve(g_s), s	3.8	0.0	0.0	3.7	0.0	46.5	2.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	40.0	0.0	0.0	3.7	0.0	46.5	6.4	0.0	0.0	4.5	0.0	0.0
Prop In Lane	1.00		0.12	1.00		0.02	0.35		0.65	0.30		0.23
Lane Grp Cap(c), veh/h	120	0	912	598	0	1190	447	0	0	343	0	0
V/C Ratio(X)	0.20	0.00	0.77	0.32	0.00	0.96	0.36	0.00	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	120	0	912	659	0	1219	447	0	0	343	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.86	0.00	0.86	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.7	0.0	0.0	6.9	0.0	13.5	25.1	0.0	0.0	24.4	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	3.5	0.3	0.0	17.7	2.2	0.0	0.0	1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.9	1.8	0.0	29.1	3.2	0.0	0.0	1.7	0.0	0.0
LnGrp Delay(d),s/veh	18.4	0.0	3.5	7.2	0.0	31.2	27.3	0.0	0.0	26.1	0.0	0.0
LnGrp LOS	B		A	A		C	C			C		
Approach Vol, veh/h	725			1337			161			86		
Approach Delay, s/veh	4.0			27.8			27.3			26.1		
Approach LOS	A			C			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3		4		6		8			
Phs Duration (G+Y+Rc), s	24.2		10.3		45.5		24.2		55.8			
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5		4.5			
Max Green Setting (Gmax), s	18.5		8.5		39.5		18.5		52.5			
Max Q Clear Time (g_c+I1), s	8.4		5.7		42.0		6.5		48.5			
Green Ext Time (p_c), s	1.1		0.1		0.0		1.2		2.8			
Intersection Summary												
HCM 2010 Ctrl Delay	20.2											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

08/01/2017

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↩		↩					↩↩		↩	↩	
Traffic Volume (veh/h)	70	0	190	0	0	0	0	380	250	260	840	0
Future Volume (veh/h)	70	0	190	0	0	0	0	380	250	260	840	0
Number	1	6	16				7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1863				0	1852	1900	1776	1881	0
Adj Flow Rate, veh/h	90	0	284				0	432	272	329	1063	0
Adj No. of Lanes	1	0	1				0	2	0	1	1	0
Peak Hour Factor	0.78	0.92	0.67				0.90	0.88	0.92	0.79	0.79	0.92
Percent Heavy Veh, %	2	0	2				0	3	3	7	1	0
Cap, veh/h	499	0	445				0	689	431	569	1140	0
Arrive On Green	0.28	0.00	0.28				0.00	0.33	0.33	0.44	1.00	0.00
Sat Flow, veh/h	1774	0	1583				0	2174	1300	1691	1881	0
Grp Volume(v), veh/h	90	0	284				0	365	339	329	1063	0
Grp Sat Flow(s), veh/h/ln	1774	0	1583				0	1759	1622	1691	1881	0
Q Serve(g_s), s	3.1	0.0	12.6				0.0	14.0	14.2	7.8	0.0	0.0
Cycle Q Clear(g_c), s	3.1	0.0	12.6				0.0	14.0	14.2	7.8	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.80	1.00		0.00
Lane Grp Cap(c), veh/h	499	0	445				0	583	537	569	1140	0
V/C Ratio(X)	0.18	0.00	0.64				0.00	0.63	0.63	0.58	0.93	0.00
Avail Cap(c_a), veh/h	499	0	445				0	583	537	569	1140	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.8	0.0	25.2				0.0	22.6	22.6	8.2	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	6.8				0.0	5.0	5.6	4.2	14.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6	0.0	6.3				0.0	7.6	7.1	4.1	4.6	0.0
LnGrp Delay(d),s/veh	22.6	0.0	32.0				0.0	27.6	28.2	12.4	14.6	0.0
LnGrp LOS	C		C				C	C	B	B	B	
Approach Vol, veh/h	374						704			1392		
Approach Delay, s/veh	29.7						27.9			14.1		
Approach LOS	C						C			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			22.0	31.0		27.0		53.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			17.5	26.5		22.5		48.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			20.4									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

6: Park Dr. & US-52 WB On Ramp/US-52 WB Off Ramp

08/01/2017

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations				↩		↩		↩↩			↩↩	
Traffic Volume (veh/h)	0	0	0	220	0	280	0	380	0	90	820	0
Future Volume (veh/h)	0	0	0	220	0	280	0	380	0	90	820	0
Number				1	6	16		7	4	14	3	8
Initial Q (Qb), veh				0	0	0		0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00		1.00		1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1696	0	1827		1863	0	1900	1857	0
Adj Flow Rate, veh/h				262	0	326		404	0	99	1079	0
Adj No. of Lanes				1	0	1		2	0	0	2	0
Peak Hour Factor				0.84	0.92	0.86		0.94	0.92	0.91	0.76	0.92
Percent Heavy Veh, %				12	0	4		2	0	2	2	0
Cap, veh/h				616	0	592		1792	0	165	1538	0
Arrive On Green				0.38	0.00	0.38		1.00	0.00	0.51	0.51	0.00
Sat Flow, veh/h				1616	0	1553		3725	0	222	3122	0
Grp Volume(v), veh/h				262	0	326		404	0	602	576	0
Grp Sat Flow(s), veh/h/ln				1616	0	1553		1770	0	1655	1605	0
Q Serve(g_s), s				9.6	0.0	13.2		0.0	0.0	15.3	22.1	0.0
Cycle Q Clear(g_c), s				9.6	0.0	13.2		0.0	0.0	21.9	22.1	0.0
Prop In Lane				1.00		1.00		0.00		0.00	0.16	0.00
Lane Grp Cap(c), veh/h				616	0	592		1792	0	890	813	0
V/C Ratio(X)				0.43	0.00	0.55		0.23	0.00	0.68	0.71	0.00
Avail Cap(c_a), veh/h				616	0	592		1792	0	890	813	0
HCM Platoon Ratio				1.00	1.00	1.00		2.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00		1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh				18.3	0.0	19.4		0.0	0.0	14.9	15.2	0.0
Incr Delay (d2), s/veh				2.1	0.0	3.7		0.3	0.0	4.1	5.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.6	0.0	6.2		0.1	0.0	11.1	10.9	0.0
LnGrp Delay(d),s/veh				20.4	0.0	23.0		0.3	0.0	19.0	20.4	0.0
LnGrp LOS				C		C		A		B	C	
Approach Vol, veh/h				588				404			1178	
Approach Delay, s/veh				21.9				0.3			19.7	
Approach LOS				C				A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				45.0		35.0		45.0				
Change Period (Y+Rc), s				4.5		4.5		4.5				
Max Green Setting (Gmax), s				40.5		30.5		40.5				
Max Q Clear Time (g_c+I1), s				0.0		0.0		0.0				
Green Ext Time (p_c), s				0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				16.7								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
1: 6th St. & Park Ave.

08/01/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	750	0	0	450	160	20	190	260	0	0	0
Future Volume (veh/h)	10	750	0	0	450	160	20	190	260	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1881	0	0	1881	1900	1900	1900	1900			
Adj Flow Rate, veh/h	20	773	0	0	511	182	32	229	338			
Adj No. of Lanes	1	1	0	0	1	0	0	2	0			
Peak Hour Factor	0.50	0.97	0.92	0.92	0.88	0.88	0.63	0.83	0.77			
Percent Heavy Veh, %	0	1	0	0	1	1	0	0	0			
Cap, veh/h	472	988	0	0	696	248	89	638	619			
Arrive On Green	0.52	0.52	0.00	0.00	1.00	1.00	0.38	0.38	0.38			
Sat Flow, veh/h	763	1881	0	0	1325	472	232	1657	1607			
Grp Volume(v), veh/h	20	773	0	0	0	693	261	0	338			
Grp Sat Flow(s),veh/h/ln	763	1881	0	0	0	1798	1888	0	1607			
Q Serve(g_s), s	1.3	33.1	0.0	0.0	0.0	0.0	9.9	0.0	16.4			
Cycle Q Clear(g_c), s	1.3	33.1	0.0	0.0	0.0	0.0	9.9	0.0	16.4			
Prop In Lane	1.00		0.00	0.00		0.26	0.12		1.00			
Lane Grp Cap(c), veh/h	472	988	0	0	0	944	727	0	619			
V/C Ratio(X)	0.04	0.78	0.00	0.00	0.00	0.73	0.36	0.00	0.55			
Avail Cap(c_a), veh/h	472	988	0	0	0	944	727	0	619			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	11.6	19.2	0.0	0.0	0.0	0.0	21.9	0.0	23.9			
Incr Delay (d2), s/veh	0.2	6.2	0.0	0.0	0.0	5.1	1.4	0.0	3.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.3	18.7	0.0	0.0	0.0	1.3	5.4	0.0	7.8			
LnGrp Delay(d),s/veh	11.8	25.3	0.0	0.0	0.0	5.1	23.3	0.0	27.4			
LnGrp LOS	B	C				A	C		C			
Approach Vol, veh/h	793			693			599					
Approach Delay, s/veh	25.0			5.1			25.6					
Approach LOS	C			A			C					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4				8					
Phs Duration (G+Y+Rc), s	43.0		57.0				57.0					
Change Period (Y+Rc), s	4.5		4.5				4.5					
Max Green Setting (Gmax), s	38.5		52.5				52.5					
Max Q Clear Time (g_c+I1), s	0.0		0.0				0.0					
Green Ext Time (p_c), s	0.0		0.0				0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	18.5											
HCM 2010 LOS	B											

HCM 2010 TWSC
2: 7th St. & Park Ave.

08/01/2017

Intersection												
Int Delay, s/veh	30.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1000	30	120	590	0	0	0	0	50	20	20
Future Vol, veh/h	0	1000	30	120	590	0	0	0	0	50	20	20
Conflicting Peds, #/hr	15	0	1	1	0	15	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	69	87	86	92	92	92	92	68	58	60
Heavy Vehicles, %	2	1	0	1	1	2	2	2	2	7	14	0
Mvmt Flow	0	1075	43	138	686	0	0	0	0	74	34	33
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	1120	0	0				2061	2082	686
Stage 1	-	-	-	-	-	-				962	962	-
Stage 2	-	-	-	-	-	-				1099	1120	-
Critical Hdwy	-	-	-	4.11	-	-				6.47	6.64	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-				5.47	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.47	5.64	-
Follow-up Hdwy	-	-	-	2.209	-	-				3.563	4.126	3.3
Pot Cap-1 Maneuver	0	-	-	627	-	0				~ 58	49	451
Stage 1	0	-	-	-	-	0				363	319	-
Stage 2	0	-	-	-	-	0				312	268	-
Platoon blocked, %	-	-	-	-	-	-				-	-	-
Mov Cap-1 Maneuver	-	-	-	626	-	-				~ 45	0	451
Mov Cap-2 Maneuver	-	-	-	-	-	-				~ 45	0	-
Stage 1	-	-	-	-	-	-				283	0	-
Stage 2	-	-	-	-	-	-				312	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			2.1			\$ 433.6					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	626	-	45	451						
HCM Lane V/C Ratio	-	-	0.22	-	2.017	0.112						
HCM Control Delay (s)	-	-	12.4	-	\$ 667.4	14						
HCM Lane LOS	-	-	B	-	F	B						
HCM 95th %tile Q(veh)	-	-	0.8	-	9.4	0.4						
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 2010 Signalized Intersection Summary
3: 8th St. & Park Ave.

08/01/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	960	20	10	680	80	10	20	100	30	20	20
Future Volume (veh/h)	20	960	20	10	680	80	10	20	100	30	20	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1882	1900	1900	1881	1900	1900	1900	1900	1900	1829	1900
Adj Flow Rate, veh/h	27	1000	40	20	756	100	20	32	149	48	40	36
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.75	0.96	0.50	0.50	0.90	0.80	0.50	0.63	0.67	0.63	0.50	0.56
Percent Heavy Veh, %	0	1	1	0	1	1	0	0	0	0	0	0
Cap, veh/h	468	1087	43	132	985	130	65	104	370	202	166	130
Arrive On Green	0.61	0.61	0.61	1.00	1.00	1.00	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	655	1797	72	551	1627	215	84	340	1215	499	544	427
Grp Volume(v), veh/h	27	0	1040	20	0	856	201	0	0	124	0	0
Grp Sat Flow(s), veh/h/ln	655	0	1869	551	0	1842	1638	0	0	1470	0	0
Q Serve(g_s), s	1.7	0.0	49.5	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	49.5	52.7	0.0	0.0	9.5	0.0	0.0	5.8	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.12	0.10		0.74	0.39		0.29
Lane Grp Cap(c), veh/h	468	0	1131	132	0	1115	539	0	0	498	0	0
V/C Ratio(X)	0.06	0.00	0.92	0.15	0.00	0.77	0.37	0.00	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	475	0	1149	138	0	1133	539	0	0	498	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.64	0.00	0.64	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.1	0.0	17.6	21.6	0.0	0.0	27.5	0.0	0.0	26.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	11.7	0.3	0.0	2.1	2.0	0.0	0.0	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	28.8	0.5	0.0	0.6	4.7	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	8.2	0.0	29.3	21.9	0.0	2.1	29.4	0.0	0.0	27.3	0.0	0.0
LnGrp LOS	A		C	C		A	C			C		
Approach Vol, veh/h	1067			876			201			124		
Approach Delay, s/veh	28.7			2.5			29.4			27.3		
Approach LOS	C			A			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	35.0		65.0		35.0		65.0					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	29.5		61.5		29.5		61.5					
Max Q Clear Time (g_c+I1), s	11.5		51.5		7.8		54.7					
Green Ext Time (p_c), s	2.0		8.2		2.1		5.8					
Intersection Summary												
HCM 2010 Ctrl Delay	18.6											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary
4: 9th St. & Park Ave.

08/01/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1020	60	100	770	20	20	0	100	10	0	10
Future Volume (veh/h)	10	1020	60	100	770	20	20	0	100	10	0	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1882	1900	1845	1882	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	20	1097	71	137	895	40	36	0	139	26	0	13
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.50	0.93	0.84	0.73	0.86	0.50	0.56	0.25	0.72	0.38	0.92	0.75
Percent Heavy Veh, %	0	1	1	3	1	1	0	0	0	0	0	0
Cap, veh/h	291	1023	66	170	1216	54	94	25	291	248	12	100
Arrive On Green	1.00	1.00	1.00	0.05	0.68	0.68	0.23	0.00	0.23	0.23	0.00	0.23
Sat Flow, veh/h	608	1748	113	1757	1788	80	221	107	1267	817	52	434
Grp Volume(v), veh/h	20	0	1168	137	0	935	175	0	0	39	0	0
Grp Sat Flow(s),veh/h/ln	608	0	1862	1757	0	1867	1595	0	0	1303	0	0
Q Serve(g_s), s	1.3	0.0	56.4	3.0	0.0	32.1	2.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	23.9	0.0	56.4	3.0	0.0	32.1	9.2	0.0	0.0	2.1	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.04	0.21		0.79	0.67		0.33
Lane Grp Cap(c), veh/h	291	0	1089	170	0	1270	410	0	0	360	0	0
V/C Ratio(X)	0.07	0.00	1.07	0.81	0.00	0.74	0.43	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	291	0	1089	214	0	1317	410	0	0	360	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.27	0.00	0.27	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.6	0.0	0.0	25.0	0.0	10.3	33.1	0.0	0.0	30.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	38.3	16.4	0.0	2.1	3.2	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	11.6	4.5	0.0	17.1	4.5	0.0	0.0	0.9	0.0	0.0
LnGrp Delay(d),s/veh	4.6	0.0	38.3	41.4	0.0	12.4	36.4	0.0	0.0	31.0	0.0	0.0
LnGrp LOS	A		F	D		B	D			C		
Approach Vol, veh/h	1188			1072			175			39		
Approach Delay, s/veh	37.7			16.1			36.4			31.0		
Approach LOS	D			B			D			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3		4		6		8			
Phs Duration (G+Y+Rc), s	27.5		9.5		63.0		27.5		72.5			
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5		4.5			
Max Green Setting (Gmax), s	20.5		7.5		58.5		20.5		70.5			
Max Q Clear Time (g_c+I1), s	11.2		5.0		58.4		4.1		34.1			
Green Ext Time (p_c), s	0.8		0.1		0.1		1.2		25.5			
Intersection Summary												
HCM 2010 Ctrl Delay	28.2											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

08/01/2017

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↩		↩					↩↪		↩	↪	
Traffic Volume (veh/h)	70	0	150	0	0	0	0	790	350	220	730	0
Future Volume (veh/h)	70	0	150	0	0	0	0	790	350	220	730	0
Number	1	6	16					7	4	14	3	8
Initial Q (Qb), veh	0	0	0					0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00					1.00	1.00	1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1863	0	1845					0	1875	1900	1845	1881
Adj Flow Rate, veh/h	88	0	181					0	814	402	250	802
Adj No. of Lanes	1	0	1					0	2	0	1	0
Peak Hour Factor	0.80	0.92	0.83					0.92	0.97	0.87	0.88	0.91
Percent Heavy Veh, %	2	0	3					0	1	1	3	0
Cap, veh/h	506	0	447					0	1077	529	352	1176
Arrive On Green	0.28	0.00	0.28					0.00	0.47	0.47	0.23	1.00
Sat Flow, veh/h	1774	0	1568					0	2410	1138	1757	1881
Grp Volume(v), veh/h	88	0	181					0	625	591	250	802
Grp Sat Flow(s), veh/h/ln	1774	0	1568					0	1781	1673	1757	1881
Q Serve(g_s), s	3.7	0.0	9.3					0.0	28.9	29.2	6.9	0.0
Cycle Q Clear(g_c), s	3.7	0.0	9.3					0.0	28.9	29.2	6.9	0.0
Prop In Lane	1.00	1.00	1.00					0.00	0.68	1.00	0.00	0.00
Lane Grp Cap(c), veh/h	506	0	447					0	828	778	352	1176
V/C Ratio(X)	0.17	0.00	0.41					0.00	0.75	0.76	0.71	0.68
Avail Cap(c_a), veh/h	506	0	447					0	828	778	352	1176
HCM Platoon Ratio	1.00	1.00	1.00					1.00	1.00	1.00	2.00	1.00
Upstream Filter(l)	1.00	0.00	1.00					0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.9	0.0	28.9					0.0	22.0	22.1	15.7	0.0
Incr Delay (d2), s/veh	0.7	0.0	2.7					0.0	6.3	6.9	11.5	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	4.4					0.0	15.5	14.9	4.4	1.0
LnGrp Delay(d),s/veh	27.6	0.0	31.6					0.0	28.4	29.0	27.2	3.2
LnGrp LOS	C		C					C	C	C	A	
Approach Vol, veh/h	269							1216			1052	
Approach Delay, s/veh	30.3							28.7			8.9	
Approach LOS	C							C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			16.0	51.0		33.0		67.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			11.5	46.5		28.5		62.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			20.7									
HCM 2010 LOS			C									

Park Avenue Traffic Study 04/21/2017 Design Year No Build PM

Synchro 9 Report
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HCM 2010 Signalized Intersection Summary

6: Park Dr. & US-52 WB On Ramp/US-52 WB Off Ramp

08/01/2017

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations				↩		↩		↩↪			↩↪	
Traffic Volume (veh/h)	0	0	0	250	0	300	0	770	0	80	640	0
Future Volume (veh/h)	0	0	0	250	0	300	0	770	0	80	640	0
Number				1	6	16		7	4	14	3	8
Initial Q (Qb), veh				0	0	0		0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00		1.00	1.00		1.00	
Parking Bus, Adj				1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln				1845	0	1863		1863	0	1900	1864	
Adj Flow Rate, veh/h				284	0	390		895	0	121	681	
Adj No. of Lanes				1	0	1		2	0	0	2	
Peak Hour Factor				0.88	0.92	0.77		0.86	0.92	0.66	0.94	
Percent Heavy Veh, %				3	0	2		2	0	1	1	
Cap, veh/h				764	0	689		1681	0	218	1143	
Arrive On Green				0.44	0.00	0.44		0.95	0.00	0.47	0.47	
Sat Flow, veh/h				1757	0	1583		3725	0	356	2491	
Grp Volume(v), veh/h				284	0	390		895	0	342	460	
Grp Sat Flow(s), veh/h/ln				1757	0	1583		1770	0	1150	1612	
Q Serve(g_s), s				10.9	0.0	18.5		2.6	0.0	16.6	21.0	
Cycle Q Clear(g_c), s				10.9	0.0	18.5		2.6	0.0	20.2	21.0	
Prop In Lane				1.00	1.00	0.00		0.00	0.35		0.00	
Lane Grp Cap(c), veh/h				764	0	689		1681	0	595	766	
V/C Ratio(X)				0.37	0.00	0.57		0.53	0.00	0.58	0.60	
Avail Cap(c_a), veh/h				764	0	689		1681	0	595	766	
HCM Platoon Ratio				1.00	1.00	1.00		2.00	1.00	1.00	1.00	
Upstream Filter(l)				1.00	0.00	1.00		1.00	0.00	1.00	1.00	
Uniform Delay (d), s/veh				19.0	0.0	21.2		1.4	0.0	18.4	19.3	
Incr Delay (d2), s/veh				1.4	0.0	3.4		1.2	0.0	4.0	3.5	
Initial Q Delay(d3),s/veh				0.0	0.0	0.0		0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln				5.6	0.0	8.7		1.3	0.0	7.5	10.1	
LnGrp Delay(d),s/veh				20.4	0.0	24.5		2.6	0.0	22.4	22.8	
LnGrp LOS				C		C		A		C	C	
Approach Vol, veh/h				674				895			802	
Approach Delay, s/veh				22.8				2.6			22.6	
Approach LOS				C				A			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				52.0		48.0		52.0				
Change Period (Y+Rc), s				4.5		4.5		4.5				
Max Green Setting (Gmax), s				47.5		43.5		47.5				
Max Q Clear Time (g_c+I1), s				0.0		0.0		0.0				
Green Ext Time (p_c), s				0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				15.1								
HCM 2010 LOS				B								

Park Avenue Traffic Study 04/21/2017 Design Year No Build PM

Synchro 9 Report
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HCM 2010 Signalized Intersection Summary
1: 6th St. & Park Ave.

07/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	420	0	0	410	230	20	180	130	0	0	0
Future Volume (veh/h)	10	420	0	0	410	230	20	180	130	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1845	0	0	1881	1900	1900	1837	1900			
Adj Flow Rate, veh/h	20	462	0	0	456	280	36	254	153			
Adj No. of Lanes	1	1	0	0	1	0	0	2	0			
Peak Hour Factor	0.50	0.91	0.92	0.92	0.90	0.82	0.55	0.71	0.85			
Percent Heavy Veh, %	0	3	0	0	1	1	0	6	0			
Cap, veh/h	276	999	0	0	592	363	84	598	378			
Arrive On Green	0.54	0.54	0.00	0.00	0.54	0.54	0.31	0.31	0.31			
Sat Flow, veh/h	733	1845	0	0	1092	671	272	1940	1227			
Grp Volume(v), veh/h	20	462	0	0	0	736	241	0	202			
Grp Sat Flow(s),veh/h/ln	733	1845	0	0	0	1763	1823	0	1616			
Q Serve(g_s), s	1.3	9.2	0.0	0.0	0.0	19.7	6.3	0.0	5.9			
Cycle Q Clear(g_c), s	21.0	9.2	0.0	0.0	0.0	19.7	6.3	0.0	5.9			
Prop In Lane	1.00		0.00	0.00		0.38	0.15		0.76			
Lane Grp Cap(c), veh/h	276	999	0	0	0	955	562	0	498			
V/C Ratio(X)	0.07	0.46	0.00	0.00	0.00	0.77	0.43	0.00	0.40			
Avail Cap(c_a), veh/h	276	999	0	0	0	955	562	0	498			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	19.1	8.4	0.0	0.0	0.0	10.8	16.5	0.0	16.4			
Incr Delay (d2), s/veh	0.5	1.5	0.0	0.0	0.0	6.0	2.4	0.0	2.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.3	5.0	0.0	0.0	0.0	11.0	3.5	0.0	3.0			
LnGrp Delay(d),s/veh	19.6	9.9	0.0	0.0	0.0	16.8	18.9	0.0	18.8			
LnGrp LOS	B	A				B	B		B			
Approach Vol, veh/h	482			736			443					
Approach Delay, s/veh	10.3			16.8			18.9					
Approach LOS	B			B			B					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4				8					
Phs Duration (G+Y+Rc), s	23.0		37.0				37.0					
Change Period (Y+Rc), s	4.5		4.5				4.5					
Max Green Setting (Gmax), s	18.5		32.5				32.5					
Max Q Clear Time (g_c+I1), s	0.0		0.0				0.0					
Green Ext Time (p_c), s	0.0		0.0				0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	15.5											
HCM 2010 LOS	B											

HCM 2010 TWSC
2: 7th St. & Park Ave.

07/31/2017

Intersection												
Int Delay, s/veh	17											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰		↰	↑						↰↱	
Traffic Vol, veh/h	0	490	40	160	630	0	0	0	0	50	20	10
Future Vol, veh/h	0	490	40	160	630	0	0	0	0	50	20	10
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	91	61	82	89	92	92	92	92	80	50	58
Heavy Vehicles, %	2	2	0	0	2	2	2	2	2	0	0	0
Mvmt Flow	0	538	66	195	708	0	0	0	0	63	40	17
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	606	0	0				1671	1704	708
Stage 1	-	-	-	-	-	-				1098	1098	-
Stage 2	-	-	-	-	-	-				573	606	-
Critical Hdwy	-	-	-	4.1	-	-				7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-				6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-				6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-				3.5	4	3.3
Pot Cap-1 Maneuver	0	-	-	982	-	0				77	93	438
Stage 1	0	-	-	-	-	0				260	291	-
Stage 2	0	-	-	-	-	0				508	490	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	-	-	-	980	-	-				65	74	438
Mov Cap-2 Maneuver	-	-	-	-	-	-				65	74	-
Stage 1	-	-	-	-	-	-				260	233	-
Stage 2	-	-	-	-	-	-				507	490	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			2.1			215.4					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	980	-	67	120						
HCM Lane V/C Ratio	-	-	0.199	-	1.231	0.31						
HCM Control Delay (s)	-	-	9.6	-	291	48						
HCM Lane LOS	-	-	A	-	F	E						
HCM 95th %tile Q(veh)	-	-	0.7	-	6.6	1.2						

HCM 2010 TWSC
3: 8th St. & Park Ave.

07/31/2017

Intersection												
Int Delay, s/veh	49.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	10	520	10	10	790	70	10	20	60	30	20	10
Future Vol, veh/h	10	520	10	10	790	70	10	20	60	30	20	10
Conflicting Peds, #/hr	0	0	5	5	0	0	3	0	2	2	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	92	50	50	81	64	33	92	54	61	67	31
Heavy Vehicles, %	50	2	0	33	1	4	0	0	0	5	0	0
Mvmt Flow	30	565	20	20	975	109	30	22	111	49	30	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1085	0	0	590	0	0	1745	1766	582	1774	1721	1033
Stage 1	-	-	-	-	-	-	641	641	-	1070	1070	-
Stage 2	-	-	-	-	-	-	1104	1125	-	704	651	-
Critical Hdwy	4.6	-	-	4.43	-	-	7.1	6.5	6.2	7.15	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Follow-up Hdwy	2.65	-	-	2.497	-	-	3.5	4	3.3	3.545	4	3.3
Pot Cap-1 Maneuver	493	-	-	850	-	-	68	85	517	63	90	285
Stage 1	-	-	-	-	-	-	466	473	-	264	300	-
Stage 2	-	-	-	-	-	-	258	283	-	423	468	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	492	-	-	848	-	-	40	78	514	~ 36	82	284
Mov Cap-2 Maneuver	-	-	-	-	-	-	40	78	-	~ 36	82	-
Stage 1	-	-	-	-	-	-	436	442	-	248	293	-
Stage 2	-	-	-	-	-	-	200	276	-	295	437	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.2	227.7	\$ 552.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	130	492	-	-	848	-	-	60
HCM Lane V/C Ratio	1.255	0.062	-	-	0.024	-	-	1.855
HCM Control Delay (s)	227.7	12.8	-	-	9.3	-	-	\$ 552.4
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	10.2	0.2	-	-	0.1	-	-	10.4

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 2010 TWSC
4: 9th St. & Park Ave.

07/31/2017

Intersection												
Int Delay, s/veh	67.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	10	540	60	140	880	10	20	0	80	10	10	10
Future Vol, veh/h	10	540	60	140	880	10	20	0	80	10	10	10
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	42	88	69	74	78	50	36	92	76	38	25	50
Heavy Vehicles, %	0	5	0	2	2	0	0	0	0	0	100	0
Mvmt Flow	24	614	87	189	1128	20	56	0	105	26	40	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1149	0	0	702	0	0	2253	2234	658	2275	2267	1139
Stage 1	-	-	-	-	-	-	706	706	-	1518	1518	-
Stage 2	-	-	-	-	-	-	1547	1528	-	757	749	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.1	6.5	6.2	7.1	7.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	6.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.5	4	3.3	3.5	4.9	3.3
Pot Cap-1 Maneuver	615	-	-	895	-	-	~ 30	43	468	29	~ 21	247
Stage 1	-	-	-	-	-	-	430	442	-	150	112	-
Stage 2	-	-	-	-	-	-	145	181	-	403	303	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	615	-	-	895	-	-	-	33	468	~ 18	~ 16	247
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	33	-	~ 18	~ 16	-
Stage 1	-	-	-	-	-	-	413	424	-	144	88	-
Stage 2	-	-	-	-	-	-	57	143	-	300	291	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1.4		\$ 1774.5
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	615	-	-	895	-	-	21
HCM Lane V/C Ratio	-	0.039	-	-	0.211	-	-	4.11
HCM Control Delay (s)	-	11.1	-	-	10.1	-	-	\$ 1774.5
HCM Lane LOS	-	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	-	0.1	-	-	0.8	-	-	11.1

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

07/31/2017

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↩		↩					↩↪		↩	↪	
Traffic Volume (veh/h)	70	0	190	0	0	0	0	380	250	260	840	0
Future Volume (veh/h)	70	0	190	0	0	0	0	380	250	260	840	0
Number	1	6	16				7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1863	0	1863				0	1852	1900	1776	1881	0
Adj Flow Rate, veh/h	90	0	284				0	432	272	329	1063	0
Adj No. of Lanes	1	0	1				0	2	0	1	1	0
Peak Hour Factor	0.78	0.92	0.67				0.90	0.88	0.92	0.79	0.79	0.92
Percent Heavy Veh, %	2	0	2				0	3	3	7	1	0
Cap, veh/h	499	0	445				0	689	431	569	1140	0
Arrive On Green	0.28	0.00	0.28				0.00	0.33	0.33	0.44	1.00	0.00
Sat Flow, veh/h	1774	0	1583				0	2174	1300	1691	1881	0
Grp Volume(v), veh/h	90	0	284				0	365	339	329	1063	0
Grp Sat Flow(s), veh/h/ln	1774	0	1583				0	1759	1622	1691	1881	0
Q Serve(g_s), s	3.1	0.0	12.6				0.0	14.0	14.2	7.8	0.0	0.0
Cycle Q Clear(g_c), s	3.1	0.0	12.6				0.0	14.0	14.2	7.8	0.0	0.0
Prop In Lane	1.00		1.00				0.00	0.80	1.00		0.00	
Lane Grp Cap(c), veh/h	499	0	445				0	583	537	569	1140	0
V/C Ratio(X)	0.18	0.00	0.64				0.00	0.63	0.63	0.58	0.93	0.00
Avail Cap(c_a), veh/h	499	0	445				0	583	537	569	1140	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.8	0.0	25.2				0.0	22.6	22.6	8.2	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	6.8				0.0	5.0	5.6	4.2	14.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	6.3				0.0	7.6	7.1	4.1	4.6	0.0
LnGrp Delay(d),s/veh	22.6	0.0	32.0				0.0	27.6	28.2	12.4	14.6	0.0
LnGrp LOS	C		C				C	C	B	B	C	
Approach Vol, veh/h	374						704			1392		
Approach Delay, s/veh	29.7						27.9			14.1		
Approach LOS	C						C			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			22.0	31.0		27.0		53.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			17.5	26.5		22.5		48.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	20.4											
HCM 2010 LOS	C											

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HCM 2010 Signalized Intersection Summary

6: Park Dr. & US-52 WB On Ramp/US-52 WB Off Ramp

07/31/2017

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations				↩		↩		↩↪			↩↪	
Traffic Volume (veh/h)	0	0	0	220	0	280	0	380	0	90	820	0
Future Volume (veh/h)	0	0	0	220	0	280	0	380	0	90	820	0
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00		1.00		1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1696	0	1827	0	1863	0	1900	1857	0
Adj Flow Rate, veh/h				262	0	326	0	404	0	99	1079	0
Adj No. of Lanes				1	0	1	0	2	0	0	2	0
Peak Hour Factor				0.84	0.92	0.86	0.92	0.94	0.92	0.91	0.76	0.92
Percent Heavy Veh, %				12	0	4	0	2	0	2	2	0
Cap, veh/h				616	0	592	0	1792	0	165	1538	0
Arrive On Green				0.38	0.00	0.38	0.00	1.00	0.00	0.51	0.51	0.00
Sat Flow, veh/h				1616	0	1553	0	3725	0	222	3122	0
Grp Volume(v), veh/h				262	0	326	0	404	0	602	576	0
Grp Sat Flow(s), veh/h/ln				1616	0	1553	0	1770	0	1655	1605	0
Q Serve(g_s), s				9.6	0.0	13.2	0.0	0.0	0.0	15.3	22.1	0.0
Cycle Q Clear(g_c), s				9.6	0.0	13.2	0.0	0.0	0.0	21.9	22.1	0.0
Prop In Lane				1.00		1.00	0.00	0.00	0.00	0.16		0.00
Lane Grp Cap(c), veh/h				616	0	592	0	1792	0	890	813	0
V/C Ratio(X)				0.43	0.00	0.55	0.00	0.23	0.00	0.68	0.71	0.00
Avail Cap(c_a), veh/h				616	0	592	0	1792	0	890	813	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				18.3	0.0	19.4	0.0	0.0	0.0	14.9	15.2	0.0
Incr Delay (d2), s/veh				2.1	0.0	3.7	0.0	0.3	0.0	4.1	5.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.6	0.0	6.2	0.0	0.1	0.0	11.1	10.9	0.0
LnGrp Delay(d),s/veh				20.4	0.0	23.0	0.0	0.3	0.0	19.0	20.4	0.0
LnGrp LOS				C		C		A		B	C	
Approach Vol, veh/h				588			404			1178		
Approach Delay, s/veh				21.9			0.3			19.7		
Approach LOS				C			A			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				45.0		35.0		45.0				
Change Period (Y+Rc), s				4.5		4.5		4.5				
Max Green Setting (Gmax), s				40.5		30.5		40.5				
Max Q Clear Time (g_c+I1), s				0.0		0.0		0.0				
Green Ext Time (p_c), s				0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				16.7								
HCM 2010 LOS				B								

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HCM 2010 Signalized Intersection Summary

1: 6th St. & Park Ave.

07/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	750	0	0	450	160	20	190	260	0	0	0
Future Volume (veh/h)	10	750	0	0	450	160	20	190	260	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1881	0	0	1881	1900	1900	1900	1900			
Adj Flow Rate, veh/h	20	773	0	0	511	182	32	229	338			
Adj No. of Lanes	1	1	0	0	1	0	0	2	0			
Peak Hour Factor	0.50	0.97	0.92	0.92	0.88	0.88	0.63	0.83	0.77			
Percent Heavy Veh. %	0	1	0	0	1	1	0	0	0			
Cap, veh/h	272	956	0	0	674	240	79	566	549			
Arrive On Green	0.51	0.51	0.00	0.00	0.51	0.51	0.34	0.34	0.34			
Sat Flow, veh/h	763	1881	0	0	1325	472	232	1657	1606			
Grp Volume(v), veh/h	20	773	0	0	0	693	261	0	338			
Grp Sat Flow(s),veh/h/ln	763	1881	0	0	0	1798	1888	0	1606			
Q Serve(g_s), s	1.3	20.6	0.0	0.0	0.0	18.5	6.3	0.0	10.5			
Cycle Q Clear(g_c), s	19.8	20.6	0.0	0.0	0.0	18.5	6.3	0.0	10.5			
Prop In Lane	1.00		0.00	0.00		0.26	0.12		1.00			
Lane Grp Cap(c), veh/h	272	956	0	0	0	914	645	0	549			
V/C Ratio(X)	0.07	0.81	0.00	0.00	0.00	0.76	0.40	0.00	0.62			
Avail Cap(c_a), veh/h	272	956	0	0	0	914	645	0	549			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	19.7	12.3	0.0	0.0	0.0	11.8	15.1	0.0	16.5			
Incr Delay (d2), s/veh	0.5	7.3	0.0	0.0	0.0	5.9	1.9	0.0	5.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.3	12.5	0.0	0.0	0.0	10.5	3.6	0.0	5.4			
LnGrp Delay(d),s/veh	20.2	19.6	0.0	0.0	0.0	17.7	17.0	0.0	21.6			
LnGrp LOS	C	B				B	B		C			
Approach Vol, veh/h	793			693			599					
Approach Delay, s/veh	19.6			17.7			19.6					
Approach LOS	B			B			B					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4				8					
Phs Duration (G+Y+Rc), s	25.0		35.0				35.0					
Change Period (Y+Rc), s	4.5		4.5				4.5					
Max Green Setting (Gmax), s	20.5		30.5				30.5					
Max Q Clear Time (g_c+I1), s	0.0		0.0				0.0					
Green Ext Time (p_c), s	0.0		0.0				0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	19.0											
HCM 2010 LOS	B											

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Synchro 9 Report
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HCM 2010 TWSC

2: 7th St. & Park Ave.

07/31/2017

Intersection												
Int Delay, s/veh	48.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰		↰	↱					↰↱		
Traffic Vol, veh/h	0	1000	30	120	590	0	0	0	0	50	20	20
Future Vol, veh/h	0	1000	30	120	590	0	0	0	0	50	20	20
Conflicting Peds, #/hr	15	0	1	1	0	15	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	69	87	86	92	92	92	92	68	58	60
Heavy Vehicles, %	2	1	0	1	1	2	2	2	2	7	14	0
Mvmt Flow	0	1075	43	138	686	0	0	0	0	74	34	33
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	1120	0	0				2061	2082	686
Stage 1	-	-	-	-	-	-				962	962	-
Stage 2	-	-	-	-	-	-				1099	1120	-
Critical Hdwy	-	-	-	4.11	-	-				7.17	6.64	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-				6.17	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-				6.17	5.64	-
Follow-up Hdwy	-	-	-	2.209	-	-				3.563	4.126	3.3
Pot Cap-1 Maneuver	0	-	-	627	-	0				~ 39	49	451
Stage 1	0	-	-	-	-	0				301	319	-
Stage 2	0	-	-	-	-	0				252	268	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	-	-	-	626	-	-				~ 32	38	451
Mov Cap-2 Maneuver	-	-	-	-	-	-				~ 32	38	-
Stage 1	-	-	-	-	-	-				301	249	-
Stage 2	-	-	-	-	-	-				252	268	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			2.1			\$ 700.2					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	626	-	33	96						
HCM Lane V/C Ratio	-	-	0.22	-	2.751	0.527						
HCM Control Delay (s)	-	-	12.4	\$ 1046.7	78.2							
HCM Lane LOS	-	-	B	-	F	F						
HCM 95th %tile Q(veh)	-	-	0.8	-	10.5	2.4						
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

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Synchro 9 Report
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HCM 2010 TWSC
3: 8th St. & Park Ave.

07/31/2017

Intersection												
Int Delay, s/veh	171.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	20	960	20	10	680	80	10	20	100	30	20	20
Future Vol, veh/h	20	960	20	10	680	80	10	20	100	30	20	20
Conflicting Peds, #/hr	0	0	4	4	0	0	5	0	3	3	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	96	50	50	90	80	50	63	67	63	50	56
Heavy Vehicles, %	0	1	0	0	1	1	0	0	0	10	0	0
Mvmt Flow	27	1000	40	20	756	100	20	32	149	48	40	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	856	0	0	1044	0	0	1965	1973	1027	2013	1943	811
Stage 1	-	-	-	-	-	-	1077	1077	-	846	846	-
Stage 2	-	-	-	-	-	-	888	896	-	1167	1097	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.2	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.2	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.2	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.59	4	3.3
Pot Cap-1 Maneuver	793	-	-	674	-	-	48	63	287	~ 41	66	383
Stage 1	-	-	-	-	-	-	268	298	-	346	381	-
Stage 2	-	-	-	-	-	-	341	362	-	227	291	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	789	-	-	672	-	-	20	59	285	~ 11	62	381
Mov Cap-2 Maneuver	-	-	-	-	-	-	20	59	-	~ 11	62	-
Stage 1	-	-	-	-	-	-	258	287	-	334	370	-
Stage 2	-	-	-	-	-	-	266	351	-	93	280	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2	-	-	0.2	-	-	\$ 588	-	-	\$ 2188.1	-	-
HCM LOS	-	-	-	-	-	-	F	-	-	F	-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	97	789	-	-	672	-	-	24
HCM Lane V/C Ratio	2.072	0.034	-	-	0.03	-	-	5.139
HCM Control Delay (s)	\$ 588	9.7	-	-	10.5	-	-	\$ 2188.1
HCM Lane LOS	F	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	17.3	0.1	-	-	0.1	-	-	15.4

Notes												
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon									

HCM 2010 TWSC
4: 9th St. & Park Ave.

07/31/2017

Intersection												
Int Delay, s/veh	86.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	10	1020	60	100	770	20	20	0	100	10	0	10
Future Vol, veh/h	10	1020	60	100	770	20	20	0	100	10	0	10
Conflicting Peds, #/hr	3	0	6	6	0	3	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	93	84	73	86	50	56	25	72	38	92	75
Heavy Vehicles, %	0	1	0	3	1	0	0	0	0	0	0	0
Mvmt Flow	20	1097	71	137	895	40	36	0	139	26	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	938	0	0	1174	0	0	2374	2390	1140	2436	2406	918
Stage 1	-	-	-	-	-	-	1178	1178	-	1192	1192	-
Stage 2	-	-	-	-	-	-	1196	1212	-	1244	1214	-
Critical Hdwy	4.1	-	-	4.13	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	739	-	-	591	-	-	~ 24	34	247	~ 22	34	332
Stage 1	-	-	-	-	-	-	235	267	-	230	263	-
Stage 2	-	-	-	-	-	-	229	257	-	215	257	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	739	-	-	590	-	-	~ 18	25	245	~ 8	25	331
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 18	25	-	~ 8	25	-
Stage 1	-	-	-	-	-	-	227	258	-	223	201	-
Stage 2	-	-	-	-	-	-	169	197	-	90	249	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2	-	-	1.7	-	-	\$ 841.5	-	-	\$ 1668.9	-	-
HCM LOS	-	-	-	-	-	-	F	-	-	F	-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	68	739	-	-	590	-	-	12
HCM Lane V/C Ratio	2.568	0.027	-	-	0.232	-	-	3.304
HCM Control Delay (s)	\$ 841.5	10	-	-	12.9	-	-	\$ 1668.9
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	17.1	0.1	-	-	0.9	-	-	6

Notes												
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon									

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

07/31/2017

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↩		↩					↩↪		↩	↪	
Traffic Volume (veh/h)	70	0	150	0	0	0	0	790	350	220	730	0
Future Volume (veh/h)	70	0	150	0	0	0	0	790	350	220	730	0
Number	1	6	16					7	4	14	3	8
Initial Q (Qb), veh	0	0	0					0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00	1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1863	0	1845				0	1875	1900	1845	1881	0
Adj Flow Rate, veh/h	88	0	181				0	814	402	250	802	0
Adj No. of Lanes	1	0	1				0	2	0	1	1	0
Peak Hour Factor	0.80	0.92	0.83				0.92	0.97	0.87	0.88	0.91	0.92
Percent Heavy Veh, %	2	0	3				0	1	1	3	1	0
Cap, veh/h	340	0	301				0	984	484	448	1238	0
Arrive On Green	0.19	0.00	0.19				0.00	0.43	0.43	0.32	1.00	0.00
Sat Flow, veh/h	1774	0	1568				0	2410	1138	1757	1881	0
Grp Volume(v), veh/h	88	0	181				0	625	591	250	802	0
Grp Sat Flow(s), veh/h/ln	1774	0	1568				0	1781	1673	1757	1881	0
Q Serve(g_s), s	2.5	0.0	6.3				0.0	18.7	18.8	3.7	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	6.3				0.0	18.7	18.8	3.7	0.0	0.0
Prop In Lane	1.00		1.00				0.00	0.68	1.00		0.00	
Lane Grp Cap(c), veh/h	340	0	301				0	757	711	448	1238	0
V/C Ratio(X)	0.26	0.00	0.60				0.00	0.83	0.83	0.56	0.65	0.00
Avail Cap(c_a), veh/h	340	0	301				0	757	711	448	1238	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.6	0.0	22.2				0.0	15.3	15.3	8.6	0.0	0.0
Incr Delay (d2), s/veh	1.8	0.0	8.7				0.0	10.0	10.9	4.9	2.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	3.4				0.0	11.1	10.7	2.2	0.9	0.0
LnGrp Delay(d),s/veh	22.5	0.0	30.8				0.0	25.3	26.2	13.5	2.6	0.0
LnGrp LOS	C		C				C	C	B		A	
Approach Vol, veh/h	269							1216		1052		
Approach Delay, s/veh	28.1							25.7		5.2		
Approach LOS	C							C		A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			14.0	30.0		16.0		44.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			9.5	25.5		11.5		39.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	17.5											
HCM 2010 LOS	B											

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HCM 2010 Signalized Intersection Summary

6: Park Dr. & US-52 WB On Ramp/US-52 WB Off Ramp

07/31/2017

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations				↩	↪	↩		↩↪			↩↪	
Traffic Volume (veh/h)	0	0	0	250	0	300	0	770	0	80	640	0
Future Volume (veh/h)	0	0	0	250	0	300	0	770	0	80	640	0
Number				1	6	16		7		4	3	8
Initial Q (Qb), veh				0	0	0		0		0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	1.00		1.00		1.00	1.00	1.00
Parking Bus, Adj				1.00	1.00	1.00		1.00		1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1845	0	1863		1863		1900	1864	0
Adj Flow Rate, veh/h				284	0	390		895		121	681	0
Adj No. of Lanes				1	0	1		2		0	2	0
Peak Hour Factor				0.88	0.92	0.77		0.86		0.92	0.66	0.94
Percent Heavy Veh, %				3	0	2		2		0	1	0
Cap, veh/h				717	0	647		1563		222	1109	0
Arrive On Green				0.41	0.00	0.41		0.88		0.00	0.44	0.00
Sat Flow, veh/h				1757	0	1583		3725		321	2596	0
Grp Volume(v), veh/h				284	0	390		895		357	445	0
Grp Sat Flow(s), veh/h/ln				1757	0	1583		1770		1220	1612	0
Q Serve(g_s), s				6.8	0.0	11.6		3.6		8.1	12.8	0.0
Cycle Q Clear(g_c), s				6.8	0.0	11.6		3.6		12.0	12.8	0.0
Prop In Lane				1.00		1.00		0.00		0.34		0.00
Lane Grp Cap(c), veh/h				717	0	647		1563		619	712	0
V/C Ratio(X)				0.40	0.00	0.60		0.57		0.58	0.62	0.00
Avail Cap(c_a), veh/h				717	0	647		1563		619	712	0
HCM Platoon Ratio				1.00	1.00	1.00		2.00		1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00		1.00		1.00	1.00	0.00
Uniform Delay (d), s/veh				12.5	0.0	13.9		2.2		12.1	12.9	0.0
Incr Delay (d2), s/veh				1.6	0.0	4.1		1.5		3.9	4.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0		0.0		0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.6	0.0	5.7		1.8		5.1	6.4	0.0
LnGrp Delay(d),s/veh				14.2	0.0	18.1		3.7		16.0	17.0	0.0
LnGrp LOS				B		B		A		B	B	
Approach Vol, veh/h				674		895			802			
Approach Delay, s/veh				16.4		3.7			16.6			
Approach LOS				B		A			B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				31.0		29.0		31.0				
Change Period (Y+Rc), s				4.5		4.5		4.5				
Max Green Setting (Gmax), s				26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s				0.0		0.0		0.0				
Green Ext Time (p_c), s				0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				11.7								
HCM 2010 LOS				B								

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HCM 2010 Signalized Intersection Summary

1: 6th St. & Park Ave.

07/24/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	319	0	0	310	173	11	137	98	0	0	0
Future Volume (veh/h)	6	319	0	0	310	173	11	137	98	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1845	0	0	1881	1900	1900	1835	1900			
Adj Flow Rate, veh/h	12	351	0	0	344	211	20	193	115			
Adj No. of Lanes	1	1	0	0	1	0	0	2	0			
Peak Hour Factor	0.50	0.91	0.92	0.92	0.90	0.82	0.55	0.71	0.85			
Percent Heavy Veh, %	0	3	0	0	1	1	0	6	0			
Cap, veh/h	340	867	0	0	514	315	72	700	432			
Arrive On Green	0.47	0.47	0.00	0.00	0.47	0.47	0.35	0.35	0.35			
Sat Flow, veh/h	867	1845	0	0	1093	670	206	2000	1233			
Grp Volume(v), veh/h	12	351	0	0	0	555	178	0	150			
Grp Sat Flow(s),veh/h/ln	867	1845	0	0	0	1763	1825	0	1613			
Q Serve(g_s), s	0.5	6.2	0.0	0.0	0.0	12.2	3.5	0.0	3.3			
Cycle Q Clear(g_c), s	12.7	6.2	0.0	0.0	0.0	12.2	3.5	0.0	3.3			
Prop In Lane	1.00		0.00	0.00		0.38	0.11		0.76			
Lane Grp Cap(c), veh/h	340	867	0	0	0	829	639	0	565			
V/C Ratio(X)	0.04	0.40	0.00	0.00	0.00	0.67	0.28	0.00	0.27			
Avail Cap(c_a), veh/h	340	867	0	0	0	829	639	0	565			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	15.2	8.7	0.0	0.0	0.0	10.2	11.7	0.0	11.6			
Incr Delay (d2), s/veh	0.2	1.4	0.0	0.0	0.0	4.3	1.1	0.0	1.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.1	3.5	0.0	0.0	0.0	6.8	1.9	0.0	1.6			
LnGrp Delay(d),s/veh	15.4	10.1	0.0	0.0	0.0	14.5	12.8	0.0	12.8			
LnGrp LOS	B	B				B	B		B			
Approach Vol, veh/h	363			555			328					
Approach Delay, s/veh	10.3			14.5			12.8					
Approach LOS	B			B			B					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4				8					
Phs Duration (G+Y+Rc), s	22.0		28.0				28.0					
Change Period (Y+Rc), s	4.5		4.5				4.5					
Max Green Setting (Gmax), s	17.5		23.5				23.5					
Max Q Clear Time (g_c+I1), s	0.0		0.0				0.0					
Green Ext Time (p_c), s	0.0		0.0				0.0					
Intersection Summary												
HCM 2010 Ctrl Delay				12.8								
HCM 2010 LOS				B								

HCM 2010 TWSC

2: 7th St. & Park Ave.

07/24/2017

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	378	27	123	487	0	0	0	0	32	12	7
Future Vol, veh/h	0	378	27	123	487	0	0	0	0	32	12	7
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	91	61	82	89	92	92	92	92	80	50	58
Heavy Vehicles, %	2	2	0	0	2	2	2	2	2	0	0	0
Mvmt Flow	0	415	44	150	547	0	0	0	0	40	24	12
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	462	0	0				1287	1309	547
Stage 1	-	-	-	-	-	-				847	847	-
Stage 2	-	-	-	-	-	-				440	462	-
Critical Hdwy	-	-	-	4.1	-	-				6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-				5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.4	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-				3.5	4	3.3
Pot Cap-1 Maneuver	0	-	-	1110	-	0				183	161	541
Stage 1	0	-	-	-	-	0				424	381	-
Stage 2	0	-	-	-	-	0				653	568	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	-	-	-	1108	-	-				158	0	541
Mov Cap-2 Maneuver	-	-	-	-	-	-				158	0	-
Stage 1	-	-	-	-	-	-				367	0	-
Stage 2	-	-	-	-	-	-				653	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			1.9			30.2					
HCM LOS							D					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	1108	-	158	541						
HCM Lane V/C Ratio	-	-	0.135	-	0.329	0.044						
HCM Control Delay (s)	-	-	8.8	-	38.6	12						
HCM Lane LOS	-	-	A	-	E	B						
HCM 95th %tile Q(veh)	-	-	0.5	-	1.3	0.1						

HCM 2010 TWSC
3: 8th St. & Park Ave.

07/24/2017

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	4	399	6	6	605	51	4	11	39	22	8	5
Future Vol, veh/h	4	399	6	6	605	51	4	11	39	22	8	5
Conflicting Peds, #/hr	0	0	5	5	0	0	3	0	2	2	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	92	50	50	81	64	33	92	54	61	67	31
Heavy Vehicles, %	50	2	0	33	1	4	0	0	0	5	0	0
Mvmt Flow	12	434	12	12	747	80	12	12	72	36	12	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	827	0	0	451	0	0	1297	1320	447	1319	1286	790
Stage 1	-	-	-	-	-	-	469	469	-	811	811	-
Stage 2	-	-	-	-	-	-	828	851	-	508	475	-
Critical Hdwy	4.6	-	-	4.43	-	-	7.1	6.5	6.2	7.15	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Follow-up Hdwy	2.65	-	-	2.497	-	-	3.5	4	3.3	3.545	4	3.3
Pot Cap-1 Maneuver	630	-	-	964	-	-	140	158	616	132	166	393
Stage 1	-	-	-	-	-	-	579	564	-	369	396	-
Stage 2	-	-	-	-	-	-	368	379	-	542	561	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	628	-	-	962	-	-	123	152	612	107	160	392
Mov Cap-2 Maneuver	-	-	-	-	-	-	123	152	-	107	160	-
Stage 1	-	-	-	-	-	-	565	551	-	362	391	-
Stage 2	-	-	-	-	-	-	337	374	-	458	548	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			20.6			49.7		
HCM LOS							C			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	326	628	-	-	962	-	-	142
HCM Lane V/C Ratio	0.295	0.019	-	-	0.012	-	-	0.452
HCM Control Delay (s)	20.6	10.8	-	-	8.8	-	-	49.7
HCM Lane LOS	C	B	-	-	A	-	-	E
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0	-	-	2

HCM 2010 TWSC
4: 9th St. & Park Ave.

07/24/2017

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	5	411	44	101	678	4	10	0	55	3	1	2
Future Vol, veh/h	5	411	44	101	678	4	10	0	55	3	1	2
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	42	88	69	74	78	50	36	92	76	38	25	50
Heavy Vehicles, %	0	5	0	2	2	0	0	0	0	0	100	0
Mvmt Flow	12	467	64	136	869	8	28	0	72	8	4	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	878	0	0	532	0	0	1674	1675	500	1706	1703	874
Stage 1	-	-	-	-	-	-	524	524	-	1147	1147	-
Stage 2	-	-	-	-	-	-	1150	1151	-	559	556	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.1	6.5	6.2	7.1	7.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	6.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.5	4	3.3	3.5	4.9	3.3
Pot Cap-1 Maneuver	778	-	-	1036	-	-	77	96	575	73	54	352
Stage 1	-	-	-	-	-	-	540	533	-	244	183	-
Stage 2	-	-	-	-	-	-	243	275	-	517	384	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	778	-	-	1036	-	-	63	82	574	57	46	352
Mov Cap-2 Maneuver	-	-	-	-	-	-	63	82	-	57	46	-
Stage 1	-	-	-	-	-	-	531	524	-	240	159	-
Stage 2	-	-	-	-	-	-	203	239	-	445	378	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			1.2			49			74.7		
HCM LOS							E			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	177	778	-	-	1036	-	-	67
HCM Lane V/C Ratio	0.566	0.015	-	-	0.132	-	-	0.237
HCM Control Delay (s)	49	9.7	-	-	9	-	-	74.7
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	3	0	-	-	0.5	-	-	0.8

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

07/24/2017

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↩		↩					↩↪		↩	↩	
Traffic Volume (veh/h)	50	0	145	0	0	0	0	292	189	196	647	0
Future Volume (veh/h)	50	0	145	0	0	0	0	292	189	196	647	0
Number	1	6	16				7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1863	0	1863				0	1852	1900	1776	1881	0
Adj Flow Rate, veh/h	64	0	216				0	332	205	248	819	0
Adj No. of Lanes	1	0	1				0	2	0	1	1	0
Peak Hour Factor	0.78	0.92	0.67				0.90	0.88	0.92	0.79	0.79	0.92
Percent Heavy Veh, %	2	0	2				0	3	7	1	0	0
Cap, veh/h	517	0	462				0	721	436	537	1050	0
Arrive On Green	0.29	0.00	0.29				0.00	0.34	0.34	0.28	1.00	0.00
Sat Flow, veh/h	1774	0	1583				0	2202	1276	1691	1881	0
Grp Volume(v), veh/h	64	0	216				0	276	261	248	819	0
Grp Sat Flow(s), veh/h/ln	1774	0	1583				0	1759	1626	1691	1881	0
Q Serve(g_s), s	1.6	0.0	6.7				0.0	7.3	7.6	5.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	6.7				0.0	7.3	7.6	5.0	0.0	0.0
Prop In Lane	1.00		1.00				0.00	0.78	1.00		0.00	
Lane Grp Cap(c), veh/h	517	0	462				0	601	556	537	1050	0
V/C Ratio(X)	0.12	0.00	0.47				0.00	0.46	0.47	0.46	0.78	0.00
Avail Cap(c_a), veh/h	517	0	462				0	601	556	537	1050	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.6	0.0	17.4				0.0	15.4	15.5	7.7	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	3.4				0.0	2.5	2.8	2.8	5.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	3.4				0.0	3.9	3.8	2.7	1.7	0.0
LnGrp Delay(d),s/veh	16.1	0.0	20.8				0.0	17.9	18.3	10.6	5.7	0.0
LnGrp LOS	B		C				B	B	B	A		
Approach Vol, veh/h	280							537			1067	
Approach Delay, s/veh	19.7							18.1			6.9	
Approach LOS	B							B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			13.0	25.0		22.0		38.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			8.5	20.5		17.5		33.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	12.0											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary

6: Park Dr. & US-52 WB On Ramp/US-52 WB Off Ramp

07/24/2017

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations				↩	↩	↩		↩↪			↩↪	
Traffic Volume (veh/h)	0	0	0	165	0	216	0	287	0	69	627	0
Future Volume (veh/h)	0	0	0	165	0	216	0	287	0	69	627	0
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	1.00		1.00		1.00	1.00	1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1696	0	1827	0	1863	0	1900	1857	0
Adj Flow Rate, veh/h				196	0	251	0	305	0	76	825	0
Adj No. of Lanes				1	0	1	0	2	0	0	2	0
Peak Hour Factor				0.84	0.92	0.86	0.92	0.94	0.92	0.91	0.76	0.92
Percent Heavy Veh, %				12	0	4	0	2	0	2	2	0
Cap, veh/h				633	0	608	0	1622	0	159	1432	0
Arrive On Green				0.39	0.00	0.39	0.00	0.92	0.00	0.46	0.46	0.00
Sat Flow, veh/h				1616	0	1553	0	3725	0	194	3209	0
Grp Volume(v), veh/h				196	0	251	0	305	0	468	433	0
Grp Sat Flow(s), veh/h/ln				1616	0	1553	0	1770	0	1713	1605	0
Q Serve(g_s), s				5.0	0.0	7.0	0.0	0.5	0.0	3.8	12.0	0.0
Cycle Q Clear(g_c), s				5.0	0.0	7.0	0.0	0.5	0.0	11.5	12.0	0.0
Prop In Lane				1.00		1.00	0.00		0.00	0.16		0.00
Lane Grp Cap(c), veh/h				633	0	608	0	1622	0	855	736	0
V/C Ratio(X)				0.31	0.00	0.41	0.00	0.19	0.00	0.55	0.59	0.00
Avail Cap(c_a), veh/h				633	0	608	0	1622	0	855	736	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				12.6	0.0	13.2	0.0	1.4	0.0	11.8	12.0	0.0
Incr Delay (d2), s/veh				1.3	0.0	2.1	0.0	0.3	0.0	2.5	3.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.5	0.0	3.3	0.0	0.3	0.0	6.2	6.0	0.0
LnGrp Delay(d),s/veh				13.9	0.0	15.3	0.0	1.6	0.0	14.3	15.5	0.0
LnGrp LOS				B		B		A		B	B	
Approach Vol, veh/h				447				305			901	
Approach Delay, s/veh				14.7				1.6			14.9	
Approach LOS				B				A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				32.0		28.0		32.0				
Change Period (Y+Rc), s				4.5		4.5		4.5				
Max Green Setting (Gmax), s				27.5		23.5		27.5				
Max Q Clear Time (g_c+I1), s				0.0		0.0		0.0				
Green Ext Time (p_c), s				0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	12.4											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary

1: 6th St. & Park Ave.

07/26/2017

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								 					
Traffic Volume (veh/h)	7	578	0	0	343	116	13	143	198	0	0	0	
Future Volume (veh/h)	7	578	0	0	343	116	13	143	198	0	0	0	
Number	7	4	14	3	8	18	5	2	12				
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Adj Sat Flow, veh/h/ln	1900	1881	0	0	1881	1900	1900	1900	1900				
Adj Flow Rate, veh/h	14	596	0	0	390	132	21	172	257				
Adj No. of Lanes	1	1	0	0	1	0	0	2	0				
Peak Hour Factor	0.50	0.97	0.92	0.92	0.88	0.88	0.63	0.83	0.77				
Percent Heavy Veh, %	0	1	0	0	1	1	0	0	0				
Cap, veh/h	371	884	0	0	632	214	72	589	562				
Arrive On Green	0.47	0.47	0.00	0.00	0.47	0.47	0.35	0.35	0.35				
Sat Flow, veh/h	894	1881	0	0	1345	455	206	1684	1606				
Grp Volume(v), veh/h	14	596	0	0	0	522	193	0	257				
Grp Sat Flow(s),veh/h/ln	894	1881	0	0	0	1800	1890	0	1606				
Q Serve(g_s), s	0.6	12.3	0.0	0.0	0.0	10.8	3.7	0.0	6.2				
Cycle Q Clear(g_c), s	11.4	12.3	0.0	0.0	0.0	10.8	3.7	0.0	6.2				
Prop In Lane	1.00		0.00	0.00		0.25	0.11		1.00				
Lane Grp Cap(c), veh/h	371	884	0	0	0	846	661	0	562				
V/C Ratio(X)	0.04	0.67	0.00	0.00	0.00	0.62	0.29	0.00	0.46				
Avail Cap(c_a), veh/h	371	884	0	0	0	846	661	0	562				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00				
Uniform Delay (d), s/veh	14.1	10.3	0.0	0.0	0.0	9.9	11.8	0.0	12.6				
Incr Delay (d2), s/veh	0.2	4.1	0.0	0.0	0.0	3.4	1.1	0.0	2.7				
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
%ile BackOfQ(50%),veh/ln	0.2	7.3	0.0	0.0	0.0	6.0	2.1	0.0	3.1				
LnGrp Delay(d),s/veh	14.3	14.4	0.0	0.0	0.0	13.2	12.9	0.0	15.2				
LnGrp LOS	B	B				B	B		B				
Approach Vol, veh/h	610			522			450						
Approach Delay, s/veh	14.4			13.2			14.2						
Approach LOS	B			B			B						
Timer	1	2	3	4	5	6	7	8					
Assigned Phs	2		4				8						
Phs Duration (G+Y+Rc), s	22.0		28.0				28.0						
Change Period (Y+Rc), s	4.5		4.5				4.5						
Max Green Setting (Gmax), s	17.5		23.5				23.5						
Max Q Clear Time (g_c+I1), s	0.0		0.0				0.0						
Green Ext Time (p_c), s	0.0		0.0				0.0						
Intersection Summary													
HCM 2010 Ctrl Delay	14.0												
HCM 2010 LOS	B												

HCM 2010 TWSC

2: 7th St. & Park Ave.

07/26/2017

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	767	22	88	450	0	0	0	0	15	13	31
Future Vol, veh/h	0	767	22	88	450	0	0	0	0	15	13	31
Conflicting Peds, #/hr	15	0	1	1	0	15	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	69	87	86	92	92	92	92	68	58	60
Heavy Vehicles, %	2	1	0	1	1	2	2	2	2	7	14	0
Mvmt Flow	0	825	32	101	523	0	0	0	0	22	22	52
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	858	0	0	1569	1584	523			
Stage 1	-	-	-	-	-	-	726	726	-			
Stage 2	-	-	-	-	-	-	843	858	-			
Critical Hdwy	-	-	-	4.11	-	-	6.47	6.64	6.2			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.47	5.64	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.47	5.64	-			
Follow-up Hdwy	-	-	-	2.209	-	-	3.563	4.126	3.3			
Pot Cap-1 Maneuver	0	-	-	787	-	0	119	102	558			
Stage 1	0	-	-	-	-	0	470	412	-			
Stage 2	0	-	-	-	-	0	414	357	-			
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	-	-	-	786	-	-	104	0	558			
Mov Cap-2 Maneuver	-	-	-	-	-	-	104	0	-			
Stage 1	-	-	-	-	-	-	410	0	-			
Stage 2	-	-	-	-	-	-	414	0	-			
Approach	EB			WB			SB					
HCM Control Delay, s	0			1.7			27.1					
HCM LOS							D					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	786	-	104	558						
HCM Lane V/C Ratio	-	-	0.129	-	0.32	0.113						
HCM Control Delay (s)	-	-	10.3	-	55.1	12.3						
HCM Lane LOS	-	-	B	-	F	B						
HCM 95th %tile Q(veh)	-	-	0.4	-	1.2	0.4						

HCM 2010 TWSC
3: 8th St. & Park Ave.

07/26/2017

Intersection												
Int Delay, s/veh	9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	12	738	10	7	522	60	3	14	72	22	10	13
Future Vol, veh/h	12	738	10	7	522	60	3	14	72	22	10	13
Conflicting Peds, #/hr	0	0	4	4	0	0	5	0	3	3	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	96	50	50	90	80	50	63	67	63	50	56
Heavy Vehicles, %	0	1	0	0	1	1	0	0	0	10	0	0
Mvmt Flow	16	769	20	14	580	75	6	22	107	35	20	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	655	0	0	793	0	0	1487	1498	786	1525	1471	623
Stage 1	-	-	-	-	-	-	815	815	-	646	646	-
Stage 2	-	-	-	-	-	-	672	683	-	879	825	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.2	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.2	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.2	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.59	4	3.3
Pot Cap-1 Maneuver	942	-	-	837	-	-	104	124	395	92	128	490
Stage 1	-	-	-	-	-	-	374	394	-	447	470	-
Stage 2	-	-	-	-	-	-	449	452	-	331	390	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	938	-	-	835	-	-	84	119	392	56	123	488
Mov Cap-2 Maneuver	-	-	-	-	-	-	84	119	-	56	123	-
Stage 1	-	-	-	-	-	-	366	386	-	439	462	-
Stage 2	-	-	-	-	-	-	400	444	-	222	382	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2	-	-	0.2	-	-	34.1	-	-	130.9	-	-
HCM LOS	D	-	-	D	-	-	D	-	-	F	-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	255	938	-	-	835	-	-	94
HCM Lane V/C Ratio	0.532	0.017	-	-	0.017	-	-	0.831
HCM Control Delay (s)	34.1	8.9	-	-	9.4	-	-	130.9
HCM Lane LOS	D	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	2.9	0.1	-	-	0.1	-	-	4.5

HCM 2010 TWSC
4: 9th St. & Park Ave.

07/26/2017

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	4	785	40	70	594	8	10	0	76	3	0	2
Future Vol, veh/h	4	785	40	70	594	8	10	0	76	3	0	2
Conflicting Peds, #/hr	3	0	6	6	0	3	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	93	84	73	86	50	56	25	72	38	92	75
Heavy Vehicles, %	0	1	0	3	1	0	0	0	0	0	0	0
Mvmt Flow	8	844	48	96	691	16	18	0	106	8	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	710	0	0	898	0	0	1782	1791	876	1832	1807	702
Stage 1	-	-	-	-	-	-	890	890	-	893	893	-
Stage 2	-	-	-	-	-	-	892	901	-	939	914	-
Critical Hdwy	4.1	-	-	4.13	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	899	-	-	752	-	-	64	82	351	59	80	442
Stage 1	-	-	-	-	-	-	340	364	-	339	363	-
Stage 2	-	-	-	-	-	-	339	360	-	320	355	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	899	-	-	751	-	-	57	70	348	37	69	441
Mov Cap-2 Maneuver	-	-	-	-	-	-	57	70	-	37	69	-
Stage 1	-	-	-	-	-	-	335	359	-	335	316	-
Stage 2	-	-	-	-	-	-	294	313	-	221	350	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1	-	-	1.3	-	-	48.3	-	-	100	-	-
HCM LOS	E	-	-	E	-	-	E	-	-	F	-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	200	899	-	-	751	-	-	48
HCM Lane V/C Ratio	0.617	0.009	-	-	0.128	-	-	0.22
HCM Control Delay (s)	48.3	9	-	-	10.5	-	-	100
HCM Lane LOS	E	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	3.5	0	-	-	0.4	-	-	0.7

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

07/26/2017

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↩		↩					↩↪		↩	↪	
Traffic Volume (veh/h)	51	0	111	0	0	0	0	606	263	165	557	0
Future Volume (veh/h)	51	0	111	0	0	0	0	606	263	165	557	0
Number	1	6	16				7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1863	0	1845				0	1875	1900	1845	1881	0
Adj Flow Rate, veh/h	64	0	134				0	625	302	188	612	0
Adj No. of Lanes	1	0	1				0	2	0	1	1	0
Peak Hour Factor	0.80	0.92	0.83				0.92	0.97	0.87	0.88	0.91	0.92
Percent Heavy Veh, %	2	0	3				0	1	1	3	1	0
Cap, veh/h	429	0	379				0	874	422	485	1144	0
Arrive On Green	0.24	0.00	0.24				0.00	0.38	0.38	0.32	1.00	0.00
Sat Flow, veh/h	1774	0	1568				0	2424	1126	1757	1881	0
Grp Volume(v), veh/h	64	0	134				0	478	449	188	612	0
Grp Sat Flow(s), veh/h/ln	1774	0	1568				0	1781	1675	1757	1881	0
Q Serve(g_s), s	1.7	0.0	4.3				0.0	13.7	13.7	2.9	0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	4.3				0.0	13.7	13.7	2.9	0.0	0.0
Prop In Lane	1.00		1.00				0.00	0.67	1.00		0.00	
Lane Grp Cap(c), veh/h	429	0	379				0	668	628	485	1144	0
V/C Ratio(X)	0.15	0.00	0.35				0.00	0.72	0.72	0.39	0.53	0.00
Avail Cap(c_a), veh/h	429	0	379				0	668	628	485	1144	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.9	0.0	18.9				0.0	16.0	16.0	7.3	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	2.6				0.0	6.4	6.8	2.3	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	2.1				0.0	7.8	7.4	1.7	0.6	0.0
LnGrp Delay(d),s/veh	18.6	0.0	21.4				0.0	22.5	22.9	9.7	1.8	0.0
LnGrp LOS	B		C				C	C	A	A	A	
Approach Vol, veh/h	198						927			800		
Approach Delay, s/veh	20.5						22.6			3.6		
Approach LOS	C						C			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			14.0	27.0		19.0		41.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			9.5	22.5		14.5		36.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	14.5											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary

6: Park Dr. & US-52 WB On Ramp/US-52 WB Off Ramp

07/26/2017

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations				↩		↪		↩↪			↩↪	
Traffic Volume (veh/h)	0	0	0	193	0	229	0	590	0	61	493	0
Future Volume (veh/h)	0	0	0	193	0	229	0	590	0	61	493	0
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00		1.00	
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln				1845	0	1863	0	1863	0	1900	1865	0
Adj Flow Rate, veh/h				219	0	297	0	686	0	92	524	0
Adj No. of Lanes				1	0	1	0	2	0	0	2	0
Peak Hour Factor				0.88	0.92	0.77	0.92	0.86	0.92	0.66	0.94	0.92
Percent Heavy Veh, %				3	0	2	0	2	0	1	1	0
Cap, veh/h				717	0	647	0	1563	0	226	1172	0
Arrive On Green				0.41	0.00	0.41	0.00	0.88	0.00	0.44	0.44	0.00
Sat Flow, veh/h				1757	0	1583	0	3725	0	333	2737	0
Grp Volume(v), veh/h				219	0	297	0	686	0	294	322	0
Grp Sat Flow(s), veh/h/ln				1757	0	1583	0	1770	0	1374	1612	0
Q Serve(g_s), s				5.1	0.0	8.2	0.0	2.2	0.0	3.1	8.3	0.0
Cycle Q Clear(g_c), s				5.1	0.0	8.2	0.0	2.2	0.0	7.4	8.3	0.0
Prop In Lane				1.00		1.00	0.00	0.00	0.31		0.00	
Lane Grp Cap(c), veh/h				717	0	647	0	1563	0	685	712	0
V/C Ratio(X)				0.31	0.00	0.46	0.00	0.44	0.00	0.43	0.45	0.00
Avail Cap(c_a), veh/h				717	0	647	0	1563	0	685	712	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				12.0	0.0	12.9	0.0	2.1	0.0	11.2	11.7	0.0
Incr Delay (d2), s/veh				1.1	0.0	2.3	0.0	0.9	0.0	2.0	2.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.7	0.0	4.0	0.0	1.1	0.0	3.6	4.1	0.0
LnGrp Delay(d),s/veh				13.1	0.0	15.3	0.0	3.0	0.0	13.2	13.7	0.0
LnGrp LOS				B		B		A		B	B	
Approach Vol, veh/h				516			686			616		
Approach Delay, s/veh				14.3			3.0			13.5		
Approach LOS				B			A			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				31.0		29.0		31.0				
Change Period (Y+Rc), s				4.5		4.5		4.5				
Max Green Setting (Gmax), s				26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s				0.0		0.0		0.0				
Green Ext Time (p_c), s				0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				9.8								
HCM 2010 LOS				A								

HCM 2010 Signalized Intersection Summary
1: 6th St. & Park Ave.

08/01/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	380	0	0	370	210	20	170	20	0	0	0
Future Volume (veh/h)	10	380	0	0	370	210	20	170	20	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1845	0	0	1881	1900	1900	1813	1900			
Adj Flow Rate, veh/h	20	418	0	0	411	256	36	239	24			
Adj No. of Lanes	1	1	0	0	1	0	0	2	0			
Peak Hour Factor	0.50	0.91	0.92	0.92	0.90	0.82	0.55	0.71	0.85			
Percent Heavy Veh, %	0	3	0	0	1	1	0	6	0			
Cap, veh/h	215	957	0	0	563	351	151	1049	110			
Arrive On Green	0.52	0.52	0.00	0.00	0.17	0.17	0.37	0.37	0.37			
Sat Flow, veh/h	782	1845	0	0	1086	676	410	2844	298			
Grp Volume(v), veh/h	20	418	0	0	0	667	157	0	142			
Grp Sat Flow(s),veh/h/ln	782	1845	0	0	0	1762	1793	0	1760			
Q Serve(g_s), s	1.8	11.3	0.0	0.0	0.0	28.7	4.9	0.0	4.4			
Cycle Q Clear(g_c), s	30.4	11.3	0.0	0.0	0.0	28.7	4.9	0.0	4.4			
Prop In Lane	1.00		0.00	0.00		0.38	0.23		0.17			
Lane Grp Cap(c), veh/h	215	957	0	0	0	914	661	0	649			
V/C Ratio(X)	0.09	0.44	0.00	0.00	0.00	0.73	0.24	0.00	0.22			
Avail Cap(c_a), veh/h	215	957	0	0	0	914	661	0	649			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	29.0	12.0	0.0	0.0	0.0	27.8	17.5	0.0	17.3			
Incr Delay (d2), s/veh	0.9	1.5	0.0	0.0	0.0	5.1	0.8	0.0	0.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.4	6.1	0.0	0.0	0.0	15.3	2.6	0.0	2.3			
LnGrp Delay(d),s/veh	29.8	13.4	0.0	0.0	0.0	32.9	18.3	0.0	18.1			
LnGrp LOS	C	B				C	B		B			
Approach Vol, veh/h	438			667			299					
Approach Delay, s/veh	14.2			32.9			18.2					
Approach LOS	B			C			B					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4				8					
Phs Duration (G+Y+Rc), s	34.0		46.0				46.0					
Change Period (Y+Rc), s	4.5		4.5				4.5					
Max Green Setting (Gmax), s	29.5		41.5				41.5					
Max Q Clear Time (g_c+I1), s	0.0		0.0				0.0					
Green Ext Time (p_c), s	0.0		0.0				0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	24.0											
HCM 2010 LOS	C											

HCM 2010 TWSC
2: 7th St. & Park Ave.

08/01/2017

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰		↰	↑					↰↱		
Traffic Vol, veh/h	0	450	40	150	580	0	0	0	0	40	20	10
Future Vol, veh/h	0	450	40	150	580	0	0	0	0	40	20	10
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	91	61	82	89	92	92	92	92	80	50	58
Heavy Vehicles, %	2	2	0	0	2	2	2	2	2	0	0	0
Mvmt Flow	0	495	66	183	652	0	0	0	0	50	40	17
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	562	0	0				1547	1580	652
Stage 1	-	-	-	-	-	-				1018	1018	-
Stage 2	-	-	-	-	-	-				529	562	-
Critical Hdwy	-	-	-	4.1	-	-				6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-				5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.4	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-				3.5	4	3.3
Pot Cap-1 Maneuver	0	-	-	1019	-	0				127	110	471
Stage 1	0	-	-	-	-	0				352	317	-
Stage 2	0	-	-	-	-	0				595	513	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	-	-	-	1017	-	-				104	0	471
Mov Cap-2 Maneuver	-	-	-	-	-	-				104	0	-
Stage 1	-	-	-	-	-	-				289	0	-
Stage 2	-	-	-	-	-	-				595	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			2			64.7					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	1017	-	104	471						
HCM Lane V/C Ratio	-	-	0.18	-	0.673	0.079						
HCM Control Delay (s)	-	-	9.3	-	92.1	13.3						
HCM Lane LOS	-	-	A	-	F	B						
HCM 95th %tile Q(veh)	-	-	0.7	-	3.4	0.3						

HCM 2010 Signalized Intersection Summary
3: 8th St. & Park Ave.

08/01/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	470	10	10	720	70	10	20	50	30	10	10
Future Volume (veh/h)	10	470	10	10	720	70	10	20	50	30	10	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1267	1864	1900	1429	1875	1900	1900	1900	1900	1853	1900	1900
Adj Flow Rate, veh/h	30	511	20	20	889	109	30	22	93	49	15	32
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.33	0.92	0.50	0.50	0.81	0.64	0.33	0.92	0.54	0.61	0.67	0.31
Percent Heavy Veh, %	50	2	2	33	1	1	0	0	0	0	0	0
Cap, veh/h	134	1098	43	398	1009	124	115	98	283	256	86	137
Arrive On Green	0.62	0.62	0.62	0.41	0.41	0.41	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	382	1782	70	666	1638	201	222	361	1042	694	315	505
Grp Volume(v), veh/h	30	0	531	20	0	998	145	0	0	96	0	0
Grp Sat Flow(s), veh/h/ln	382	0	1851	666	0	1839	1624	0	0	1514	0	0
Q Serve(g_s), s	6.0	0.0	12.3	1.7	0.0	40.1	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	46.1	0.0	12.3	14.0	0.0	40.1	5.4	0.0	0.0	3.3	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.11	0.21		0.64	0.51		0.33
Lane Grp Cap(c), veh/h	134	0	1141	398	0	1133	495	0	0	479	0	0
V/C Ratio(X)	0.22	0.00	0.47	0.05	0.00	0.88	0.29	0.00	0.00	0.20	0.00	0.00
Avail Cap(c_a), veh/h	135	0	1146	399	0	1138	495	0	0	479	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.47	0.00	0.47	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	34.0	0.0	8.3	17.5	0.0	20.8	23.2	0.0	0.0	22.5	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.3	0.0	0.0	4.1	1.5	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	6.3	0.3	0.0	21.6	2.7	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	34.8	0.0	8.6	17.5	0.0	24.9	24.7	0.0	0.0	23.4	0.0	0.0
LnGrp LOS	C		A	B		C	C			C		
Approach Vol, veh/h	561		1018				145		96			
Approach Delay, s/veh	10.0		24.8				24.7		23.4			
Approach LOS	A		C				C		C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	26.2		53.8		26.2		53.8					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	21.5		49.5		21.5		49.5					
Max Q Clear Time (g_c+I1), s	7.4		48.1		5.3		42.1					
Green Ext Time (p_c), s	1.2		1.2		1.3		5.6					
Intersection Summary												
HCM 2010 Ctrl Delay	20.1											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary
4: 9th St. & Park Ave.

08/01/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	490	60	120	800	10	20	0	70	10	10	10
Future Volume (veh/h)	10	490	60	120	800	10	20	0	70	10	10	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1821	1900	1863	1863	1900	1900	1900	1900	1900	1297	1900
Adj Flow Rate, veh/h	24	557	87	162	1026	20	56	0	92	26	40	20
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.42	0.88	0.69	0.74	0.78	0.50	0.36	0.92	0.76	0.38	0.25	0.50
Percent Heavy Veh, %	0	5	5	2	2	2	0	0	0	100	100	100
Cap, veh/h	191	806	126	346	1173	23	180	26	237	122	151	65
Arrive On Green	0.17	0.17	0.17	0.06	0.64	0.24	0.00	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	548	1538	240	1774	1822	36	484	108	973	261	621	267
Grp Volume(v), veh/h	24	0	644	162	0	1046	148	0	0	86	0	0
Grp Sat Flow(s),veh/h/ln	548	0	1779	1774	0	1857	1566	0	0	1150	0	0
Q Serve(g_s), s	3.3	0.0	27.2	3.1	0.0	36.8	1.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	30.5	0.0	27.2	3.1	0.0	36.8	5.8	0.0	0.0	4.5	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.02	0.38		0.62	0.30		0.23
Lane Grp Cap(c), veh/h	191	0	932	346	0	1196	444	0	0	339	0	0
V/C Ratio(X)	0.13	0.00	0.69	0.47	0.00	0.87	0.33	0.00	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	215	0	1012	400	0	1335	444	0	0	339	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.00	0.87	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	41.3	0.0	27.0	13.3	0.0	11.6	25.0	0.0	0.0	24.6	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	1.6	1.0	0.0	6.3	2.0	0.0	0.0	1.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	13.9	1.7	0.0	20.4	3.0	0.0	0.0	1.7	0.0	0.0
LnGrp Delay(d),s/veh	41.6	0.0	28.6	14.3	0.0	17.9	27.0	0.0	0.0	26.4	0.0	0.0
LnGrp LOS	D		C	B		B	C			C		
Approach Vol, veh/h	668		1208				148		86			
Approach Delay, s/veh	29.1		17.4				27.0		26.4			
Approach LOS	C		B				C		C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3		4		6		8			
Phs Duration (G+Y+Rc), s	24.0		9.6		46.4		24.0		56.0			
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5		4.5			
Max Green Setting (Gmax), s	13.5		7.5		45.5		13.5		57.5			
Max Q Clear Time (g_c+I1), s	7.8		5.1		32.5		6.5		38.8			
Green Ext Time (p_c), s	0.7		0.1		9.4		0.8		12.4			
Intersection Summary												
HCM 2010 Ctrl Delay	22.1											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

08/01/2017

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↩		↩					↩↪		↩	↪	
Traffic Volume (veh/h)	60	0	180	0	0	0	0	350	230	240	770	0
Future Volume (veh/h)	60	0	180	0	0	0	0	350	230	240	770	0
Number	1	6	16					7	4	14	3	8
Initial Q (Qb), veh	0	0	0					0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00					1.00	1.00	1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1863	0	1863					0	1852	1900	1776	1881
Adj Flow Rate, veh/h	77	0	269					0	398	250	304	975
Adj No. of Lanes	1	0	1					0	2	0	1	0
Peak Hour Factor	0.78	0.92	0.67					0.90	0.88	0.92	0.79	0.92
Percent Heavy Veh, %	2	0	2					0	3	3	7	1
Cap, veh/h	521	0	465					0	717	445	557	1117
Arrive On Green	0.29	0.00	0.29					0.00	0.34	0.34	0.19	0.59
Sat Flow, veh/h	1774	0	1583					0	2179	1295	1691	1881
Grp Volume(v), veh/h	77	0	269					0	335	313	304	975
Grp Sat Flow(s), veh/h/ln	1774	0	1583					0	1759	1623	1691	1881
Q Serve(g_s), s	2.6	0.0	11.6					0.0	12.3	12.6	7.7	35.0
Cycle Q Clear(g_c), s	2.6	0.0	11.6					0.0	12.3	12.6	7.7	35.0
Prop In Lane	1.00		1.00					0.00	0.80	1.00		0.00
Lane Grp Cap(c), veh/h	521	0	465					0	605	558	557	1117
V/C Ratio(X)	0.15	0.00	0.58					0.00	0.55	0.56	0.55	0.87
Avail Cap(c_a), veh/h	521	0	465					0	605	558	557	1117
HCM Platoon Ratio	1.00	1.00	1.00					1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00					0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.9	0.0	24.0					0.0	21.3	21.3	11.6	13.7
Incr Delay (d2), s/veh	0.6	0.0	5.2					0.0	3.6	4.0	3.8	9.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	5.7					0.0	6.6	6.2	4.1	20.8
LnGrp Delay(d),s/veh	21.5	0.0	29.2					0.0	24.9	25.4	15.4	23.2
LnGrp LOS	C		C					C	C	B	C	
Approach Vol, veh/h	346							648			1279	
Approach Delay, s/veh	27.5							25.1			21.3	
Approach LOS	C							C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s		20.0	32.0		28.0		52.0					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		15.5	27.5		23.5		47.5					
Max Q Clear Time (g_c+I1), s		0.0	0.0		0.0		0.0					
Green Ext Time (p_c), s		0.0	0.0		0.0		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay		23.4										
HCM 2010 LOS		C										

HCM 2010 Signalized Intersection Summary

6: Park Dr. & US-52 WB On Ramp/US-52 WB Off Ramp

08/01/2017

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations				↩		↩		↩↪			↩↪	
Traffic Volume (veh/h)	0	0	0	200	0	260	0	340	0	90	740	0
Future Volume (veh/h)	0	0	0	200	0	260	0	340	0	90	740	0
Number				1	6	16		7	4	14	3	8
Initial Q (Qb), veh				0	0	0		0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00		1.00	1.00		1.00	
Parking Bus, Adj				1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln				1696	0	1827		1863	0	1900	1856	
Adj Flow Rate, veh/h				238	0	302		362	0	99	974	
Adj No. of Lanes				1	0	1		2	0	0	2	
Peak Hour Factor				0.84	0.92	0.86		0.94	0.92	0.91	0.76	
Percent Heavy Veh, %				12	0	4		2	0	2	2	
Cap, veh/h				636	0	611		1747	0	171	1475	
Arrive On Green				0.39	0.00	0.39		0.16	0.00	0.49	0.49	
Sat Flow, veh/h				1616	0	1553		3725	0	239	3072	
Grp Volume(v), veh/h				238	0	302		362	0	548	525	
Grp Sat Flow(s), veh/h/ln				1616	0	1553		1770	0	1622	1605	
Q Serve(g_s), s				8.4	0.0	11.7		7.1	0.0	13.4	19.7	
Cycle Q Clear(g_c), s				8.4	0.0	11.7		7.1	0.0	20.5	19.7	
Prop In Lane				1.00		1.00		0.00		0.18		0.00
Lane Grp Cap(c), veh/h				636	0	611		1747	0	854	792	
V/C Ratio(X)				0.37	0.00	0.49		0.21	0.00	0.64	0.66	
Avail Cap(c_a), veh/h				636	0	611		1747	0	854	792	
HCM Platoon Ratio				1.00	1.00	1.00		0.33	1.00	1.00	1.00	
Upstream Filter(l)				1.00	0.00	1.00		0.00	0.00	1.00	1.00	
Uniform Delay (d), s/veh				17.2	0.0	18.3		19.9	0.0	15.3	15.2	
Incr Delay (d2), s/veh				1.7	0.0	2.8		0.3	0.0	3.7	4.3	
Initial Q Delay(d3),s/veh				0.0	0.0	0.0		0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln				4.0	0.0	5.4		3.5	0.0	10.0	9.6	
LnGrp Delay(d),s/veh				18.9	0.0	21.1		20.2	0.0	19.0	19.6	
LnGrp LOS				B		C		C		B	B	
Approach Vol, veh/h				540				362			1073	
Approach Delay, s/veh				20.1				20.2			19.3	
Approach LOS				C				C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				44.0		36.0		44.0				
Change Period (Y+Rc), s				4.5		4.5		4.5				
Max Green Setting (Gmax), s				39.5		31.5		39.5				
Max Q Clear Time (g_c+I1), s				0.0		0.0		0.0				
Green Ext Time (p_c), s				0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				19.7								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
1: 6th St. & Park Ave.

08/01/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	690	0	0	410	140	20	170	240	0	0	0
Future Volume (veh/h)	10	690	0	0	410	140	20	170	240	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1881	0	0	1881	1900	1900	1900	1900			
Adj Flow Rate, veh/h	20	711	0	0	466	159	32	205	312			
Adj No. of Lanes	1	1	0	0	1	0	0	2	0			
Peak Hour Factor	0.50	0.97	0.92	0.92	0.88	0.88	0.63	0.83	0.77			
Percent Heavy Veh, %	0	1	0	0	1	1	0	0	0			
Cap, veh/h	500	972	0	0	693	237	98	626	616			
Arrive On Green	0.52	0.52	0.00	0.00	1.00	1.00	0.38	0.38	0.38			
Sat Flow, veh/h	812	1881	0	0	1342	458	255	1632	1607			
Grp Volume(v), veh/h	20	711	0	0	0	625	237	0	312			
Grp Sat Flow(s),veh/h/ln	812	1881	0	0	0	1800	1887	0	1607			
Q Serve(g_s), s	1.1	26.4	0.0	0.0	0.0	0.0	8.0	0.0	13.4			
Cycle Q Clear(g_c), s	1.1	26.4	0.0	0.0	0.0	0.0	8.0	0.0	13.4			
Prop In Lane	1.00		0.00	0.00		0.25	0.14		1.00			
Lane Grp Cap(c), veh/h	500	972	0	0	0	930	723	0	616			
V/C Ratio(X)	0.04	0.73	0.00	0.00	0.00	0.67	0.33	0.00	0.51			
Avail Cap(c_a), veh/h	500	972	0	0	0	930	723	0	616			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	10.8	16.9	0.0	0.0	0.0	0.0	19.6	0.0	21.2			
Incr Delay (d2), s/veh	0.2	4.9	0.0	0.0	0.0	3.9	1.2	0.0	3.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.3	14.9	0.0	0.0	0.0	1.0	4.4	0.0	6.4			
LnGrp Delay(d),s/veh	10.9	21.8	0.0	0.0	0.0	3.9	20.8	0.0	24.2			
LnGrp LOS	B	C				A	C		C			
Approach Vol, veh/h	731			625			549					
Approach Delay, s/veh	21.5			3.9			22.7					
Approach LOS	C			A			C					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4				8					
Phs Duration (G+Y+Rc), s	39.0		51.0				51.0					
Change Period (Y+Rc), s	4.5		4.5				4.5					
Max Green Setting (Gmax), s	34.5		46.5				46.5					
Max Q Clear Time (g_c+I1), s	0.0		0.0				0.0					
Green Ext Time (p_c), s	0.0		0.0				0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	16.0											
HCM 2010 LOS	B											

HCM 2010 TWSC
2: 7th St. & Park Ave.

08/01/2017

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	910	30	110	530	0	0	0	0	20	20	40
Future Vol, veh/h	0	910	30	110	530	0	0	0	0	20	20	40
Conflicting Peds, #/hr	15	0	1	1	0	15	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	69	87	86	92	92	92	92	68	58	60
Heavy Vehicles, %	2	1	0	1	1	2	2	2	2	7	14	0
Mvmt Flow	0	978	43	126	616	0	0	0	0	29	34	67
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	1023	0	0				1871	1892	616
Stage 1	-	-	-	-	-	-				869	869	-
Stage 2	-	-	-	-	-	-				1002	1023	-
Critical Hdwy	-	-	-	4.11	-	-				6.47	6.64	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-				5.47	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.47	5.64	-
Follow-up Hdwy	-	-	-	2.209	-	-				3.563	4.126	3.3
Pot Cap-1 Maneuver	0	-	-	682	-	0				77	65	494
Stage 1	0	-	-	-	-	0				402	353	-
Stage 2	0	-	-	-	-	0				348	298	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	-	-	-	681	-	-				63	0	494
Mov Cap-2 Maneuver	-	-	-	-	-	-				63	0	-
Stage 1	-	-	-	-	-	-				328	0	-
Stage 2	-	-	-	-	-	-				348	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			2			63.8					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	681	-	63	494						
HCM Lane V/C Ratio	-	-	0.186	-	0.741	0.17						
HCM Control Delay (s)	-	-	11.5	-	153.6	13.8						
HCM Lane LOS	-	-	B	-	F	B						
HCM 95th %tile Q(veh)	-	-	0.7	-	3.3	0.6						

HCM 2010 Signalized Intersection Summary
3: 8th St. & Park Ave.

08/01/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	870	20	10	620	80	10	20	90	30	20	20
Future Volume (veh/h)	20	870	20	10	620	80	10	20	90	30	20	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1882	1900	1900	1881	1900	1900	1900	1900	1900	1829	1900
Adj Flow Rate, veh/h	27	906	40	20	689	100	20	32	134	48	40	36
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.75	0.96	0.50	0.50	0.90	0.80	0.50	0.63	0.67	0.63	0.50	0.56
Percent Heavy Veh, %	0	1	1	0	1	1	0	0	0	0	0	0
Cap, veh/h	481	1030	45	165	925	134	75	118	383	222	182	143
Arrive On Green	0.58	0.58	0.58	1.00	1.00	1.00	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	697	1789	79	602	1606	233	93	365	1182	514	562	440
Grp Volume(v), veh/h	27	0	946	20	0	789	186	0	0	124	0	0
Grp Sat Flow(s), veh/h/ln	697	0	1868	602	0	1839	1641	0	0	1516	0	0
Q Serve(g_s), s	1.5	0.0	39.2	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	39.2	41.6	0.0	0.0	7.6	0.0	0.0	4.7	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.13	0.11		0.72	0.39		0.29
Lane Grp Cap(c), veh/h	481	0	1076	165	0	1060	576	0	0	546	0	0
V/C Ratio(X)	0.06	0.00	0.88	0.12	0.00	0.74	0.32	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	502	0	1131	183	0	1114	576	0	0	546	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.71	0.00	0.71	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.4	0.0	16.4	15.7	0.0	0.0	23.1	0.0	0.0	22.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	7.9	0.2	0.0	1.9	1.5	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	22.3	0.4	0.0	0.6	3.8	0.0	0.0	2.4	0.0	0.0
LnGrp Delay(d),s/veh	8.5	0.0	24.3	15.9	0.0	1.9	24.6	0.0	0.0	23.1	0.0	0.0
LnGrp LOS	A		C	B		A	C			C		
Approach Vol, veh/h	973			809			186			124		
Approach Delay, s/veh	23.8			2.2			24.6			23.1		
Approach LOS	C			A			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	33.7		56.3		33.7		56.3					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	26.5		54.5		26.5		54.5					
Max Q Clear Time (g_c+I1), s	9.6		41.2		6.7		43.6					
Green Ext Time (p_c), s	1.8		9.7		1.9		8.3					
Intersection Summary												
HCM 2010 Ctrl Delay	15.5											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary
4: 9th St. & Park Ave.

08/01/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	930	50	90	700	10	20	0	90	10	0	10
Future Volume (veh/h)	10	930	50	90	700	10	20	0	90	10	0	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1882	1900	1845	1882	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	20	1000	60	123	814	20	36	0	125	26	0	13
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.50	0.93	0.84	0.73	0.86	0.50	0.56	0.25	0.72	0.38	0.92	0.75
Percent Heavy Veh, %	0	1	1	3	1	1	0	0	0	0	0	0
Cap, veh/h	317	947	57	173	1174	29	114	27	319	293	13	120
Arrive On Green	1.00	1.00	1.00	0.05	0.64	0.64	0.26	0.00	0.26	0.26	0.00	0.26
Sat Flow, veh/h	669	1757	105	1757	1829	45	250	105	1235	877	51	464
Grp Volume(v), veh/h	20	0	1060	123	0	834	161	0	0	39	0	0
Grp Sat Flow(s),veh/h/ln	669	0	1863	1757	0	1873	1591	0	0	1392	0	0
Q Serve(g_s), s	1.0	0.0	48.5	2.6	0.0	25.9	0.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	17.6	0.0	48.5	2.6	0.0	25.9	7.2	0.0	0.0	1.6	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.02	0.22		0.78	0.67		0.33
Lane Grp Cap(c), veh/h	317	0	1004	173	0	1203	460	0	0	426	0	0
V/C Ratio(X)	0.06	0.00	1.06	0.71	0.00	0.69	0.35	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	317	0	1004	246	0	1280	460	0	0	426	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.37	0.00	0.37	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.0	0.0	0.0	21.4	0.0	10.4	27.4	0.0	0.0	25.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	34.3	5.3	0.0	1.5	2.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	9.6	2.0	0.0	13.7	3.5	0.0	0.0	0.8	0.0	0.0
LnGrp Delay(d),s/veh	3.0	0.0	34.3	26.7	0.0	11.9	29.5	0.0	0.0	25.8	0.0	0.0
LnGrp LOS	A		F	C		B	C			C		
Approach Vol, veh/h	1080			957			161			39		
Approach Delay, s/veh	33.7			13.8			29.5			25.8		
Approach LOS	C			B			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3		4		6		8			
Phs Duration (G+Y+Rc), s	27.7		9.3		53.0		27.7		62.3			
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5		4.5			
Max Green Setting (Gmax), s	19.5		8.5		48.5		19.5		61.5			
Max Q Clear Time (g_c+I1), s	9.2		4.6		50.5		3.6		27.9			
Green Ext Time (p_c), s	0.8		0.1		0.0		1.1		20.6			
Intersection Summary												
HCM 2010 Ctrl Delay	24.7											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

08/01/2017

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↩		↩					↩↪		↩	↩	
Traffic Volume (veh/h)	70	0	140	0	0	0	0	720	310	200	660	0
Future Volume (veh/h)	70	0	140	0	0	0	0	720	310	200	660	0
Number	1	6	16				7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1845				0	1875	1900	1845	1881	0
Adj Flow Rate, veh/h	88	0	169				0	742	356	227	725	0
Adj No. of Lanes	1	0	1				0	2	0	1	1	0
Peak Hour Factor	0.80	0.92	0.83				0.92	0.97	0.87	0.88	0.91	0.92
Percent Heavy Veh, %	2	0	3				0	1	1	3	1	0
Cap, veh/h	424	0	375				0	974	467	495	1244	0
Arrive On Green	0.24	0.00	0.24				0.00	0.42	0.42	0.39	1.00	0.00
Sat Flow, veh/h	1774	0	1568				0	2431	1120	1757	1881	0
Grp Volume(v), veh/h	88	0	169				0	565	533	227	725	0
Grp Sat Flow(s), veh/h/ln	1774	0	1568				0	1781	1676	1757	1881	0
Q Serve(g_s), s	3.6	0.0	8.3				0.0	24.4	24.5	4.4	0.0	0.0
Cycle Q Clear(g_c), s	3.6	0.0	8.3				0.0	24.4	24.5	4.4	0.0	0.0
Prop In Lane	1.00		1.00				0.00	0.67	1.00		0.00	
Lane Grp Cap(c), veh/h	424	0	375				0	742	698	495	1244	0
V/C Ratio(X)	0.21	0.00	0.45				0.00	0.76	0.76	0.46	0.58	0.00
Avail Cap(c_a), veh/h	424	0	375				0	742	698	495	1244	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.4	0.0	29.2				0.0	22.4	22.4	9.7	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	3.9				0.0	7.3	7.7	3.0	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	4.0				0.0	13.4	12.7	2.4	0.7	0.0
LnGrp Delay(d),s/veh	28.5	0.0	33.1				0.0	29.7	30.2	12.7	2.0	0.0
LnGrp LOS	C		C				C	C	B	A		
Approach Vol, veh/h	257						1098			952		
Approach Delay, s/veh	31.5						29.9			4.6		
Approach LOS	C						C			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			22.0	42.0		26.0		64.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			17.5	37.5		21.5		59.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			19.6									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

6: Park Dr. & US-52 WB On Ramp/US-52 WB Off Ramp

08/01/2017

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations				↩		↩		↩↪			↩↪	
Traffic Volume (veh/h)	0	0	0	230	0	270	0	700	0	80	590	0
Future Volume (veh/h)	0	0	0	230	0	270	0	700	0	80	590	0
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1845	0	1863	0	1863	0	1900	1863	0
Adj Flow Rate, veh/h				261	0	351	0	814	0	121	628	0
Adj No. of Lanes				1	0	1	0	2	0	0	2	0
Peak Hour Factor				0.88	0.92	0.77	0.92	0.86	0.92	0.66	0.94	0.92
Percent Heavy Veh, %				3	0	2	0	2	0	1	1	0
Cap, veh/h				771	0	695	0	1632	0	230	1112	0
Arrive On Green				0.44	0.00	0.44	0.00	0.92	0.00	0.46	0.00	0.00
Sat Flow, veh/h				1757	0	1583	0	3725	0	381	2497	0
Grp Volume(v), veh/h				261	0	351	0	814	0	327	422	0
Grp Sat Flow(s), veh/h/ln				1757	0	1583	0	1770	0	1182	1611	0
Q Serve(g_s), s				8.8	0.0	14.4	0.0	3.0	0.0	13.4	17.2	0.0
Cycle Q Clear(g_c), s				8.8	0.0	14.4	0.0	3.0	0.0	16.8	17.2	0.0
Prop In Lane				1.00		1.00	0.00		0.00	0.37		0.00
Lane Grp Cap(c), veh/h				771	0	695	0	1632	0	600	743	0
V/C Ratio(X)				0.34	0.00	0.51	0.00	0.50	0.00	0.55	0.57	0.00
Avail Cap(c_a), veh/h				771	0	695	0	1632	0	600	743	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				16.6	0.0	18.2	0.0	2.0	0.0	17.0	17.7	0.0
Incr Delay (d2), s/veh				1.2	0.0	2.6	0.0	1.1	0.0	3.5	3.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.5	0.0	6.7	0.0	1.4	0.0	6.4	8.3	0.0
LnGrp Delay(d),s/veh				17.8	0.0	20.8	0.0	3.1	0.0	20.6	20.8	0.0
LnGrp LOS				B		C		A		C		C
Approach Vol, veh/h				612				814			749	
Approach Delay, s/veh				19.5				3.1			20.7	
Approach LOS				B				A			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				46.0		44.0		46.0				
Change Period (Y+Rc), s				4.5		4.5		4.5				
Max Green Setting (Gmax), s				41.5		39.5		41.5				
Max Q Clear Time (g_c+I1), s				0.0		0.0		0.0				
Green Ext Time (p_c), s				0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				13.8								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary

1: 6th St. & Park Ave.

07/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	380	0	0	370	210	20	170	20	0	0	0
Future Volume (veh/h)	10	380	0	0	370	210	20	170	20	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1845	0	0	1881	1900	1900	1813	1900			
Adj Flow Rate, veh/h	20	418	0	0	411	256	36	239	24			
Adj No. of Lanes	1	1	0	0	1	0	0	2	0			
Peak Hour Factor	0.50	0.91	0.92	0.92	0.90	0.82	0.55	0.71	0.85			
Percent Heavy Veh, %	0	3	0	0	1	1	0	6	0			
Cap, veh/h	304	968	0	0	570	355	133	924	97			
Arrive On Green	0.52	0.52	0.00	0.00	0.52	0.52	0.32	0.32	0.32			
Sat Flow, veh/h	782	1845	0	0	1086	676	410	2844	298			
Grp Volume(v), veh/h	20	418	0	0	0	667	157	0	142			
Grp Sat Flow(s),veh/h/ln	782	1845	0	0	0	1762	1793	0	1759			
Q Serve(g_s), s	1.2	8.4	0.0	0.0	0.0	17.4	3.9	0.0	3.5			
Cycle Q Clear(g_c), s	18.6	8.4	0.0	0.0	0.0	17.4	3.9	0.0	3.5			
Prop In Lane	1.00		0.00	0.00		0.38	0.23		0.17			
Lane Grp Cap(c), veh/h	304	968	0	0	0	925	583	0	572			
V/C Ratio(X)	0.07	0.43	0.00	0.00	0.00	0.72	0.27	0.00	0.25			
Avail Cap(c_a), veh/h	304	968	0	0	0	925	583	0	572			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	18.0	8.8	0.0	0.0	0.0	10.9	15.0	0.0	14.9			
Incr Delay (d2), s/veh	0.4	1.4	0.0	0.0	0.0	4.8	1.1	0.0	1.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.3	4.6	0.0	0.0	0.0	9.6	2.1	0.0	1.9			
LnGrp Delay(d),s/veh	18.4	10.2	0.0	0.0	0.0	15.7	16.1	0.0	15.9			
LnGrp LOS	B	B				B	B		B			
Approach Vol, veh/h	438			667			299					
Approach Delay, s/veh	10.5			15.7			16.0					
Approach LOS	B			B			B					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4				8					
Phs Duration (G+Y+Rc), s	24.0		36.0				36.0					
Change Period (Y+Rc), s	4.5		4.5				4.5					
Max Green Setting (Gmax), s	19.5		31.5				31.5					
Max Q Clear Time (g_c+I1), s	0.0		0.0				0.0					
Green Ext Time (p_c), s	0.0		0.0				0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	14.2											
HCM 2010 LOS	B											

HCM 2010 TWSC

2: 7th St. & Park Ave.

07/31/2017

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	450	40	150	580	0	0	0	0	40	20	10
Future Vol, veh/h	0	450	40	150	580	0	0	0	0	40	20	10
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	91	61	82	89	92	92	92	92	80	50	58
Heavy Vehicles, %	2	2	0	0	2	2	2	2	2	0	0	0
Mvmt Flow	0	495	66	183	652	0	0	0	0	50	40	17
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	562	0	0				1547	1580	652
Stage 1	-	-	-	-	-	-				1018	1018	-
Stage 2	-	-	-	-	-	-				529	562	-
Critical Hdwy	-	-	-	4.1	-	-				7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-				6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-				6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-				3.5	4	3.3
Pot Cap-1 Maneuver	0	-	-	1019	-	0				94	110	471
Stage 1	0	-	-	-	-	0				289	317	-
Stage 2	0	-	-	-	-	0				537	513	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	-	-	-	1017	-	-				81	90	471
Mov Cap-2 Maneuver	-	-	-	-	-	-				81	90	-
Stage 1	-	-	-	-	-	-				289	260	-
Stage 2	-	-	-	-	-	-				536	513	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			2			108.8					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	1017	-	83	144						
HCM Lane V/C Ratio	-	-	0.18	-	0.843	0.259						
HCM Control Delay (s)	-	-	9.3	-	146.2	38.5						
HCM Lane LOS	-	-	A	-	F	E						
HCM 95th %tile Q(veh)	-	-	0.7	-	4.4	1						

HCM 2010 TWSC
3: 8th St. & Park Ave.

07/31/2017

Intersection												
Int Delay, s/veh	20.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	10	470	10	10	720	70	10	20	50	30	10	10
Future Vol, veh/h	10	470	10	10	720	70	10	20	50	30	10	10
Conflicting Peds, #/hr	0	0	5	5	0	0	3	0	2	2	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	92	50	50	81	64	33	92	54	61	67	31
Heavy Vehicles, %	50	2	0	33	1	4	0	0	0	5	0	0
Mvmt Flow	30	511	20	20	889	109	30	22	93	49	15	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	998	0	0	536	0	0	1596	1624	528	1625	1580	947
Stage 1	-	-	-	-	-	-	586	586	-	984	984	-
Stage 2	-	-	-	-	-	-	1010	1038	-	641	596	-
Critical Hdwy	4.6	-	-	4.43	-	-	7.1	6.5	6.2	7.15	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Follow-up Hdwy	2.65	-	-	2.497	-	-	3.5	4	3.3	3.545	4	3.3
Pot Cap-1 Maneuver	536	-	-	893	-	-	87	104	554	81	110	319
Stage 1	-	-	-	-	-	-	500	500	-	295	329	-
Stage 2	-	-	-	-	-	-	292	311	-	458	495	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	534	-	-	891	-	-	65	95	550	52	101	318
Mov Cap-2 Maneuver	-	-	-	-	-	-	65	95	-	52	101	-
Stage 1	-	-	-	-	-	-	470	470	-	278	322	-
Stage 2	-	-	-	-	-	-	244	304	-	342	465	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0.2			91.5			252.2		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	168	534	-	-	891	-	-	81
HCM Lane V/C Ratio	0.861	0.057	-	-	0.022	-	-	1.19
HCM Control Delay (s)	91.5	12.1	-	-	9.1	-	-	252.2
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	6	0.2	-	-	0.1	-	-	7

HCM 2010 TWSC
4: 9th St. & Park Ave.

07/31/2017

Intersection												
Int Delay, s/veh	43.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	10	490	60	120	800	10	20	0	70	10	10	10
Future Vol, veh/h	10	490	60	120	800	10	20	0	70	10	10	10
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	42	88	69	74	78	50	36	92	76	38	25	50
Heavy Vehicles, %	0	5	0	2	2	0	0	0	0	0	100	0
Mvmt Flow	24	557	87	162	1026	20	56	0	92	26	40	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1047	0	0	645	0	0	2039	2020	601	2055	2053	1037
Stage 1	-	-	-	-	-	-	649	649	-	1361	1361	-
Stage 2	-	-	-	-	-	-	1390	1371	-	694	692	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.1	6.5	6.2	7.1	7.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	6.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.5	4	3.3	3.5	4.9	3.3
Pot Cap-1 Maneuver	672	-	-	940	-	-	~ 42	59	504	41	~ 30	283
Stage 1	-	-	-	-	-	-	462	469	-	185	138	-
Stage 2	-	-	-	-	-	-	178	216	-	436	325	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	672	-	-	940	-	-	-	47	504	28	~ 24	283
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	47	-	28	~ 24	-
Stage 1	-	-	-	-	-	-	445	452	-	178	114	-
Stage 2	-	-	-	-	-	-	89	179	-	344	313	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			1.3						\$ 1030.8		
HCM LOS							-			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	672	-	-	940	-	-	32
HCM Lane V/C Ratio	-	0.035	-	-	0.173	-	-	2.697
HCM Control Delay (s)	-	10.6	-	-	9.6	-	-	\$ 1030.8
HCM Lane LOS	-	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	-	0.1	-	-	0.6	-	-	10

Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon						

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

07/31/2017

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations								 				
Traffic Volume (veh/h)	60	0	180	0	0	0	0	350	230	240	770	0
Future Volume (veh/h)	60	0	180	0	0	0	0	350	230	240	770	0
Number	1	6	16				7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1863				0	1852	1900	1776	1881	0
Adj Flow Rate, veh/h	77	0	269				0	398	250	304	975	0
Adj No. of Lanes	1	0	1				0	2	0	1	1	0
Peak Hour Factor	0.78	0.92	0.67				0.90	0.88	0.92	0.79	0.79	0.92
Percent Heavy Veh, %	2	0	2				0	3	3	7	1	0
Cap, veh/h	494	0	441				0	641	398	582	1115	0
Arrive On Green	0.28	0.00	0.28				0.00	0.31	0.31	0.44	1.00	0.00
Sat Flow, veh/h	1774	0	1583				0	2179	1295	1691	1881	0
Grp Volume(v), veh/h	77	0	269				0	335	313	304	975	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583				0	1759	1623	1691	1881	0
Q Serve(g_s), s	2.3	0.0	10.3				0.0	11.4	11.6	6.2	0.0	0.0
Cycle Q Clear(g_c), s	2.3	0.0	10.3				0.0	11.4	11.6	6.2	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.80	1.00		0.00
Lane Grp Cap(c), veh/h	494	0	441				0	540	498	582	1115	0
V/C Ratio(X)	0.16	0.00	0.61				0.00	0.62	0.63	0.52	0.87	0.00
Avail Cap(c_a), veh/h	494	0	441				0	540	498	582	1115	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.0	0.0	21.9				0.0	20.8	20.8	7.2	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	6.2				0.0	5.3	5.9	3.3	9.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	5.2				0.0	6.3	5.9	3.3	3.0	0.0
LnGrp Delay(d),s/veh	19.7	0.0	28.1				0.0	26.0	26.7	10.6	9.6	0.0
LnGrp LOS	B		C				C	C	C	B	A	
Approach Vol, veh/h	346						648			1279		
Approach Delay, s/veh	26.2						26.4			9.8		
Approach LOS	C						C			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			20.0	26.0		24.0		46.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			15.5	21.5		19.5		41.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	17.0											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary

6: Park Dr. & US-52 WB On Ramp/US-52 WB Off Ramp

07/31/2017

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	200	0	260	0	340	0	90	740	0
Future Volume (veh/h)	0	0	0	200	0	260	0	340	0	90	740	0
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1696	0	1827	0	1863	0	1900	1856	0
Adj Flow Rate, veh/h				238	0	302	0	362	0	99	974	0
Adj No. of Lanes				1	0	1	0	2	0	0	2	0
Peak Hour Factor				0.84	0.92	0.86	0.92	0.94	0.92	0.91	0.76	0.92
Percent Heavy Veh, %				12	0	4	0	2	0	2	2	0
Cap, veh/h				612	0	588	0	1744	0	177	1492	0
Arrive On Green				0.38	0.00	0.38	0.00	0.99	0.00	0.49	0.49	0.00
Sat Flow, veh/h				1616	0	1553	0	3725	0	237	3111	0
Grp Volume(v), veh/h				238	0	302	0	362	0	549	524	0
Grp Sat Flow(s),veh/h/ln				1616	0	1553	0	1770	0	1659	1605	0
Q Serve(g_s), s				7.5	0.0	10.5	0.0	0.1	0.0	10.4	17.2	0.0
Cycle Q Clear(g_c), s				7.5	0.0	10.5	0.0	0.1	0.0	16.9	17.2	0.0
Prop In Lane				1.00		1.00	0.00		0.00	0.18		0.00
Lane Grp Cap(c), veh/h				612	0	588	0	1744	0	878	791	0
V/C Ratio(X)				0.39	0.00	0.51	0.00	0.21	0.00	0.63	0.66	0.00
Avail Cap(c_a), veh/h				612	0	588	0	1744	0	878	791	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				15.9	0.0	16.8	0.0	0.3	0.0	13.1	13.4	0.0
Incr Delay (d2), s/veh				1.9	0.0	3.2	0.0	0.3	0.0	3.4	4.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.6	0.0	5.0	0.0	0.1	0.0	8.6	8.5	0.0
LnGrp Delay(d),s/veh				17.7	0.0	20.0	0.0	0.5	0.0	16.4	17.7	0.0
LnGrp LOS				B		B		A		B	B	
Approach Vol, veh/h				540			362			1073		
Approach Delay, s/veh				19.0			0.5			17.0		
Approach LOS				B			A			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4	6		8					
Phs Duration (G+Y+Rc), s				39.0	31.0		39.0					
Change Period (Y+Rc), s				4.5	4.5		4.5					
Max Green Setting (Gmax), s				34.5	26.5		34.5					
Max Q Clear Time (g_c+I1), s				0.0	0.0		0.0					
Green Ext Time (p_c), s				0.0	0.0		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay				14.5								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary

1: 6th St. & Park Ave.

07/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	690	0	0	410	140	20	170	240	0	0	0
Future Volume (veh/h)	10	690	0	0	410	140	20	170	240	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1881	0	0	1881	1900	1900	1900	1900			
Adj Flow Rate, veh/h	20	711	0	0	466	159	32	205	312			
Adj No. of Lanes	1	1	0	0	1	0	0	2	0			
Peak Hour Factor	0.50	0.97	0.92	0.92	0.88	0.88	0.63	0.83	0.77			
Percent Heavy Veh, %	0	1	0	0	1	1	0	0	0			
Cap, veh/h	321	956	0	0	682	233	87	558	549			
Arrive On Green	0.51	0.51	0.00	0.00	0.51	0.51	0.34	0.34	0.34			
Sat Flow, veh/h	813	1881	0	0	1342	458	255	1632	1606			
Grp Volume(v), veh/h	20	711	0	0	0	625	237	0	312			
Grp Sat Flow(s),veh/h/ln	813	1881	0	0	0	1800	1887	0	1606			
Q Serve(g_s), s	1.1	17.9	0.0	0.0	0.0	15.7	5.7	0.0	9.5			
Cycle Q Clear(g_c), s	16.8	17.9	0.0	0.0	0.0	15.7	5.7	0.0	9.5			
Prop In Lane	1.00		0.00	0.00		0.25	0.14		1.00			
Lane Grp Cap(c), veh/h	321	956	0	0	0	915	645	0	549			
V/C Ratio(X)	0.06	0.74	0.00	0.00	0.00	0.68	0.37	0.00	0.57			
Avail Cap(c_a), veh/h	321	956	0	0	0	915	645	0	549			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	17.4	11.7	0.0	0.0	0.0	11.1	14.9	0.0	16.1			
Incr Delay (d2), s/veh	0.4	5.2	0.0	0.0	0.0	4.1	1.6	0.0	4.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.3	10.5	0.0	0.0	0.0	8.7	3.3	0.0	4.8			
LnGrp Delay(d),s/veh	17.8	16.9	0.0	0.0	0.0	15.2	16.5	0.0	20.4			
LnGrp LOS	B	B				B	B		C			
Approach Vol, veh/h	731			625			549					
Approach Delay, s/veh	16.9			15.2			18.7					
Approach LOS	B			B			B					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4				8					
Phs Duration (G+Y+Rc), s	25.0		35.0				35.0					
Change Period (Y+Rc), s	4.5		4.5				4.5					
Max Green Setting (Gmax), s	20.5		30.5				30.5					
Max Q Clear Time (g_c+I1), s	0.0		0.0				0.0					
Green Ext Time (p_c), s	0.0		0.0				0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	16.9											
HCM 2010 LOS	B											

HCM 2010 TWSC

2: 7th St. & Park Ave.

07/31/2017

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	910	30	110	530	0	0	0	0	20	20	40
Future Vol, veh/h	0	910	30	110	530	0	0	0	0	20	20	40
Conflicting Peds, #/hr	15	0	1	1	0	15	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	69	87	86	92	92	92	92	68	58	60
Heavy Vehicles, %	2	1	0	1	1	2	2	2	2	7	14	0
Mvmt Flow	0	978	43	126	616	0	0	0	0	29	34	67
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	1023	0	0				1871	1892	616
Stage 1	-	-	-	-	-	-				869	869	-
Stage 2	-	-	-	-	-	-				1002	1023	-
Critical Hdwy	-	-	-	4.11	-	-				6.47	6.64	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-				5.47	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.47	5.64	-
Follow-up Hdwy	-	-	-	2.209	-	-				3.563	4.126	3.3
Pot Cap-1 Maneuver	0	-	-	682	-	0				77	65	494
Stage 1	0	-	-	-	-	0				402	353	-
Stage 2	0	-	-	-	-	0				348	298	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	-	-	-	681	-	-				63	0	494
Mov Cap-2 Maneuver	-	-	-	-	-	-				63	0	-
Stage 1	-	-	-	-	-	-				328	0	-
Stage 2	-	-	-	-	-	-				348	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			2			63.8					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	681	-	63	494						
HCM Lane V/C Ratio	-	-	0.186	-	0.741	0.17						
HCM Control Delay (s)	-	-	11.5	-	153.6	13.8						
HCM Lane LOS	-	-	B	-	F	B						
HCM 95th %tile Q(veh)	-	-	0.7	-	3.3	0.6						

HCM 2010 TWSC
3: 8th St. & Park Ave.

07/31/2017

Intersection												
Int Delay, s/veh	93.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	20	870	20	10	620	80	10	20	90	30	20	20
Future Vol, veh/h	20	870	20	10	620	80	10	20	90	30	20	20
Conflicting Peds, #/hr	0	0	4	4	0	0	5	0	3	3	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	96	50	50	90	80	50	63	67	63	50	56
Heavy Vehicles, %	0	1	0	0	1	1	0	0	0	10	0	0
Mvmt Flow	27	906	40	20	689	100	20	32	134	48	40	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	789	0	0	950	0	0	1806	1813	933	1845	1783	744
Stage 1	-	-	-	-	-	-	984	984	-	779	779	-
Stage 2	-	-	-	-	-	-	822	829	-	1066	1004	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.2	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.2	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.2	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.59	4	3.3
Pot Cap-1 Maneuver	840	-	-	731	-	-	62	79	325	55	83	418
Stage 1	-	-	-	-	-	-	302	329	-	377	409	-
Stage 2	-	-	-	-	-	-	371	388	-	260	322	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	836	-	-	729	-	-	32	74	323	~20	78	416
Mov Cap-2 Maneuver	-	-	-	-	-	-	32	74	-	~20	78	-
Stage 1	-	-	-	-	-	-	291	317	-	365	398	-
Stage 2	-	-	-	-	-	-	295	377	-	132	310	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	\$ 310.2	\$ 1113
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	127	836	-	-	729	-	-	41
HCM Lane V/C Ratio	1.465	0.032	-	-	0.027	-	-	3.008
HCM Control Delay (s)	\$ 310.2	9.4	-	-	10.1	-	-	\$ 1113
HCM Lane LOS	F	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	12.8	0.1	-	-	0.1	-	-	13.7

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 2010 TWSC
4: 9th St. & Park Ave.

07/31/2017

Intersection												
Int Delay, s/veh	46.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	10	930	50	90	700	10	20	0	90	10	0	10
Future Vol, veh/h	10	930	50	90	700	10	20	0	90	10	0	10
Conflicting Peds, #/hr	3	0	6	6	0	3	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	93	84	73	86	50	56	25	72	38	92	75
Heavy Vehicles, %	0	1	0	3	1	0	0	0	0	0	0	0
Mvmt Flow	20	1000	60	123	814	20	36	0	125	26	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	837	0	0	1066	0	0	2153	2160	1038	2208	2180	827
Stage 1	-	-	-	-	-	-	1076	1076	-	1074	1074	-
Stage 2	-	-	-	-	-	-	1077	1084	-	1134	1106	-
Critical Hdwy	4.1	-	-	4.13	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	806	-	-	650	-	-	~35	48	283	32	47	375
Stage 1	-	-	-	-	-	-	268	298	-	269	299	-
Stage 2	-	-	-	-	-	-	268	296	-	249	289	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	806	-	-	649	-	-	~28	38	281	~15	37	374
Mov Cap-2 Maneuver	-	-	-	-	-	-	~28	38	-	~15	37	-
Stage 1	-	-	-	-	-	-	260	289	-	262	242	-
Stage 2	-	-	-	-	-	-	209	239	-	135	280	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.5	\$ 446.2	\$ 755.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	93	806	-	-	649	-	-	22
HCM Lane V/C Ratio	1.728	0.025	-	-	0.19	-	-	1.802
HCM Control Delay (s)	\$ 446.2	9.6	-	-	11.8	-	-	\$ 755.7
HCM Lane LOS	F	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	13.1	0.1	-	-	0.7	-	-	5.1

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

07/31/2017

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↩		↩					↩↪		↩	↩	
Traffic Volume (veh/h)	70	0	140	0	0	0	0	720	310	200	660	0
Future Volume (veh/h)	70	0	140	0	0	0	0	720	310	200	660	0
Number	1	6	16				7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1863	0	1845				0	1875	1900	1845	1881	0
Adj Flow Rate, veh/h	88	0	169				0	742	356	227	725	0
Adj No. of Lanes	1	0	1				0	2	0	1	1	0
Peak Hour Factor	0.80	0.92	0.83				0.92	0.97	0.87	0.88	0.91	0.92
Percent Heavy Veh, %	2	0	3				0	1	1	3	1	0
Cap, veh/h	429	0	379				0	954	457	407	1144	0
Arrive On Green	0.24	0.00	0.24				0.00	0.41	0.41	0.25	1.00	0.00
Sat Flow, veh/h	1774	0	1568				0	2431	1120	1757	1881	0
Grp Volume(v), veh/h	88	0	169				0	565	533	227	725	0
Grp Sat Flow(s), veh/h/ln	1774	0	1568				0	1781	1676	1757	1881	0
Q Serve(g_s), s	2.4	0.0	5.5				0.0	16.5	16.5	3.9	0.0	0.0
Cycle Q Clear(g_c), s	2.4	0.0	5.5				0.0	16.5	16.5	3.9	0.0	0.0
Prop In Lane	1.00		1.00				0.00	0.67	1.00		0.00	
Lane Grp Cap(c), veh/h	429	0	379				0	727	684	407	1144	0
V/C Ratio(X)	0.21	0.00	0.45				0.00	0.78	0.78	0.56	0.63	0.00
Avail Cap(c_a), veh/h	429	0	379				0	727	684	407	1144	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.2	0.0	19.3				0.0	15.4	15.4	9.4	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	3.8				0.0	8.0	8.5	5.4	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	2.7				0.0	9.6	9.2	2.4	0.9	0.0
LnGrp Delay(d),s/veh	19.2	0.0	23.1				0.0	23.4	23.9	14.8	2.7	0.0
LnGrp LOS	B		C				C	C	B	A		
Approach Vol, veh/h	257							1098			952	
Approach Delay, s/veh	21.8							23.6			5.6	
Approach LOS	C							C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			12.0	29.0		19.0		41.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			7.5	24.5		14.5		36.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			16.0									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

6: Park Dr. & US-52 WB On Ramp/US-52 WB Off Ramp

07/31/2017

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations				↩	↩	↩		↩↪			↩↪	
Traffic Volume (veh/h)	0	0	0	230	0	270	0	700	0	80	590	0
Future Volume (veh/h)	0	0	0	230	0	270	0	700	0	80	590	0
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln				1845	0	1863	0	1863	0	1900	1863	0
Adj Flow Rate, veh/h				261	0	351	0	814	0	121	628	0
Adj No. of Lanes				1	0	1	0	2	0	0	2	0
Peak Hour Factor				0.88	0.92	0.77	0.92	0.86	0.92	0.66	0.94	0.92
Percent Heavy Veh, %				3	0	2	0	2	0	1	1	0
Cap, veh/h				717	0	647	0	1563	0	237	1100	0
Arrive On Green				0.41	0.00	0.41	0.00	0.88	0.00	0.44	0.44	0.00
Sat Flow, veh/h				1757	0	1583	0	3725	0	352	2576	0
Grp Volume(v), veh/h				261	0	351	0	814	0	337	412	0
Grp Sat Flow(s), veh/h/ln				1757	0	1583	0	1770	0	1233	1611	0
Q Serve(g_s), s				6.2	0.0	10.1	0.0	3.0	0.0	7.3	11.5	0.0
Cycle Q Clear(g_c), s				6.2	0.0	10.1	0.0	3.0	0.0	10.9	11.5	0.0
Prop In Lane				1.00		1.00	0.00		0.00	0.36		0.00
Lane Grp Cap(c), veh/h				717	0	647	0	1563	0	626	711	0
V/C Ratio(X)				0.36	0.00	0.54	0.00	0.52	0.00	0.54	0.58	0.00
Avail Cap(c_a), veh/h				717	0	647	0	1563	0	626	711	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				12.3	0.0	13.5	0.0	2.1	0.0	11.9	12.6	0.0
Incr Delay (d2), s/veh				1.4	0.0	3.3	0.0	1.2	0.0	3.3	3.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.3	0.0	5.0	0.0	1.4	0.0	4.6	5.7	0.0
LnGrp Delay(d),s/veh				13.8	0.0	16.7	0.0	3.4	0.0	15.2	16.0	0.0
LnGrp LOS				B		B		A		B	B	
Approach Vol, veh/h				612				814			749	
Approach Delay, s/veh				15.5				3.4			15.6	
Approach LOS				B				A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				31.0		29.0		31.0				
Change Period (Y+Rc), s				4.5		4.5		4.5				
Max Green Setting (Gmax), s				26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s				0.0		0.0		0.0				
Green Ext Time (p_c), s				0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				11.0								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

04/20/2018

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	70	0	190	0	0	0	0	380	250	260	840	0
Future Volume (veh/h)	70	0	190	0	0	0	0	380	250	260	840	0
Number	1	6	16					7	4	14	3	8
Initial Q (Qb), veh	0	0	0					0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00					1.00		1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00					1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1863					0	1852	1900	1776	1881
Adj Flow Rate, veh/h	90	0	284					0	432	272	329	1063
Adj No. of Lanes	1	0	1					0	2	0	1	1
Peak Hour Factor	0.78	0.92	0.67					0.90	0.88	0.92	0.79	0.79
Percent Heavy Veh, %	2	0	2					0	3	3	7	1
Cap, veh/h	499	0	445					0	689	431	569	1140
Arrive On Green	0.28	0.00	0.28					0.00	0.33	0.33	0.44	1.00
Sat Flow, veh/h	1774	0	1583					0	2174	1300	1691	1881
Grp Volume(v), veh/h	90	0	284					0	365	339	329	1063
Grp Sat Flow(s),veh/h/ln	1774	0	1583					0	1759	1622	1691	1881
Q Serve(g_s), s	3.1	0.0	12.6					0.0	14.0	14.2	7.8	0.0
Cycle Q Clear(g_c), s	3.1	0.0	12.6					0.0	14.0	14.2	7.8	0.0
Prop In Lane	1.00		1.00					0.00		0.80	1.00	0.00
Lane Grp Cap(c), veh/h	499	0	445					0	583	537	569	1140
V/C Ratio(X)	0.18	0.00	0.64					0.00	0.63	0.63	0.58	0.93
Avail Cap(c_a), veh/h	499	0	445					0	583	537	569	1140
HCM Platoon Ratio	1.00	1.00	1.00					1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00					0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.8	0.0	25.2					0.0	22.6	22.6	8.2	0.0
Incr Delay (d2), s/veh	0.8	0.0	6.8					0.0	5.0	5.6	4.2	14.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	6.3					0.0	7.6	7.1	4.1	4.6
LnGrp Delay(d),s/veh	22.6	0.0	32.0					0.0	27.6	28.2	12.4	14.6
LnGrp LOS	C		C					C	C	B	B	
Approach Vol, veh/h		374						704			1392	
Approach Delay, s/veh		29.7						27.9			14.1	
Approach LOS		C						C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			22.0	31.0		27.0		53.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			17.5	26.5		22.5		48.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			20.4									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

04/20/2018

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	70	0	190	0	0	0	0	380	250	260	840	0
Future Volume (veh/h)	70	0	190	0	0	0	0	380	250	260	840	0
Number	1	6	16					7	4	14	3	8
Initial Q (Qb), veh	0	0	0					0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00					1.00	1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00					1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1863					0	1845	1863	1776	1881
Adj Flow Rate, veh/h	90	0	284					0	432	0	329	1063
Adj No. of Lanes	1	0	1					0	2	1	1	0
Peak Hour Factor	0.78	0.92	0.67					0.90	0.88	0.92	0.79	0.79
Percent Heavy Veh, %	2	0	2					0	3	2	7	1
Cap, veh/h	499	0	445					0	1161	524	675	1140
Arrive On Green	0.28	0.00	0.28					0.00	0.33	0.00	0.44	1.00
Sat Flow, veh/h	1774	0	1583					0	3597	1583	1691	1881
Grp Volume(v), veh/h	90	0	284					0	432	0	329	1063
Grp Sat Flow(s),veh/h/ln	1774	0	1583					0	1752	1583	1691	1881
Q Serve(g_s), s	3.1	0.0	12.6					0.0	7.5	0.0	7.8	0.0
Cycle Q Clear(g_c), s	3.1	0.0	12.6					0.0	7.5	0.0	7.8	0.0
Prop In Lane	1.00		1.00					0.00		1.00	1.00	0.00
Lane Grp Cap(c), veh/h	499	0	445					0	1161	524	675	1140
V/C Ratio(X)	0.18	0.00	0.64					0.00	0.37	0.00	0.49	0.93
Avail Cap(c_a), veh/h	499	0	445					0	1161	524	675	1140
HCM Platoon Ratio	1.00	1.00	1.00					1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00					0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	0.0	25.2					0.0	20.4	0.0	6.9	0.0
Incr Delay (d2), s/veh	0.8	0.0	6.8					0.0	0.9	0.0	2.5	14.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	6.3					0.0	3.7	0.0	3.9	4.6
LnGrp Delay(d),s/veh	22.6	0.0	32.0					0.0	21.3	0.0	9.5	14.6
LnGrp LOS	C		C					C		A	B	
Approach Vol, veh/h		374						432			1392	
Approach Delay, s/veh		29.7						21.3			13.4	
Approach LOS		C						C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			22.0	31.0		27.0		53.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			17.5	26.5		22.5		48.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			17.7									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

04/20/2018

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	70	0	150	0	0	0	0	790	350	220	730	0
Future Volume (veh/h)	70	0	150	0	0	0	0	790	350	220	730	0
Number	1	6	16					7	4	14	3	8
Initial Q (Qb), veh	0	0	0					0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00					1.00		1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00					1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1845					0	1875	1900	1845	1881
Adj Flow Rate, veh/h	88	0	181					0	814	402	250	802
Adj No. of Lanes	1	0	1					0	2	0	1	1
Peak Hour Factor	0.80	0.92	0.83					0.92	0.97	0.87	0.88	0.91
Percent Heavy Veh, %	2	0	3					0	1	1	3	1
Cap, veh/h	506	0	447					0	1077	529	352	1176
Arrive On Green	0.28	0.00	0.28					0.00	0.47	0.47	0.23	1.00
Sat Flow, veh/h	1774	0	1568					0	2410	1138	1757	1881
Grp Volume(v), veh/h	88	0	181					0	625	591	250	802
Grp Sat Flow(s),veh/h/ln	1774	0	1568					0	1781	1673	1757	1881
Q Serve(g_s), s	3.7	0.0	9.3					0.0	28.9	29.2	6.9	0.0
Cycle Q Clear(g_c), s	3.7	0.0	9.3					0.0	28.9	29.2	6.9	0.0
Prop In Lane	1.00		1.00					0.00		0.68	1.00	0.00
Lane Grp Cap(c), veh/h	506	0	447					0	828	778	352	1176
V/C Ratio(X)	0.17	0.00	0.41					0.00	0.75	0.76	0.71	0.68
Avail Cap(c_a), veh/h	506	0	447					0	828	778	352	1176
HCM Platoon Ratio	1.00	1.00	1.00					1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00					0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.9	0.0	28.9					0.0	22.0	22.1	15.7	0.0
Incr Delay (d2), s/veh	0.7	0.0	2.7					0.0	6.3	6.9	11.5	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	4.4					0.0	15.5	14.9	4.4	1.0
LnGrp Delay(d),s/veh	27.6	0.0	31.6					0.0	28.4	29.0	27.2	3.2
LnGrp LOS	C		C					C	C	C	A	
Approach Vol, veh/h		269						1216			1052	
Approach Delay, s/veh		30.3						28.7			8.9	
Approach LOS		C						C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			16.0	51.0		33.0		67.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			11.5	46.5		28.5		62.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			20.7									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

5: Park Ave./Park Dr. & US-52 EB On Ramp/US-52 EB Off Ramp

04/20/2018

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	70	0	150	0	0	0	0	790	350	220	730	0
Future Volume (veh/h)	70	0	150	0	0	0	0	790	350	220	730	0
Number	1	6	16					7	4	14	3	8
Initial Q (Qb), veh	0	0	0					0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00					1.00	1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00					1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1845					0	1881	1863	1845	1881
Adj Flow Rate, veh/h	88	0	181					0	814	0	250	802
Adj No. of Lanes	1	0	1					0	2	1	1	0
Peak Hour Factor	0.80	0.92	0.83					0.92	0.97	0.87	0.88	0.91
Percent Heavy Veh, %	2	0	3					0	1	2	3	1
Cap, veh/h	506	0	447					0	1662	736	477	1176
Arrive On Green	0.28	0.00	0.28					0.00	0.47	0.00	0.23	1.00
Sat Flow, veh/h	1774	0	1568					0	3668	1583	1757	1881
Grp Volume(v), veh/h	88	0	181					0	814	0	250	802
Grp Sat Flow(s),veh/h/ln	1774	0	1568					0	1787	1583	1757	1881
Q Serve(g_s), s	3.7	0.0	9.3					0.0	15.8	0.0	6.9	0.0
Cycle Q Clear(g_c), s	3.7	0.0	9.3					0.0	15.8	0.0	6.9	0.0
Prop In Lane	1.00		1.00					0.00		1.00	1.00	0.00
Lane Grp Cap(c), veh/h	506	0	447					0	1662	736	477	1176
V/C Ratio(X)	0.17	0.00	0.41					0.00	0.49	0.00	0.52	0.68
Avail Cap(c_a), veh/h	506	0	447					0	1662	736	477	1176
HCM Platoon Ratio	1.00	1.00	1.00					1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00					0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	28.9					0.0	18.5	0.0	10.2	0.0
Incr Delay (d2), s/veh	0.7	0.0	2.7					0.0	1.0	0.0	4.1	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	4.4					0.0	7.9	0.0	3.8	1.0
LnGrp Delay(d),s/veh	27.6	0.0	31.6					0.0	19.6	0.0	14.3	3.2
LnGrp LOS	C		C					B		B	A	
Approach Vol, veh/h		269						814			1052	
Approach Delay, s/veh		30.3						19.6			5.8	
Approach LOS		C						B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			16.0	51.0		33.0		67.0				
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s			11.5	46.5		28.5		62.5				
Max Q Clear Time (g_c+I1), s			0.0	0.0		0.0		0.0				
Green Ext Time (p_c), s			0.0	0.0		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			14.2									
HCM 2010 LOS			B									

Movement	Park Avenue & 6th Street				Park Avenue & US-52 EB Ramp				Park Avenue & US-52 WB Ramp				Corridor Overall	
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak	PM Peak
	Volume	Capacity	Volume	Capacity	Volume	Capacity	Volume	Capacity	Volume	Capacity	Volume	Capacity		
EBL	6	340	7	371	0	0	0	0	0	0	0	0		
EBT	319	867	578	884	292	721	606	874	287	1622	590	1563		
EBR	0	0	0	0	189	436	263	422	0	0	0	0		
WBL	0	0	0	0	196	537	165	485	69	159	61	226		
WBT	310	514	343	632	647	1050	557	1144	627	1432	493	1172		
WBR	173	315	116	214	0	0	0	0	0	0	0	0		
NBL	11	72	13	72	0	0	0	0	0	0	0	0		
NBT	137	700	143	589	0	0	0	0	0	0	0	0		
NBR	98	432	198	562	0	0	0	0	0	0	0	0		
SBL	0	0	0	0	50	517	51	429	165	633	193	717		
SBT	0	0	0	0	0	0	0	0	0	0	0	0		
SBR	0	0	0	0	145	462	111	379	216	608	229	647		
v/c Ratio	0.33		0.42		0.41		0.47		0.31		0.36		0.34	0.41
	1054	3240	1398	3324	1519	3723	1753	3733	1364	4454	1566	4325		

APPENDIX D
GCAT ANALYSIS



LAW-93 - (1.17-1.76) From // to //

	Number
Total	54

CRASH_SEVERITY	Number	%
Injury Crash	16	29.6%
Property Damage Crash	38	70.4%
(blank)		0.0%
Grand Total	54	100.0%

TRAFFIC_CRASH_YEA	Number	%
2014	7	13.0%
2015	14	25.9%
2016	33	61.1%
(blank)		0.0%
Grand Total	54	100.0%

DAY_OF_WEEK	Number	%
Wednesday	13	24.1%
Friday	12	22.2%
Tuesday	10	18.5%
Thursday	6	11.1%
Monday	6	11.1%
Sunday	4	7.4%
Saturday	3	5.6%
(blank)		0.0%
Grand Total	54	100.0%

HOUR_OF_DAY	Number	%
6	1	1.9%
7	3	5.6%
8	2	3.7%
9	2	3.7%
10	2	3.7%
11	3	5.6%
12	5	9.3%
13	5	9.3%
14	6	11.1%
15	11	20.4%
16	3	5.6%
17	1	1.9%
18	5	9.3%
19	2	3.7%
21	1	1.9%
22	2	3.7%
(blank)		0.0%
Grand Total	54	100.0%

TYPE_OF_CRASH	Number	%
Rear End	25	46.3%
Angle	14	25.9%
Sideswipe - Meeting	3	5.6%
Backing	3	5.6%
Other Object	2	3.7%
Parked Vehicle	2	3.7%
Left Turn	2	3.7%
Sideswipe - Passing	1	1.9%
Fixed Object	1	1.9%
Overturning	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

LAW-93 - (1.17-1.76) From // to //

WEATHER_CONDITION	Number	%
Clear	26	48.1%
Cloudy	23	42.6%
Rain	5	9.3%
(blank)		0.0%
Grand Total	54	100.0%

ROAD_CONDITION	Number	%
Road - Dry	45	83.3%
Road - Wet	9	16.7%
(blank)		0.0%
Grand Total	54	100.0%

LIGHT_CONDITION	Number	%
Daylight	44	81.5%
Dark - Lighted	8	14.8%
Dark - No Lights	1	1.9%
Dusk	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

NUMBER_OF_VEHICLE	Number	%
(blank)	54	100.0%
Grand Total	54	100.0%

LOCATION	Number	%
Not An Intersection	24	44.4%
Four-Way Intersection	22	40.7%
T-Intersection	5	9.3%
Off Ramp	2	3.7%
On Ramp	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

CRASH_MONTH_NBR	Number	%
1	2	3.7%
2	4	7.4%
3	2	3.7%
4	3	5.6%
5	4	7.4%
6	4	7.4%
7	4	7.4%
8	4	7.4%
9	7	13.0%
10	4	7.4%
11	7	13.0%
12	9	16.7%
(blank)		0.0%
Grand Total	54	100.0%

ROAD_CONTOUR	Number	%
Straight - Level	29	53.7%
Straight - Grade	24	44.4%
Curve - Level	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

SPECIAL_AREA	Number	%
Unknown or Not in Work Zone	54	100.0%
(blank)		0.0%
Grand Total	54	100.0%

ANIMAL_TYPE	Number	%
Animal Not Stated	54	100.0%
(blank)		0.0%
Grand Total	54	100.0%

LAW-93 - (1.17-1.76) From // to //

ACTION1	Number	%
Straight Ahead	37	68.5%
Making Left Turn	5	9.3%
Backing	3	5.6%
Slowing Or Stopped In Tra	3	5.6%
Making Right Turn	3	5.6%
Changing Lanes	1	1.9%
Negotiating A Curve	1	1.9%
Unknown	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

CONTRIBUTING FACT1	Number	%
Followed Too Closely/AC	26	48.1%
Failure To Yield	8	14.8%
Ran Red Light	7	13.0%
Unknown	2	3.7%
None	2	3.7%
Improper Start From Par	2	3.7%
Improper Backing	2	3.7%
Left Of Center	1	1.9%
Improper Lane Change/P	1	1.9%
Load Shifting/Falling/Spil	1	1.9%
Unsafe Speed	1	1.9%
Failure To Control	1	1.9%
(blank)		0.0%

TYPE_OF_CRASH	Number	%
Rear End	25	44.6%
Angle	15	26.8%
Sideswipe - Meeting	3	5.4%
Backing	3	5.4%
Fixed Object	3	5.4%
Left Turn	2	3.6%
Parked Vehicle	2	3.6%
Overturning	1	1.8%
Other Object	1	1.8%
Sideswipe - Passing	1	1.8%
Grand Total	56	100.0%

OBJECT_STRUCK1	Number	%
(blank)	54	100.0%
Grand Total	54	100.0%

TRAFFIC_CONTROL1	Number	%
Traffic Signal	36	66.7%
No Controls	7	13.0%
Pavement Markings	7	13.0%
Stop Sign	4	7.4%
(blank)		0.0%
Grand Total	54	100.0%

DRIVER_ALCOHOL1	Number	%
None	53	98.1%
Yes - Alcohol And Drugs S	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

DRIVER_DRUGS1	Number	%
(blank)	54	100.0%
Grand Total	54	100.0%

LAW-93 - (1.17-1.76) From // to //

DIRECTION_FROM1	Number	%
North	32	59.3%
East	7	13.0%
South	7	13.0%
West	7	13.0%
Southwest	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

DIRECTION_TO1	Number	%
South	28	51.9%
East	9	16.7%
West	8	14.8%
North	8	14.8%
Northeast	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

POSTED_SPEED1	Number	%
Posted Speed 31-35	38	70.4%
Posted Speed Not Stated	12	22.2%
Posted Speed 51-55	2	3.7%
Posted Speed 21-25	1	1.9%
Posted Speed 56-60	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

ESTIMATED_SPEED1	Number	%
Unit Speed Not Stated	23	42.6%
Unit Speed 20 and Unde	17	31.5%
Unit Speed 31-35	5	9.3%
Unit Speed 26-30	4	7.4%
Unit Speed 21-25	3	5.6%
Unit Speed 46-50	1	1.9%
Unit Speed 41-45	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

VEHICLE_TYPE1	Number	%
Mid Size	16	29.6%
Sport Utility Vehicle	14	25.9%
Pickup	8	14.8%
Compact	6	11.1%
Sub-Compact	4	7.4%
Tractor/Semi-Trailer	3	5.6%
Minivan	2	3.7%
Single Unit Truck/Trailer	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

VEHICLE_TYPE2	Number	%
Sport Utility Vehicle	16	29.6%
Pickup	14	25.9%
Mid Size	12	22.2%
Compact	6	11.1%
	3	5.6%
Minivan	1	1.9%
Van	1	1.9%
Full Size	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

LAW-93 - (1.17-1.76) From // to //

ACTION2	Number	%
Slowing Or Stopped In Tra	27	50.0%
Straight Ahead	18	33.3%
Making Left Turn	6	11.1%
	3	5.6%
(blank)		0.0%
Grand Total	54	100.0%

CONTRIBUTING FACT	Number	%
None	47	87.0%
	3	5.6%
Unknown	2	3.7%
Failure To Yield	1	1.9%
Followed To Closely/ACI	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

DIRECTION_FROM2	Number	%
North	24	44.4%
East	11	20.4%
West	9	16.7%
South	7	13.0%
	3	5.6%
(blank)		0.0%
Grand Total	54	100.0%

DIRECTION_TO2	Number	%
South	23	42.6%
North	11	20.4%
West	10	18.5%
East	6	11.1%
	3	5.6%
Southwest	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

DRIVER_ALCOHOL2	Number	%
None	50	92.6%
	3	5.6%
	1	1.9%
(blank)		0.0%
Grand Total	54	100.0%

DRIVER_DRUGS2	Number	%
(blank)	54	100.0%
Grand Total	54	100.0%

LAW-93 - (1.17-1.76) From // to //

SEVERITY		CRASH_SEVERITY		
TRAFFIC_CRASH_YEAR		Property Damage Crash	Injury Crash	(blank)
	2014	6	1	0
	2015	8	6	0
	2016	24	9	0
	(blank)	0	0	0
Grand Total		38	16	0

TRAFFIC_CRASH_YEAR	Fatalities	ipacitating Inju
	2014	0
	2015	0
	2016	0
	(blank)	0
Grand Total		0

TRAFFIC_CRASH_YEAR	IJ_TYPE2_SERIOUS_VISIBLPE3_MINOR_VPE4_NO		
	2014	0	1
	2015	0	6
	2016	0	13
	(blank)	0	0
Grand Total		0	20

Select Location Type: Rural Non-Freeway

Show RSI Formula

RSI Value = 39,676

2014 Relative Severity Index							
User Override	Auto Fill	Crash Type Severity Calc	Crash Type #	Crash Type	Rural Non-Freeway	Urban Non-Freeway	Freeway
	0	\$0	0	Not stated	\$35,645	\$37,787	\$16,432
	0	\$0	1	Head on	\$189,865	\$71,901	\$223,381
	25	\$712,741	2	Rear end	\$28,510	\$19,397	\$22,570
	3	\$42,161	3	Backing	\$14,054	\$11,176	\$13,980
	3	\$223,031	4	Sideswipe - meeting	\$74,344	\$39,087	\$101,955
	1	\$31,832	5	Sideswipe - passing	\$31,832	\$15,221	\$20,635
	14	\$775,847	6	Angle	\$55,418	\$25,558	\$32,012
	2	\$65,305	7	Parked Vehicle	\$32,653	\$15,801	\$32,121
	0	\$0	8	Pedestrian	\$230,269	\$112,394	\$326,779
	0	\$0	9	Animal	\$11,803	\$10,901	\$11,403
	0	\$0	10	Train	\$268,328	\$121,938	\$24,250
	0	\$0	11	Pedalcycles	\$127,819	\$62,014	\$60,872
	0	\$0	12	Other non-vehicle	\$53,092	\$19,621	\$14,697
	1	\$44,711	13	Fixed object	\$44,711	\$34,916	\$30,733
	2	\$53,128	14	Other object	\$26,564	\$21,157	\$12,628
	0	\$0	15	Falling from or in vehicle	\$0	\$0	\$0
	1	\$84,209	16	Overturning	\$84,209	\$87,933	\$75,227
	0	\$0	17	Other non-collision	\$18,399	\$23,414	\$16,532
	2	\$109,543	18	Left Turn	\$54,771	\$31,468	\$33,587
0	54	\$2,142,509					

Select Appropriate "Location Type" and Modify the "User Override" Cells in Yellow if Necessary

APPENDIX E COST ESTIMATES



KYOVA Park Avenue (SR93) Corridor Study ESTIMATED COST - LONG TERM IMPROVEMENTS						
Major Cost Drivers * Extended Costs rounded to nearest \$1000.						
Description	Est. Quantity	Unit	Unit Cost	Extended Cost *	Group Total	
Roadway					\$184,000	
608E52000	Curb Ramps	1036	SF	\$15	\$16,000	
609E26000	Curb, Type 6	300	LF	\$30	\$9,000	
608E10000	4" Concrete Walk	9632	SF	\$10	\$96,000	
518E21100	Porous Backfill	167	CY	\$150	\$25,000	
611G04400	12" Conduit, Type B	500	LF	\$75	\$38,000	
Erosion Control		LSUM			\$1,000	
832E30000	Erosion Control	1	EA	\$1,000	\$1,000	
Subtotal Major Items					\$185,000	
Miscellaneous Costs						
<i>MOT - not including temp signals (3%)</i>	<i>LUMP</i>					\$13,000
<i>Full Signalization (Per Intersection)</i>	2	@	\$155,000			\$310,000
<i>Countdown Pedestrian Signals</i>	8	@	\$600			\$4,800
<i>Signal Timing Adjustments</i>	<i>LUMP</i>					\$50,000
<i>Overhead Lane Use Signs</i>	4	@	\$15,000			\$60,000
<i>Pavement Marking & Other Signing</i>	<i>LUMP</i>					\$15,000
Subtotal Miscellaneous Costs						\$452,800
Total Construction Cost Before Contingency & Inflationary Factor						\$637,800
<i>PDP Design Risk Contingency (25%-35%)</i>				25%		\$159,000
<i>Inflation per ODOT Business Plan Inflation Calculator (2017-2020)</i>				11.4%		\$73,000
Total Preliminary Roadway Construction Cost Estimate						\$869,800
Right-of-Way Budgetary Estimate						
<i>Prel. Eng. / Survey</i>				15%		\$130,000
<i>Final Engineering</i>				5%		\$43,000
<i>Construction Engineering</i>				8%		\$70,000
<i>Right-of-Way/Utilities Estimate</i>				5%		\$43,000
Total Project Cost Estimate						\$1,155,800
<i>Assumptions - This estimate does not include costs for landscaping, retaining walls, lighting, utility relocation, storm water retention or treatment, or other unforeseen impacts to private property. The Right-of-Way costs shown are provided as an estimated allowance for minimal strip takes and/or additional Right-of-Way needed at intersections for placement of traffic signal items or curb radii improvements. The Right-of-Way costs do not include costs for the real estate acquisition/appraisal process.</i>						

KYOVA Park Avenue (SR93) Corridor Study ESTIMATED COST - SHORT TERM IMPROVEMENTS						
Major Cost Drivers					* Extended Costs rounded to nearest \$1000.	
Description		Est. Quantity	Unit	Unit Cost	Extended Cost *	Group Total
Change in Driveway Density from X to Y Driveways Per Mile						\$34,000
609E26000	Curb, Type 6	365	LF	\$30	\$11,000	
659E10000	Seeding and Mulching	295	SY	\$5	\$2,000	
608E10000	4" Concrete Walk	1827	SF	\$10	\$19,000	
Install Left Turn Lane						\$15,000
644E30000	Pavement Marking Removed	1878	FT	\$3	\$6,000	
644E30020	Pavement Marking Removed	4	EA	\$300	\$1,000	
644E00700	Diagonal Line	550	FT	\$5	\$3,000	
644E00100	Edge Line	0.08845	MI	\$2,000	\$0	
644E00300	Center Line	0.22462	MI	\$3,000	\$1,000	
644E13000	Lane Arrow	4	EA	\$1,000	\$4,000	
Replace Curb Ramps and Raised Median						
608E5200	Curb Ramp	1878	SF	\$15	\$28,000	
Subtotal Major Items						\$49,000
MOT - not including temp signals (3%)		LUMP				\$2,000
Subtotal Miscellaneous Costs						\$2,000
Total Construction Cost Before Contingency & Inflationary Factor						\$51,000
PDP Design Risk Contingency (25%-35%)				25%		\$13,000
Inflation per ODOT Business Plan Inflation Calculator (2017-2018)				3.4%		\$2,000
Total Preliminary Roadway Construction Cost Estimate						\$66,000
Right-of-Way Budgetary Estimate						
Prel. Eng. / Survey				15%		\$10,000
Final Engineering				5%		\$3,000
Construction Engineering				8%		\$5,000
Right-of-Way/Utilities Estimate				5%		\$3,000
Total Project Cost Estimate						\$87,000
Assumptions - This estimate does not include costs for landscaping, retaining walls, lighting, utility relocation, storm water retention or treatment, or other unforeseen impacts to private property.						

APPENDIX F
ECAT ANALYSIS - EXISTING



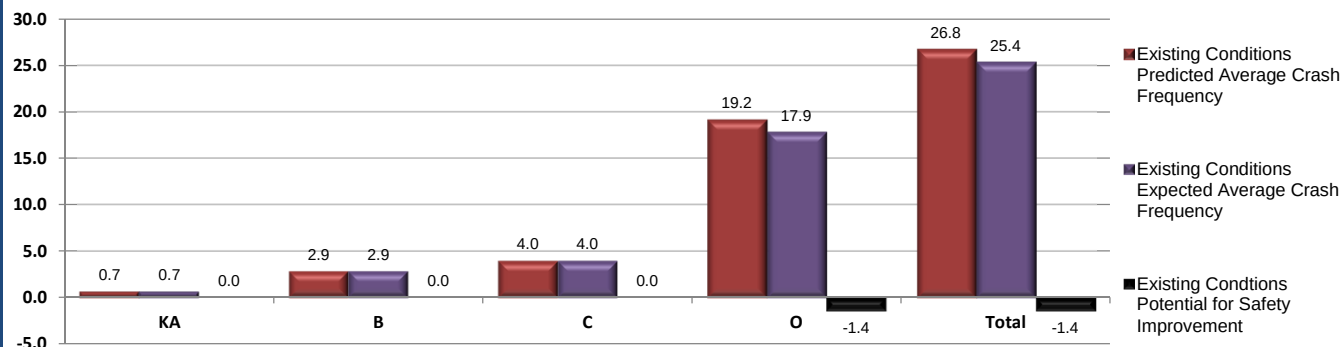


Project Safety Performance Report

General Information

Project Name	KYOVA Lawrence County Non-Motorized	Contact Email	sdiebol@manniksmithgroup.com
Project Description		Contact Phone	(419) 891-2222
Reference Number		Date Performed	3/1/2017
Analyst	Steve Diebol, PE, PTOE	Analysis Year	2017
Agency/Company	The Mannik & Smith Group, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
N_{predicted} - Existing Conditions	0.6855	2.9102	4.0038	19.2126	26.8121
N_{expected} - Existing Conditions	0.6814	2.8727	3.9836	17.8524	25.3901
N_{potential for improvement} - Existing Conditions	-0.0041	-0.0375	-0.0202	-1.3602	-1.4220



Project Safety Performance Report

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Analyst	Steve Diebol, PE, PTOE	Analysis Year	2017
Agency/Company	The Mannik & Smith Group, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				Total
		KA	B	C	O	
CR7C; 0.19-0.24	Park Avenue S of S 6th Street	0.0036	0.0106	0.0117	0.0708	0.0967
CR7C; 0.25-0.3	Park Avenue from S 7th Street to S 6th	0.0071	0.0213	0.024	0.1278	0.1802
CR7C; 0.31-0.37	Park Avenue from S 8th Street to S 7th	0.0099	0.0297	0.0342	0.1848	0.2586
CR7C; 0.38-0.45	Park Avenue from S 9th Street to S 8th	0.0098	0.0296	0.0341	0.1749	0.2484
CR7C; 0.46-0.51	Park Avenue N of S 9th Street	0.0172	0.0522	0.0615	0.3176	0.4485
SR93; 0-0.07	Park Avenue from EB US 52 Ramp to S 9th	0.0161	0.0486	0.0566	0.3047	0.426
SR93; 0.08-0.18	Park Drive from WB US 52 Ramp to EB US 52	0.0098	0.0244	0.023	0.1594	0.2166
SR93; 0.19-0.37	Park Drive from Coryville Road to WB US 52	0.0123	0.0307	0.029	0.2014	0.2734
SR93; 0.38-0.43	Park Drive N of Coryville Road	0.0027	0.0179	0.0155	0.0945	0.1306
CR7C; 0.25	Park Avenue & 6th Street	0.0925	0.4102	0.5652	2.8198	3.8877
CR7C; 0.31	Park Avenue & 7th Street	0.0259	0.1162	0.1703	0.6157	0.9281
CR7C; 0.38	Park Avenue & 8th Street	0.0563	0.2364	0.3343	1.44	2.067
CR7C; 0.46	Park Avenue & 9th Street	0.0612	0.2577	0.3655	1.5495	2.2339
SR93; 0	Park Avenue & 9th Street	0.0612	0.2577	0.3655	1.5495	2.2339
SR93; 0.08	Park Drive & EB US 52 Ramp	0.0944	0.4324	0.6079	3.0682	4.2029
SR93; 0.19	Park Drive & WB US 52 Ramp	0.0983	0.4392	0.605	3.2373	4.3798
SR93; 0.38	Park Drive & Coryville Road	0.1072	0.4954	0.7005	3.2967	4.5998



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Analyst	Steve Diebol, PE, PTOE	Analysis Year	2017
Agency/Company	The Mannik & Smith Group, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				Total
		KA	B	C	O	
CR7C; 0.19-0.24	Park Avenue S of S 6th Street	0.0036	0.0107	0.0117	0.0698	0.0958
CR7C; 0.25-0.3	Park Avenue from S 7th Street to S 6th	0.0072	0.0214	0.0241	0.1246	0.1773
CR7C; 0.31-0.37	Park Avenue from S 8th Street to S 7th	0.0101	0.03	0.034	0.1773	0.2514
CR7C; 0.38-0.45	Park Avenue from S 9th Street to S 8th	0.0098	0.0294	0.0337	0.1684	0.2413
CR7C; 0.46-0.51	Park Avenue N of S 9th Street	0.0172	0.0517	0.0604	0.2948	0.4241
SR93; 0-0.07	Park Avenue from EB US 52 Ramp to S 9th	0.0162	0.0478	0.0556	0.2836	0.4032
SR93; 0.08-0.18	Park Drive from WB US 52 Ramp to EB US 52	0.0098	0.0242	0.0227	0.152	0.2087
SR93; 0.19-0.37	Park Drive from Coryville Road to WB US 52	0.0124	0.0308	0.0296	0.19	0.2628
SR93; 0.38-0.43	Park Drive N of Coryville Road	0.0027	0.0179	0.0153	0.0911	0.127
CR7C; 0.25	Park Avenue & 6th Street	0.092	0.3983	0.5466	2.3096	3.3465
CR7C; 0.31	Park Avenue & 7th Street	0.0259	0.1144	0.1639	0.6861	0.9903
CR7C; 0.38	Park Avenue & 8th Street	0.0559	0.2312	0.3186	1.3171	1.9228
CR7C; 0.46	Park Avenue & 9th Street	0.0608	0.2515	0.3467	1.3551	2.0141
SR93; 0	Park Avenue & 9th Street	0.0608	0.2515	0.3467	1.3251	1.9841
SR93; 0.08	Park Drive & EB US 52 Ramp	0.0936	0.4613	0.7504	3.7306	5.0359
SR93; 0.19	Park Drive & WB US 52 Ramp	0.0974	0.4256	0.573	3.08	4.176
SR93; 0.38	Park Drive & Coryville Road	0.106	0.475	0.6506	2.4972	3.7288



Project Safety Performance Report

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Reference Number		Date Performed	3/1/2017
Analyst	Steve Diebol, PE, PTOE	Analysis Year	2017
Agency/Company	The Mannik & Smith Group, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				Total
		KA	B	C	O	
CR7C; 0.19-0.24	Park Avenue S of S 6th Street	0	0.0001	0	-0.001	-0.0009
CR7C; 0.25-0.3	Park Avenue from S 7th Street to S 6th	0.0001	0.0001	1E-04	-0.0032	-0.0029
CR7C; 0.31-0.37	Park Avenue from S 8th Street to S 7th	0.0002	0.0003	-0.0002	-0.0075	-0.0072
CR7C; 0.38-0.45	Park Avenue from S 9th Street to S 8th	0	-0.0002	-0.0004	-0.0065	-0.0071
CR7C; 0.46-0.51	Park Avenue N of S 9th Street	0	-0.0005	-0.0011	-0.0228	-0.0244
SR93; 0-0.07	Park Avenue from EB US 52 Ramp to S 9th	1E-04	-0.0008	-0.001	-0.0211	-0.0228
SR93; 0.08-0.18	Park Drive from WB US 52 Ramp to EB US 52	0	-0.0002	-0.0003	-0.0074	-0.0079
SR93; 0.19-0.37	Park Drive from Coryville Road to WB US 52 R	1E-04	1E-04	0.0006	-0.0114	-0.0106
SR93; 0.38-0.43	Park Drive N of Coryville Road	0	0	-0.0002	-0.0034	-0.0036
CR7C; 0.25	Park Avenue & 6th Street	-0.0005	-0.0119	-0.0186	-0.5102	-0.5412
CR7C; 0.31	Park Avenue & 7th Street	0	-0.0018	-0.0064	0.0704	0.0622
CR7C; 0.38	Park Avenue & 8th Street	-0.0004	-0.0052	-0.0157	-0.1229	-0.1442
CR7C; 0.46	Park Avenue & 9th Street	-0.0004	-0.0062	-0.0188	-0.1944	-0.2198
SR93; 0	Park Avenue & 9th Street	-0.0004	-0.0062	-0.0188	-0.2244	-0.2498
SR93; 0.08	Park Drive & EB US 52 Ramp	-0.0008	0.0289	0.1425	0.6624	0.833
SR93; 0.19	Park Drive & WB US 52 Ramp	-0.0009	-0.0136	-0.032	-0.1573	-0.2038
SR93; 0.38	Park Drive & Coryville Road	-0.0012	-0.0204	-0.0499	-0.7995	-0.871



Project Safety Performance Report

General Information

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Reference Number		Date Performed	3/1/2017
Analyst	Steve Diebol, PE, PTOE	Analysis Year	2017
Agency/Company	The Mannik & Smith Group, Inc.		



Project Safety Performance Report

General Information

Project Name	KYOVA Lawrence County Non-Motorized	Contact Email	sdiebol@manniksmithgroup.com
Project Description		Contact Phone	(419) 891-2222
Reference Number		Date Performed	3/1/2017
Analyst	Steve Diebol, PE, PTOE	Analysis Year	2017
Agency/Company	The Mannik & Smith Group, Inc.		

Summary by Crash Type

Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown	0.0267	0.0271	0.0004	
Head On	0.1726	0.1723	-0.0003	
Rear End	12.8555	11.9406	-0.9149	
Backing	0.6261	0.6289	0.0028	
Sideswipe - Meeting	0.4608	0.4674	0.0066	
Sideswipe - Passing	3.0090	2.7381	-0.2709	
Angle	4.4716	4.3720	-0.0996	
Parked Vehicle	0.5270	0.5271	0.0001	
Pedestrian	0.2016	0.1988	-0.0028	
Animal	0.5561	0.4852	-0.0709	
Train	0.0010	0.0012	0.0002	
Pedalcycles	0.6129	0.5848	-0.0281	
Other Non-Vehicle	0.0000	0.0000	0.0000	
Fixed Object	1.0437	1.0300	-0.0137	
Other Object	0.0475	0.0485	0.0010	
Overturning	0.0600	0.0605	0.0005	
Other Non-Collision	0.1355	0.1351	-0.0004	
Left Turn	2.5606	2.4577	-0.1029	
Right Turn	0.0000	0.0000	0.0000	

Existing Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.19 to 0.24	
Date Performed	03/01/17	Common Name	Park Avenue S of S 6th Street	
Segment for Analysis	CR7C; 0.19-0.24	Analysis Year	2017	
Input Data		Existing Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		3T		--
Length of segment, L (mi)		0.05		--
AADT (veh/day) is within range	AADT _{MAX} = 32,900 (veh/day)	10,890		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		1		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		2		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		120		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		25		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		Local System		

Existing Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.25	
Date Performed	03/01/17	Common Name	Park Avenue & 6th Street	
Intersection	CR7C; 0.25	Analysis Year	2017	
Signalized/Unsignalized	Signalized			
Input Data		Existing Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		3SG		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 58,100 (veh/day)	12,520		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 16,400 (veh/day)	3,360		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes				0
Number of major-road approaches with right-turn lanes				0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes		0		0
Number of approaches with right-turn lanes		0		0
Number of approaches with left-turn signal phasing		0		--
Type of left-turn signal phasing for Leg #1		Permissive		Permissive
Type of left-turn signal phasing for Leg #2		Permissive		--
Type of left-turn signal phasing for Leg #3		Permissive		--
Not Applicable		Not Applicable		--
Number of approaches with right-turn-on-red prohibited		0		0
Intersection red light cameras (present/not present)		Not Present		Not Present
Sum of all pedestrian crossing volumes (PedVol)		146		--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})		3		--
Number of bus stops within 300 m (1,000 ft) of the intersection		0		0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Present		Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		1 to 8		0
Locality:		Local System		

Existing Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.25 to 0.3	
Date Performed	03/01/17	Common Name	Park Avenue from S 7th Street to S 6th	
Segment for Analysis	CR7C; 0.25-0.3	Analysis Year	2017	
Input Data		Existing Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		3T		--
Length of segment, L (mi)		0.05		--
AADT (veh/day) is within range	AADT _{MAX} = 32,900 (veh/day)	14,200		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		6		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		220		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		Local System		

Existing Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.31	
Date Performed	03/01/17	Common Name	Park Avenue & 7th Street	
Intersection	CR7C; 0.31	Analysis Year	2017	
Signalized/Unsignalized	Unsignalized			
Input Data		Existing Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		3ST		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 45,700 (veh/day)	15,380		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 9,300 (veh/day)	850		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes		0		0
Number of major-road approaches with right-turn lanes		0		0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes				0
Number of approaches with right-turn lanes				0
Number of approaches with left-turn signal phasing				--
Type of left-turn signal phasing for Leg #1				Permissive
Type of left-turn signal phasing for Leg #2				--
Type of left-turn signal phasing for Leg #3				--
Not Applicable				--
Number of approaches with right-turn-on-red prohibited				0
Intersection red light cameras (present/not present)				Not Present
Sum of all pedestrian crossing volumes (PedVol)				--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})				--
Number of bus stops within 300 m (1,000 ft) of the intersection				0
Schools within 300 m (1,000 ft) of the intersection (present/not present)				Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection				0
Locality:		Local System		

Existing Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.31 to 0.37	
Date Performed	03/01/17	Common Name	Park Avenue from S 8th Street to S 7th	
Segment for Analysis	CR7C; 0.31-0.37	Analysis Year	2017	
Input Data		Existing Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		3T		--
Length of segment, L (mi)		0.06		--
AADT (veh/day) is within range	AADT _{MAX} = 32,900 (veh/day)	15,300		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Not Present		Not Present
Auto speed enforcement (present / not present)		Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		3		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		284		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		Local System		

Existing Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.38	
Date Performed	03/01/17	Common Name	Park Avenue & 8th Street	
Intersection	CR7C; 0.38	Analysis Year	2017	
Signalized/Unsignalized	Unsignalized			
Input Data		Existing Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		4ST		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 46,800 (veh/day)	15,860		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 5,900 (veh/day)	1,580		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes		0		0
Number of major-road approaches with right-turn lanes		0		0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes				0
Number of approaches with right-turn lanes				0
Number of approaches with left-turn signal phasing				--
Type of left-turn signal phasing for Leg #1				Permissive
Type of left-turn signal phasing for Leg #2				--
Type of left-turn signal phasing for Leg #3				--
Type of left-turn signal phasing for Leg #4				--
Number of approaches with right-turn-on-red prohibited				0
Intersection red light cameras (present/not present)				Not Present
Sum of all pedestrian crossing volumes (PedVol)				--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})				--
Number of bus stops within 300 m (1,000 ft) of the intersection				0
Schools within 300 m (1,000 ft) of the intersection (present/not present)				Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0		
Locality:		Local System		

Existing Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.38 to 0.45	
Date Performed	03/01/17	Common Name	Park Avenue from S 9th Street to S 8th	
Segment for Analysis	CR7C; 0.38-0.45	Analysis Year	2017	
Input Data		Existing Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		3T		--
Length of segment, L (mi)		0.07		--
AADT (veh/day) is within range	AADT _{MAX} = 32,900 (veh/day)	17,300		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		6		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		129		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		Local System		

Existing Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.46	
Date Performed	03/01/17	Common Name	Park Avenue & 9th Street	
Intersection	CR7C; 0.46	Analysis Year	2017	
Signalized/Unsignalized	Unsignalized			
Input Data		Existing Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		4ST		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 46,800 (veh/day)	18,030		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 5,900 (veh/day)	1,450		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes		0		0
Number of major-road approaches with right-turn lanes		0		0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes				0
Number of approaches with right-turn lanes				0
Number of approaches with left-turn signal phasing				--
Type of left-turn signal phasing for Leg #1				Permissive
Type of left-turn signal phasing for Leg #2				--
Type of left-turn signal phasing for Leg #3				--
Type of left-turn signal phasing for Leg #4				--
Number of approaches with right-turn-on-red prohibited				0
Intersection red light cameras (present/not present)				Not Present
Sum of all pedestrian crossing volumes (PedVol)				--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})				--
Number of bus stops within 300 m (1,000 ft) of the intersection				0
Schools within 300 m (1,000 ft) of the intersection (present/not present)				Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection				0
Locality:		Local System		

Existing Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.46 to 0.51	
Date Performed	03/01/17	Common Name	Park Avenue N of S 9th Street	
Segment for Analysis	CR7C; 0.46-0.51	Analysis Year	2017	
Input Data		Existing Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		3T		--
Length of segment, L (mi)		0.05		--
AADT (veh/day) is within range	AADT _{MAX} = 32,900 (veh/day)	18,600		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		1		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		500		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		20		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		Local System		

Existing Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.38	
Date Performed	03/01/17	Common Name	Park Drive & Coryville Road	
Intersection	SR93; 0.38	Analysis Year	2017	
Signalized/Unsignalized	Signalized			
Input Data		Existing Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		4SG		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 67,700 (veh/day)	17,100		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 33,400 (veh/day)	500		--
Intersection lighting (present/not present)		Not Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes				0
Number of major-road approaches with right-turn lanes				0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes		2		0
Number of approaches with right-turn lanes		1		0
Number of approaches with left-turn signal phasing		1		--
Type of left-turn signal phasing for Leg #1		Permissive		Permissive
Type of left-turn signal phasing for Leg #2		Protected		--
Type of left-turn signal phasing for Leg #3		Protected/Permissive		--
Type of left-turn signal phasing for Leg #4		Protected		--
Number of approaches with right-turn-on-red prohibited		0		0
Intersection red light cameras (present/not present)		Not Present		Not Present
Sum of all pedestrian crossing volumes (PedVol)		50		--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})		5		--
Number of bus stops within 300 m (1,000 ft) of the intersection		0		0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present		Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		1 to 8		0
Locality:		State System		

Existing Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.08	
Date Performed	03/01/17	Common Name	Park Drive & EB US 52 Ramp	
Intersection	SR93; 0.08	Analysis Year	2017	
Signalized/Unsignalized	Signalized			
Input Data		Existing Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		3SG		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 58,100 (veh/day)	19,660		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 16,400 (veh/day)	2,160		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes				0
Number of major-road approaches with right-turn lanes				0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes		2		0
Number of approaches with right-turn lanes		1		0
Number of approaches with left-turn signal phasing		1		--
Type of left-turn signal phasing for Leg #1		Protected/Permissive		Permissive
Type of left-turn signal phasing for Leg #2		Permissive		--
Type of left-turn signal phasing for Leg #3		Protected		--
Not Applicable		Not Applicable		--
Number of approaches with right-turn-on-red prohibited		1		0
Intersection red light cameras (present/not present)		Not Present		Not Present
Sum of all pedestrian crossing volumes (PedVol)		20		--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})		4		--
Number of bus stops within 300 m (1,000 ft) of the intersection		0		0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present		Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		1 to 8		0
Locality:		State System		

Existing Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.08 to 0.18	
Date Performed	03/01/17	Common Name	Park Drive from WB US 52 Ramp to EB US 52 Ramp	
Segment for Analysis	SR93; 0.08-0.18	Analysis Year	2017	
Input Data		Existing Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		4U		--
Length of segment, L (mi)		0.1		--
AADT (veh/day) is within range	AADT _{MAX} = 40,100 (veh/day)	16,700		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		0		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		210		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		25		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		State System		

Existing Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.19	
Date Performed	03/01/17	Common Name	Park Drive & WB US 52 Ramp	
Intersection	SR93; 0.19	Analysis Year	2017	
Signalized/Unsignalized	Signalized			
Input Data		Existing Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		3SG		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 58,100 (veh/day)	14,690		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 16,400 (veh/day)	5,200		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes				0
Number of major-road approaches with right-turn lanes				0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes		1		0
Number of approaches with right-turn lanes		1		0
Number of approaches with left-turn signal phasing		0		--
Type of left-turn signal phasing for Leg #1		Permissive		Permissive
Type of left-turn signal phasing for Leg #2		Permissive		--
Type of left-turn signal phasing for Leg #3		Protected		--
Not Applicable		Not Applicable		--
Number of approaches with right-turn-on-red prohibited		0		0
Intersection red light cameras (present/not present)		Not Present		Not Present
Sum of all pedestrian crossing volumes (PedVol)		52		--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})		4		--
Number of bus stops within 300 m (1,000 ft) of the intersection		0		0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present		Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		1 to 8		0
Locality:		State System		

Existing Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.19 to 0.37	
Date Performed	03/01/17	Common Name	Park Drive from Coryville Road to WB US 52 Ramp	
Segment for Analysis	SR93; 0.19-0.37	Analysis Year	2017	
Input Data		Existing Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		4U		--
Length of segment, L (mi)		0.18		--
AADT (veh/day) is within range	AADT _{MAX} = 40,100 (veh/day)	17,100		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Not Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		1		--
Minor commercial driveways (number)		0		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		34		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		22		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		State System		

Existing Conditions: General Information and Data for Urban And Suburban Roadway Segment			
General Information		Location Information	
Analyst	Steve Diebol, PE, PTOE	Route	SR93
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.38 to 0.43
Date Performed	03/01/17	Common Name	Park Drive N of Coryville Road
Segment for Analysis	SR93; 0.38-0.43	Analysis Year	2017
Input Data		Existing Conditions	HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		4D	--
Length of segment, L (mi)		0.05	--
AADT (veh/day) is within range	AADT _{MAX} = 66,000 (veh/day)	17,100	--
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		0	--
Median width (ft) - for divided only		10	15
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		0	--
Minor commercial driveways (number)		0	--
Major industrial / institutional driveways (number)		0	--
Minor industrial / institutional driveways (number)		0	--
Major residential driveways (number)		0	--
Minor residential driveways (number)		0	--
Other driveways (number)		0	--
Speed Category		Posted Speed Greater than 30 mph	--
Roadside fixed object density (fixed objects / mi)		40	0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		22	30
Calibration Factor, Cr		Varies, See Below	1.00
Locality:		State System	

Existing Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0	
Date Performed	03/01/17	Common Name	Park Avenue & 9th Street	
Intersection	SR93; 0	Analysis Year	2017	
Signalized/Unsignalized	Unsignalized			
Input Data		Existing Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		4ST		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 46,800 (veh/day)	18,030		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 5,900 (veh/day)	1,450		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes		0		0
Number of major-road approaches with right-turn lanes		0		0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes				0
Number of approaches with right-turn lanes				0
Number of approaches with left-turn signal phasing				--
Type of left-turn signal phasing for Leg #1				Permissive
Type of left-turn signal phasing for Leg #2				--
Type of left-turn signal phasing for Leg #3				--
Type of left-turn signal phasing for Leg #4				--
Number of approaches with right-turn-on-red prohibited				0
Intersection red light cameras (present/not present)				Not Present
Sum of all pedestrian crossing volumes (PedVol)				--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})				--
Number of bus stops within 300 m (1,000 ft) of the intersection				0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present		
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0		
Locality:		State System		

Existing Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0 to 0.07	
Date Performed	03/01/17	Common Name	Park Avenue from EB US 52 Ramp to S 9th	
Segment for Analysis	SR93; 0-0.07	Analysis Year	2017	
Input Data		Existing Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		3T		--
Length of segment, L (mi)		0.07		--
AADT (veh/day) is within range	AADT _{MAX} = 32,900 (veh/day)	16,600		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		1		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		357		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		20		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		State System		

APPENDIX G
ECAT ANALYSIS - PROPOSED





CMF / CRF Details

CMF ID: 2507

Change in driveway density from X to Y driveways per mile

Description: Curves and tangents.

Prior Condition: Greater or fewer number of driveways per mile

Category: Access management

Study: [*Modeling and Evaluating the Safety Impacts of Access Management \(AM\) Features in the Las Vegas Valley, Mauga and Kaseko, 2010*](#)

Star Quality Rating: ★★★★★ [\[View score details\]](#)

Crash Modification Factor (CMF)

Value: $e^{0.0090(Y-X)}$

Adjusted Standard Error:

Unadjusted Standard Error:

Crash Reduction Factor (CRF)

Value: $-100 * (e^{0.0090(Y-X)} - 1)$

Adjusted Standard Error:

Unadjusted Standard Error:

Applicability

Crash Type: Angle, Fixed object, Head on, Rear end, Run off road, Sideswipe, Single vehicle

Crash Severity: All

Roadway Types: All

Number of Lanes:

Road Division Type: Divided by TWLTL

Speed Limit:	30-45
Area Type:	Urban
Traffic Volume:	Minimum of 4883 to Maximum of 71280 Annual Average Daily Traffic (AADT)
Time of Day:	Not specified
<i>If countermeasure is intersection-based</i>	
Intersection Type:	
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	
Minor Road Traffic Volume:	
Development Details	
Date Range of Data Used:	2002 to 2006
Municipality:	
State:	NV
Country:	
Type of Methodology Used:	Regression cross-section
Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	Aug-11-2010
Comments:	

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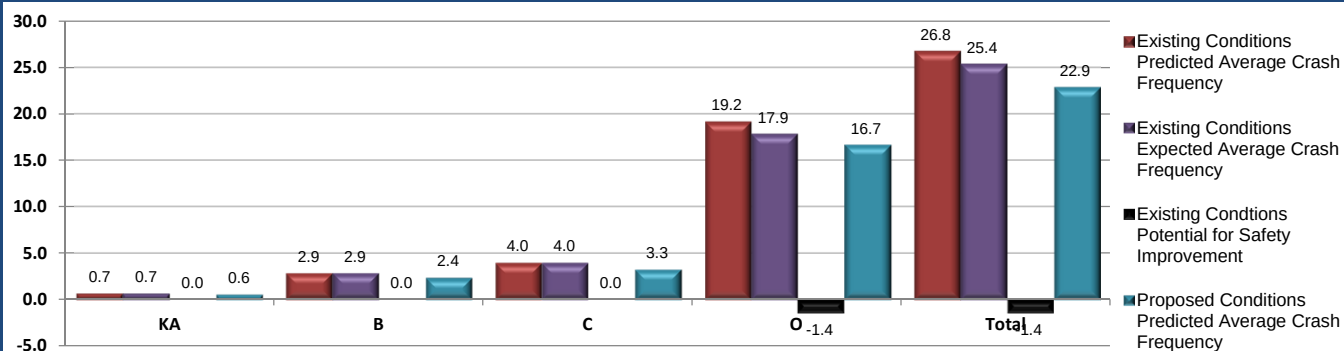


Project Safety Performance Report

General Information

Project Name	KYOVA Lawrence County Non-Motorized	Contact Email	sdiebol@manniksmithgroup.com
Project Description		Contact Phone	(419) 891-2222
Reference Number		Date Performed	3/1/2017
Analyst	Steve Diebol, PE, PTOE	Analysis Year	2017
Agency/Company	The Mannik & Smith Group, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{\text{predicted}}$ - Existing Conditions	0.6855	2.9102	4.0038	19.2126	26.8121
N_{expected} - Existing Conditions	0.6814	2.8727	3.9836	17.8524	25.3901
$N_{\text{potential for improvement}}$ - Existing Conditions	-0.0041	-0.0375	-0.0202	-1.3602	-1.4220
N_{expected} - Proposed Conditions	0.5576	2.3785	3.2596	16.7148	22.9105



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Analyst	Steve Diebol, PE, PTOE	Analysis Year	2017
Agency/Company	The Mannik & Smith Group, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				Total
		KA	B	C	O	
CR7C; 0.19-0.24	Park Avenue S of S 6th Street	0.0036	0.0106	0.0117	0.0708	0.0967
CR7C; 0.25-0.3	Park Avenue from S 7th Street to S 6th	0.0071	0.0213	0.024	0.1278	0.1802
CR7C; 0.31-0.37	Park Avenue from S 8th Street to S 7th	0.0099	0.0297	0.0342	0.1848	0.2586
CR7C; 0.38-0.45	Park Avenue from S 9th Street to S 8th	0.0098	0.0296	0.0341	0.1749	0.2484
CR7C; 0.46-0.51	Park Avenue N of S 9th Street	0.0172	0.0522	0.0615	0.3176	0.4485
SR93; 0-0.07	Park Avenue from EB US 52 Ramp to S 9th	0.0161	0.0486	0.0566	0.3047	0.426
SR93; 0.08-0.18	Park Drive from WB US 52 Ramp to EB US 52	0.0098	0.0244	0.023	0.1594	0.2166
SR93; 0.19-0.37	Park Drive from Coryville Road to WB US 52	0.0123	0.0307	0.029	0.2014	0.2734
SR93; 0.38-0.43	Park Drive N of Coryville Road	0.0027	0.0179	0.0155	0.0945	0.1306
CR7C; 0.25	Park Avenue & 6th Street	0.0925	0.4102	0.5652	2.8198	3.8877
CR7C; 0.31	Park Avenue & 7th Street	0.0259	0.1162	0.1703	0.6157	0.9281
CR7C; 0.38	Park Avenue & 8th Street	0.0563	0.2364	0.3343	1.44	2.067
CR7C; 0.46	Park Avenue & 9th Street	0.0612	0.2577	0.3655	1.5495	2.2339
SR93; 0	Park Avenue & 9th Street	0.0612	0.2577	0.3655	1.5495	2.2339
SR93; 0.08	Park Drive & EB US 52 Ramp	0.0944	0.4324	0.6079	3.0682	4.2029
SR93; 0.19	Park Drive & WB US 52 Ramp	0.0983	0.4392	0.605	3.2373	4.3798
SR93; 0.38	Park Drive & Coryville Road	0.1072	0.4954	0.7005	3.2967	4.5998



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Analyst	Steve Diebol, PE, PTOE	Analysis Year	2017
Agency/Company	The Mannik & Smith Group, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				Total
		KA	B	C	O	
CR7C; 0.19-0.24	Park Avenue S of S 6th Street	0.0036	0.0107	0.0117	0.0698	0.0958
CR7C; 0.25-0.3	Park Avenue from S 7th Street to S 6th	0.0072	0.0214	0.0241	0.1246	0.1773
CR7C; 0.31-0.37	Park Avenue from S 8th Street to S 7th	0.0101	0.03	0.034	0.1773	0.2514
CR7C; 0.38-0.45	Park Avenue from S 9th Street to S 8th	0.0098	0.0294	0.0337	0.1684	0.2413
CR7C; 0.46-0.51	Park Avenue N of S 9th Street	0.0172	0.0517	0.0604	0.2948	0.4241
SR93; 0-0.07	Park Avenue from EB US 52 Ramp to S 9th	0.0162	0.0478	0.0556	0.2836	0.4032
SR93; 0.08-0.18	Park Drive from WB US 52 Ramp to EB US 52	0.0098	0.0242	0.0227	0.152	0.2087
SR93; 0.19-0.37	Park Drive from Coryville Road to WB US 52	0.0124	0.0308	0.0296	0.19	0.2628
SR93; 0.38-0.43	Park Drive N of Coryville Road	0.0027	0.0179	0.0153	0.0911	0.127
CR7C; 0.25	Park Avenue & 6th Street	0.092	0.3983	0.5466	2.3096	3.3465
CR7C; 0.31	Park Avenue & 7th Street	0.0259	0.1144	0.1639	0.6861	0.9903
CR7C; 0.38	Park Avenue & 8th Street	0.0559	0.2312	0.3186	1.3171	1.9228
CR7C; 0.46	Park Avenue & 9th Street	0.0608	0.2515	0.3467	1.3551	2.0141
SR93; 0	Park Avenue & 9th Street	0.0608	0.2515	0.3467	1.3251	1.9841
SR93; 0.08	Park Drive & EB US 52 Ramp	0.0936	0.4613	0.7504	3.7306	5.0359
SR93; 0.19	Park Drive & WB US 52 Ramp	0.0974	0.4256	0.573	3.08	4.176
SR93; 0.38	Park Drive & Coryville Road	0.106	0.475	0.6506	2.4972	3.7288



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Analyst	Steve Diebol, PE, PTOE	Analysis Year	2017
Agency/Company	The Mannik & Smith Group, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
CR7C; 0.19-0.24	Park Avenue S of S 6th Street	0	0.0001	0	-0.001	-0.0009
CR7C; 0.25-0.3	Park Avenue from S 7th Street to S 6th	0.0001	0.0001	1E-04	-0.0032	-0.0029
CR7C; 0.31-0.37	Park Avenue from S 8th Street to S 7th	0.0002	0.0003	-0.0002	-0.0075	-0.0072
CR7C; 0.38-0.45	Park Avenue from S 9th Street to S 8th	0	-0.0002	-0.0004	-0.0065	-0.0071
CR7C; 0.46-0.51	Park Avenue N of S 9th Street	0	-0.0005	-0.0011	-0.0228	-0.0244
SR93; 0-0.07	Park Avenue from EB US 52 Ramp to S 9th	1E-04	-0.0008	-0.001	-0.0211	-0.0228
SR93; 0.08-0.18	Park Drive from WB US 52 Ramp to EB US 52	0	-0.0002	-0.0003	-0.0074	-0.0079
SR93; 0.19-0.37	Park Drive from Coryville Road to WB US 52 R	1E-04	1E-04	0.0006	-0.0114	-0.0106
SR93; 0.38-0.43	Park Drive N of Coryville Road	0	0	-0.0002	-0.0034	-0.0036
CR7C; 0.25	Park Avenue & 6th Street	-0.0005	-0.0119	-0.0186	-0.5102	-0.5412
CR7C; 0.31	Park Avenue & 7th Street	0	-0.0018	-0.0064	0.0704	0.0622
CR7C; 0.38	Park Avenue & 8th Street	-0.0004	-0.0052	-0.0157	-0.1229	-0.1442
CR7C; 0.46	Park Avenue & 9th Street	-0.0004	-0.0062	-0.0188	-0.1944	-0.2198
SR93; 0	Park Avenue & 9th Street	-0.0004	-0.0062	-0.0188	-0.2244	-0.2498
SR93; 0.08	Park Drive & EB US 52 Ramp	-0.0008	0.0289	0.1425	0.6624	0.833
SR93; 0.19	Park Drive & WB US 52 Ramp	-0.0009	-0.0136	-0.032	-0.1573	-0.2038
SR93; 0.38	Park Drive & Coryville Road	-0.0012	-0.0204	-0.0499	-0.7995	-0.871



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Analyst	Steve Diebol, PE, PTOE	Analysis Year	2017
Agency/Company	The Mannik & Smith Group, Inc.		

Proposed Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				Total
		KA	B	C	O	
CR7C; 0.19-0.24	Park Avenue S of S 6th Street	0.0036	0.0106	0.0117	0.0708	0.0967
CR7C; 0.25-0.3	Park Avenue from S 7th Street to S 6th	0.0061	0.0183	0.0204	0.1088	0.1536
CR7C; 0.31-0.37	Park Avenue from S 8th Street to S 7th	0.0099	0.0297	0.0342	0.1848	0.2586
CR7C; 0.38-0.45	Park Avenue from S 9th Street to S 8th	0.0098	0.0296	0.0341	0.1749	0.2484
CR7C; 0.46-0.51	Park Avenue N of S 9th Street	0.0172	0.0522	0.0615	0.3176	0.4485
SR93; 0-0.07	Park Avenue from EB US 52 Ramp to S 9th	0.0161	0.0486	0.0566	0.3047	0.426
SR93; 0.08-0.18	Park Drive from WB US 52 Ramp to EB US 52	0.0098	0.0244	0.023	0.1594	0.2166
SR93; 0.19-0.37	Park Drive from Coryville Road to WB US 52	0.0123	0.0307	0.029	0.2014	0.2734
SR93; 0.38-0.43	Park Drive N of Coryville Road	0.0027	0.0179	0.0155	0.0945	0.1306
CR7C; 0.25	Park Avenue & 6th Street	0.0925	0.4102	0.5652	2.8198	3.8877
CR7C; 0.31	Park Avenue & 7th Street	0.0196	0.0901	0.1333	0.6157	0.8587
CR7C; 0.38	Park Avenue & 8th Street	0.0241	0.104	0.1489	0.8223	1.0993
CR7C; 0.46	Park Avenue & 9th Street	0.0265	0.1145	0.1645	0.8943	1.1998
SR93; 0	Park Avenue & 9th Street	0.0265	0.1145	0.1645	0.8943	1.1998
SR93; 0.08	Park Drive & EB US 52 Ramp	0.0903	0.4144	0.5831	2.9455	4.0333
SR93; 0.19	Park Drive & WB US 52 Ramp	0.0966	0.4335	0.5981	3.2049	4.3331
SR93; 0.38	Park Drive & Coryville Road	0.094	0.4353	0.616	2.9011	4.0464



Project Safety Performance Report

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Project Description		Contact Phone	(419) 891-2222
Reference Number		Date Performed	3/1/2017
Analyst	Steve Diebol, PE, PTOE	Analysis Year	2017
Agency/Company	The Mannik & Smith Group, Inc.		

Summary by Crash Type

Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Predicted Crash Frequency
Unknown	0.0267	0.0271	0.0004	0.0240
Head On	0.1726	0.1723	-0.0003	0.1472
Rear End	12.8555	11.9406	-0.9149	11.0647
Backing	0.6261	0.6289	0.0028	0.5424
Sideswipe - Meeting	0.4608	0.4674	0.0066	0.4076
Sideswipe - Passing	3.0090	2.7381	-0.2709	2.5980
Angle	4.4716	4.3720	-0.0996	3.7994
Parked Vehicle	0.5270	0.5271	0.0001	0.4336
Pedestrian	0.2016	0.1988	-0.0028	0.0924
Animal	0.5561	0.4852	-0.0709	0.5476
Train	0.0010	0.0012	0.0002	0.0007
Pedalcycles	0.6129	0.5848	-0.0281	0.5562
Other Non-Vehicle	0.0000	0.0000	0.0000	0.0000
Fixed Object	1.0437	1.0300	-0.0137	0.8830
Other Object	0.0475	0.0485	0.0010	0.0419
Overturning	0.0600	0.0605	0.0005	0.0497
Other Non-Collision	0.1355	0.1351	-0.0004	0.1150
Left Turn	2.5606	2.4577	-0.1029	2.1543
Right Turn	0.0000	0.0000	0.0000	0.0000



CMF / CRF Details

CMF ID: 3948

Install left-turn lane

Description:

Prior Condition: Unknown

Category: Intersection geometry

Study: [*A full Bayes multivariate intervention model with random parameters among matched pairs for before-after safety evaluation, El-Basyouny and Sayed, 2011*](#)

Star Quality Rating:  [\[View score details\]](#)

Crash Modification Factor (CMF)

Value: 0.79

Adjusted Standard Error:

Unadjusted Standard Error:

Crash Reduction Factor (CRF)

Value: 21 (This value indicates a **decrease** in crashes)

Adjusted Standard Error:

Unadjusted Standard Error:

Applicability

Crash Type: All

Crash Severity: Fatal,Serious injury,Minor injury

Roadway Types: Not Specified

Number of Lanes:

Road Division Type:

Speed Limit:

Area Type:	Urban
Traffic Volume:	
Time of Day:	All
<i>If countermeasure is intersection-based</i>	
Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	Not specified
Traffic Control:	Not specified
Major Road Traffic Volume:	
Minor Road Traffic Volume:	
Development Details	
Date Range of Data Used:	2001 to 2008
Municipality:	
State:	
Country:	Canada
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size (site-years):	16 site-years before, 12 site-years after
Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	Jun-04-2012
Comments:	

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CMF / CRF Details

CMF ID: 5272

Install pedestrian countdown timer

Description: Install pedestrian countdown timer

Prior Condition: Unknown

Category: Intersection traffic control

Study: [Evaluating pedestrian safety improvements, Van Houten et al., 2012](#)

Star Quality Rating: ★★★★★ [\[View score details\]](#)

Crash Modification Factor (CMF)

Value: 0.3

Adjusted Standard Error:

Unadjusted Standard Error:

Crash Reduction Factor (CRF)

Value: 70 (This value indicates a **decrease** in crashes)

Adjusted Standard Error:

Unadjusted Standard Error:

Applicability

Crash Type: Vehicle/pedestrian

Crash Severity: All

Roadway Types: Not specified

Number of Lanes:

Road Division Type:

Speed Limit:

Area Type: Not specified

Traffic Volume:	
Time of Day:	
<i>If countermeasure is intersection-based</i>	
Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	Not specified
Traffic Control:	Signalized
Major Road Traffic Volume:	
Minor Road Traffic Volume:	
Development Details	
Date Range of Data Used:	
Municipality:	Detroit
State:	MI
Country:	
Type of Methodology Used:	Time series
Sample Size (sites):	449 sites
Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	Dec-02-2013
Comments:	The study did not adjust the reduction in crashes at the treatment location based on the change in the comparison sites.

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CMF / CRF Details

CMF ID: 8480

Install Pedestrian Signals

Description:

Prior Condition: Intersections without pedestrian signals

Category: Pedestrians

Study: [Developing Crash Modification Functions for Pedestrian Signal Improvement, Sacchi et al., 2015](#)

Star Quality Rating: ★★★★★ [\[View score details\]](#)

Crash Modification Factor (CMF)

$$\text{CMF}_{\text{tot}} = 0.723 \times (V_{M,1}^* \times V_{m,1}^*)^{0.057} \times \exp(0.050 \times \text{Area} + 0.121[1 - (0.825)^S]/s)$$

Where:

Value: V_M = Major Road AADT (in thousands of vehicles)
 V_m = Minor Road AADT (in thousands of vehicles)
 Area = Area Type Indicator (Residential = 0, Commercial = 1)
 S = Number of years since treatment installation

Adjusted Standard Error:

Unadjusted Standard Error:

Crash Reduction Factor (CRF)

Value: (This value indicates an **increase** in crashes)

Adjusted Standard Error:

Unadjusted Standard Error:

Applicability

Crash Type: All

Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	Urban and suburban
Traffic Volume:	
Time of Day:	Not specified
<i>If countermeasure is intersection-based</i>	
Intersection Type:	
Intersection Geometry:	4-leg
Traffic Control:	Signalized
Major Road Traffic Volume:	Minimum of 5120 to Maximum of 44800 Annual Average Daily Traffic (AADT)
Minor Road Traffic Volume:	Minimum of 650 to Maximum of 9530 Annual Average Daily Traffic (AADT)
Development Details	
Date Range of Data Used:	2005 to 2013
Municipality:	Metro Vancouver
State:	
Country:	Canada
Type of Methodology Used:	Meta-analysis
Sample Size (crashes):	101 crashes
Sample Size (sites):	13 sites
Sample Size (site-years):	53 site-years
Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	Mar-13-2017
Comments:	

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CMF / CRF Details

CMF ID: 175

Install raised median with marked crosswalk (uncontrolled)

Description:

Prior Condition: Marked crosswalk with no raised median at an uncontrolled pedestrian crossing.

Category: Pedestrians

Study: [*Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations: Executive Summary and Recommended Guidelines, Zegeer et al., 2002*](#)

Star Quality Rating: ★★★★★ [\[View score details\]](#)

Crash Modification Factor (CMF)

Value: 0.54

Adjusted Standard Error: 0.48

Unadjusted Standard Error: 0.1

Crash Reduction Factor (CRF)

Value: 46 (This value indicates a **decrease** in crashes)

Adjusted Standard Error: 48

Unadjusted Standard Error: 10

Applicability

Crash Type: Vehicle/pedestrian

Crash Severity: All

Roadway Types: Principal Arterial Other

Number of Lanes: 3 to 8

Road Division Type:

Speed Limit:

Area Type:	Urban and Suburban
Traffic Volume:	Minimum of 15000 Average Daily Traffic (ADT)
Time of Day:	All
<i>If countermeasure is intersection-based</i>	
Intersection Type:	
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	1994 to 1998
Municipality:	
State:	AZ, CA, FL, KS, LA, MD, MA, MO, NC, OH, OR, PA, TX, UT, WA, WI
Country:	USA
Type of Methodology Used:	Non-regression cross-section

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	Dec-01-2009
Comments:	The study design was a simple comparison of crash rates, controlling for pedestrian and traffic volume.

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CMF / CRF Details

CMF ID: 7982

Install a traffic signal

Description:

Prior Condition: Intersections with a stop sign on minor roads

Category: Intersection traffic control

Study: *Safety Evaluation of Signal Installation With and Without Left Turn Lanes on Two Lane Roads in Rural and Suburban Areas, Srinivasan et al., 2014*

Star Quality Rating: ★★★★★ [\[View score details\]](#)

Crash Modification Factor (CMF)

Value: 0.614

Adjusted Standard Error:

Unadjusted Standard Error: 0.037

Crash Reduction Factor (CRF)

Value: 38.6 (This value indicates a **decrease** in crashes)

Adjusted Standard Error:

Unadjusted Standard Error: 3.7

Applicability

Crash Type: All

Crash Severity: All

Roadway Types: Not specified

Number of Lanes: 2

Road Division Type:

Speed Limit:

Area Type:	All
Traffic Volume:	
Time of Day:	All
<i>If countermeasure is intersection-based</i>	
Intersection Type:	Not specified
Intersection Geometry:	4-leg
Traffic Control:	Stop-controlled
Major Road Traffic Volume:	Minimum of 2480 to Maximum of 17566 Annual Average Daily Traffic (AADT)
Minor Road Traffic Volume:	Minimum of 746 to Maximum of 5803 Annual Average Daily Traffic (AADT)
Development Details	
Date Range of Data Used:	1992 to 2012
Municipality:	
State:	NC
Country:	
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size (crashes):	697 crashes before, 421 crashes after
Sample Size (sites):	33 sites before, 33 sites after
Sample Size (site-years):	158 site-years before, 157 site-years after
Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	Nov-10-2016
Comments:	The CMF was developed for both rural and suburban areas.

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Proposed Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.19 to 0.24	
Date Performed	03/01/17	Common Name	Park Avenue S of S 6th Street	
Segment for Analysis	CR7C; 0.19-0.24	Analysis Year	2017	
Input Data		Proposed Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		3T		--
Length of segment, L (mi)		0.05		--
AADT (veh/day) is within range	AADT _{MAX} = 32,900 (veh/day)	10,890		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		1		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		2		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		120		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		25		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		Local System		

Proposed Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.25	
Date Performed	03/01/17	Common Name	Park Avenue & 6th Street	
Intersection	CR7C; 0.25	Analysis Year	2017	
Signalized/Unsignalized	Signalized			
Input Data		Proposed Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		3SG		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 58,100 (veh/day)	12,520		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 16,400 (veh/day)	3,360		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes				0
Number of major-road approaches with right-turn lanes				0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes		0		0
Number of approaches with right-turn lanes		0		0
Number of approaches with left-turn signal phasing		0		--
Type of left-turn signal phasing for Leg #1		Permissive		Permissive
Type of left-turn signal phasing for Leg #2		Permissive		--
Type of left-turn signal phasing for Leg #3		Permissive		--
Not Applicable		Not Applicable		--
Number of approaches with right-turn-on-red prohibited		0		0
Intersection red light cameras (present/not present)		Not Present		Not Present
Sum of all pedestrian crossing volumes (PedVol)		146		--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})		3		--
Number of bus stops within 300 m (1,000 ft) of the intersection		0		0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Present		Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		1 to 8		0
Locality:		Local System		

Proposed Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.25 to 0.3	
Date Performed	03/01/17	Common Name	Park Avenue from S 7th Street to S 6th	
Segment for Analysis	CR7C; 0.25-0.3	Analysis Year	2017	
Input Data		Proposed Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		3T		--
Length of segment, L (mi)		0.05		--
AADT (veh/day) is within range	AADT _{MAX} = 32,900 (veh/day)	14,200		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		6		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		220		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		Local System		

Proposed Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.31	
Date Performed	03/01/17	Common Name	Park Avenue & 7th Street	
Intersection	CR7C; 0.31	Analysis Year	2017	
Signalized/Unsignalized	Unsignalized			
Input Data		Proposed Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		3ST		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 45,700 (veh/day)	15,380		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 9,300 (veh/day)	850		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes		0		0
Number of major-road approaches with right-turn lanes		0		0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes				0
Number of approaches with right-turn lanes				0
Number of approaches with left-turn signal phasing				--
Type of left-turn signal phasing for Leg #1				Permissive
Type of left-turn signal phasing for Leg #2				--
Type of left-turn signal phasing for Leg #3				--
Not Applicable				--
Number of approaches with right-turn-on-red prohibited				0
Intersection red light cameras (present/not present)				Not Present
Sum of all pedestrian crossing volumes (PedVol)				--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})				--
Number of bus stops within 300 m (1,000 ft) of the intersection				0
Schools within 300 m (1,000 ft) of the intersection (present/not present)				Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection				0
Locality:		Local System		

Proposed Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.31 to 0.37	
Date Performed	03/01/17	Common Name	Park Avenue from S 8th Street to S 7th	
Segment for Analysis	CR7C; 0.31-0.37	Analysis Year	2017	
Input Data		Proposed Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		3T		--
Length of segment, L (mi)		0.06		--
AADT (veh/day) is within range	AADT _{MAX} = 32,900 (veh/day)	15,300		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Not Present		Not Present
Auto speed enforcement (present / not present)		Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		3		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		284		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		Local System		

Proposed Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.38	
Date Performed	03/01/17	Common Name	Park Avenue & 8th Street	
Intersection	CR7C; 0.38	Analysis Year	2017	
Signalized/Unsignalized	Unsignalized			
Input Data		Proposed Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		4ST		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 46,800 (veh/day)	15,860		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 5,900 (veh/day)	1,580		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes		0		0
Number of major-road approaches with right-turn lanes		0		0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes				0
Number of approaches with right-turn lanes				0
Number of approaches with left-turn signal phasing				--
Type of left-turn signal phasing for Leg #1				Permissive
Type of left-turn signal phasing for Leg #2				--
Type of left-turn signal phasing for Leg #3				--
Type of left-turn signal phasing for Leg #4				--
Number of approaches with right-turn-on-red prohibited				0
Intersection red light cameras (present/not present)				Not Present
Sum of all pedestrian crossing volumes (PedVol)				--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})				--
Number of bus stops within 300 m (1,000 ft) of the intersection				0
Schools within 300 m (1,000 ft) of the intersection (present/not present)				Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection				0
Locality:		Local System		

Proposed Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.38 to 0.45	
Date Performed	03/01/17	Common Name	Park Avenue from S 9th Street to S 8th	
Segment for Analysis	CR7C; 0.38-0.45	Analysis Year	2017	
Input Data		Proposed Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		3T		--
Length of segment, L (mi)		0.07		--
AADT (veh/day) is within range	AADT _{MAX} = 32,900 (veh/day)	17,300		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		6		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		129		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		Local System		

Proposed Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.46	
Date Performed	03/01/17	Common Name	Park Avenue & 9th Street	
Intersection	CR7C; 0.46	Analysis Year	2017	
Signalized/Unsignalized	Unsignalized			
Input Data		Proposed Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		4ST		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 46,800 (veh/day)	18,030		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 5,900 (veh/day)	1,450		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes		0		0
Number of major-road approaches with right-turn lanes		0		0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes				0
Number of approaches with right-turn lanes				0
Number of approaches with left-turn signal phasing				--
Type of left-turn signal phasing for Leg #1				Permissive
Type of left-turn signal phasing for Leg #2				--
Type of left-turn signal phasing for Leg #3				--
Type of left-turn signal phasing for Leg #4				--
Number of approaches with right-turn-on-red prohibited				0
Intersection red light cameras (present/not present)				Not Present
Sum of all pedestrian crossing volumes (PedVol)				--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})				--
Number of bus stops within 300 m (1,000 ft) of the intersection				0
Schools within 300 m (1,000 ft) of the intersection (present/not present)				Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection				0
Locality:		Local System		

Proposed Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	CR7C	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.46 to 0.51	
Date Performed	03/01/17	Common Name	Park Avenue N of S 9th Street	
Segment for Analysis	CR7C; 0.46-0.51	Analysis Year	2017	
Input Data		Proposed Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		3T		--
Length of segment, L (mi)		0.05		--
AADT (veh/day) is within range	AADT _{MAX} = 32,900 (veh/day)	18,600		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		1		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		500		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		20		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		Local System		

Proposed Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.08	
Date Performed	03/01/17	Common Name	Park Drive & EB US 52 Ramp	
Intersection	SR93; 0.08	Analysis Year	2017	
Signalized/Unsignalized	Signalized			
Input Data		Proposed Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		3SG		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 58,100 (veh/day)	19,660		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 16,400 (veh/day)	2,160		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes				0
Number of major-road approaches with right-turn lanes				0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes		2		0
Number of approaches with right-turn lanes		1		0
Number of approaches with left-turn signal phasing		1		--
Type of left-turn signal phasing for Leg #1		Protected/Permissive		Permissive
Type of left-turn signal phasing for Leg #2		Permissive		--
Type of left-turn signal phasing for Leg #3		Protected		--
Not Applicable		Not Applicable		--
Number of approaches with right-turn-on-red prohibited		1		0
Intersection red light cameras (present/not present)		Not Present		Not Present
Sum of all pedestrian crossing volumes (PedVol)		20		--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})		4		--
Number of bus stops within 300 m (1,000 ft) of the intersection		0		0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present		Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		1 to 8		0
Locality:		State System		

Proposed Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.08 to 0.18	
Date Performed	03/01/17	Common Name	Park Drive from WB US 52 Ramp to EB US 52 Ramp	
Segment for Analysis	SR93; 0.08-0.18	Analysis Year	2017	
Input Data		Proposed Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		4U		--
Length of segment, L (mi)		0.1		--
AADT (veh/day) is within range	AADT _{MAX} = 40,100 (veh/day)	16,700		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		0		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		210		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		25		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		State System		

Proposed Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.19	
Date Performed	03/01/17	Common Name	Park Drive & WB US 52 Ramp	
Intersection	SR93; 0.19	Analysis Year	2017	
Signalized/Unsignalized	Signalized			
Input Data		Proposed Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		3SG		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 58,100 (veh/day)	14,690		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 16,400 (veh/day)	5,200		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes				0
Number of major-road approaches with right-turn lanes				0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes		1		0
Number of approaches with right-turn lanes		1		0
Number of approaches with left-turn signal phasing		0		--
Type of left-turn signal phasing for Leg #1		Permissive		Permissive
Type of left-turn signal phasing for Leg #2		Permissive		--
Type of left-turn signal phasing for Leg #3		Protected		--
Not Applicable		Not Applicable		--
Number of approaches with right-turn-on-red prohibited		0		0
Intersection red light cameras (present/not present)		Not Present		Not Present
Sum of all pedestrian crossing volumes (PedVol)		52		--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})		4		--
Number of bus stops within 300 m (1,000 ft) of the intersection		0		0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present		Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		1 to 8		0
Locality:		State System		

Proposed Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.19 to 0.37	
Date Performed	03/01/17	Common Name	Park Drive from Coryville Road to WB US 52 Ramp	
Segment for Analysis	SR93; 0.19-0.37	Analysis Year	2017	
Input Data		Proposed Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		4U		--
Length of segment, L (mi)		0.18		--
AADT (veh/day) is within range	AADT _{MAX} = 40,100 (veh/day)	17,100		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Not Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		1		--
Minor commercial driveways (number)		0		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		34		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		22		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		State System		

Proposed Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0.38	
Date Performed	03/01/17	Common Name	Park Drive & Coryville Road	
Intersection	SR93; 0.38	Analysis Year	2017	
Signalized/Unsignalized	Signalized			
Input Data		Proposed Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		4SG		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 67,700 (veh/day)	17,100		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 33,400 (veh/day)	500		--
Intersection lighting (present/not present)		Not Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes				0
Number of major-road approaches with right-turn lanes				0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes		2		0
Number of approaches with right-turn lanes		1		0
Number of approaches with left-turn signal phasing		1		--
Type of left-turn signal phasing for Leg #1		Permissive		Permissive
Type of left-turn signal phasing for Leg #2		Protected		--
Type of left-turn signal phasing for Leg #3		Protected/Permissive		--
Type of left-turn signal phasing for Leg #4		Protected		--
Number of approaches with right-turn-on-red prohibited		0		0
Intersection red light cameras (present/not present)		Not Present		Not Present
Sum of all pedestrian crossing volumes (PedVol)		50		--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})		5		--
Number of bus stops within 300 m (1,000 ft) of the intersection		0		0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present		Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		1 to 8		0
Locality:		State System		

Proposed Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0.38 to 0.43	
Date Performed	03/01/17	Common Name	Park Drive N of Coryville Road	
Segment for Analysis	SR93; 0.38-0.43	Analysis Year	2017	
Input Data		Proposed Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		4D		--
Length of segment, L (mi)		0.05		--
AADT (veh/day) is within range	AADT _{MAX} = 66,000 (veh/day)	17,100		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		10		15
Lighting (present / not present)		Not Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		0		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		40		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		22		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		State System		

Proposed Conditions: General Information and Data for Urban And Suburban Arterial Intersection				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoint	0	
Date Performed	03/01/17	Common Name	Park Avenue & 9th Street	
Intersection	SR93; 0	Analysis Year	2017	
Signalized/Unsignalized	Unsignalized			
Input Data		Proposed Conditions		HSM Base Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		4ST		--
AADT _{major} (veh/day) (total entering on major approaches)*	AADT _{MAX} = 46,800 (veh/day)	18,030		--
AADT _{minor} (veh/day) (total entering on minor approaches)*	AADT _{MAX} = 5,900 (veh/day)	1,450		--
Intersection lighting (present/not present)		Present		Not Present
Calibration factor, C _i		Varies, See Below		1.00
<u>Data for unsignalized intersections only:</u>				
Number of major-road approaches with left-turn lanes		0		0
Number of major-road approaches with right-turn lanes		0		0
<u>Data for signalized intersections only:</u>				
Number of approaches with left-turn lanes				0
Number of approaches with right-turn lanes				0
Number of approaches with left-turn signal phasing				--
Type of left-turn signal phasing for Leg #1				Permissive
Type of left-turn signal phasing for Leg #2				--
Type of left-turn signal phasing for Leg #3				--
Type of left-turn signal phasing for Leg #4				--
Number of approaches with right-turn-on-red prohibited				0
Intersection red light cameras (present/not present)				Not Present
Sum of all pedestrian crossing volumes (PedVol)				--
Maximum number of lanes crossed by a pedestrian (n _{lanesx})				--
Number of bus stops within 300 m (1,000 ft) of the intersection				0
Schools within 300 m (1,000 ft) of the intersection (present/not present)				Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection				0
Locality:		State System		

Proposed Conditions: General Information and Data for Urban And Suburban Roadway Segment				
General Information		Location Information		
Analyst	Steve Diebol, PE, PTOE	Route	SR93	
Agency or Company	The Mannik & Smith Group, Inc.	Logpoints	0 to 0.07	
Date Performed	03/01/17	Common Name	Park Avenue from EB US 52 Ramp to S 9th	
Segment for Analysis	SR93; 0-0.07	Analysis Year	2017	
Input Data		Proposed Conditions		HSM Base Conditions
Roadway type (2U, 3T, 4U, 4D, 5T)		3T		--
Length of segment, L (mi)		0.07		--
AADT (veh/day) is within range	AADT _{MAX} = 32,900 (veh/day)	16,600		--
Type of on-street parking (none/parallel/angle)		None		None
Proportion of curb length with on-street parking		0		--
Median width (ft) - for divided only		Not Present		15
Lighting (present / not present)		Present		Not Present
Auto speed enforcement (present / not present)		Not Present		Not Present
Major commercial driveways (number)		0		--
Minor commercial driveways (number)		1		--
Major industrial / institutional driveways (number)		0		--
Minor industrial / institutional driveways (number)		0		--
Major residential driveways (number)		0		--
Minor residential driveways (number)		0		--
Other driveways (number)		0		--
Speed Category		Posted Speed Greater than 30 mph		--
Roadside fixed object density (fixed objects / mi)		357		0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		20		30
Calibration Factor, Cr		Varies, See Below		1.00
Locality:		State System		