Parking & Traffic Assessment

City of Troy, Ohio

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WOOLPERT

GPD GROUP
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1 Introduction

This study is being prepared at the request of The City of Troy in association with an update to the *Downtown Troy Parking Assessment and Management Study* published in November 1996. The purpose of the parking portion of this study is to analyze the parking conditions within the study area to determine what, if any, parking deficiencies exist within the downtown area. The City of Troy downtown parking and traffic assessment study area is bounded by Water Street to the north, Mulberry Street to the east, Race Street to the south and Short Street to the west with the Square serving as the epicenter to the study area. The street system within the City of Troy downtown area is primarily a systematic grid of blocks that encompasses both on and off-street parking options. Within the study area, the City of Troy provides both angled and parallel on-street parking options, however these spaces are restricted to unmetered two (2) hour limits for the purpose of promoting parking turnover. Additionally, the City of Troy provides off-street public parking lots that primarily utilize two (2) hour time limits, however there are some parking spaces on the Square that utilize 15 minute parking restrictions. See Figure 1 on the following page for a map of the study area.

As a part of the parking study update, analysis was completed to evaluate the capacity of the roadways in the study area along with a review of the existing pedestrian signals at the four entry/exits of the Square. The roadways evaluated include North/South Market Street and West/East Main Street. The limits of the analysis on these roadways follow the bounds shown in Figure 1, Water Street to the north, Race Street to the south, Mulberry Street to the east and Short Street to the west. The Square was analyzed as a roundabout analysis since that was the best fit representation of the intersection configuration. The crash analysis followed the same limits in Figure 1 as well. Pedestrian activity was investigated at the Square to determine if the existing pedestrian signals are warranted. The traffic analysis is contained within Section 3.

Generally speaking, parking dynamics are complex, however they are primarily based on the human perception. It is a function of supply and demand that is governed by psychological (convenience expectations, ease of use and safety) and economic (value of time, user budgets, price of convenience, location and distance) variables, which is determined by the general parking public. The adaptation of these psychological and economic variables results in a truly distinctive parking behavioral pattern in a downtown urban environment. Thus, understanding these variables and how individuals use the parking supply within the City of Troy downtown area will help grasp the parking situation, and ultimately, evaluate perceived parking problems versus the actual parking problems, and which parking management strategies could be implemented to alleviate these issues. It is the goal to prioritize these factors through design to maximize the user's perception of parking options and availability.

Figure 1: Study Area Map

2 Parking Data Analysis

2.1 Parking Existing Conditions

A comprehensive parking inventory was obtained from the City of Troy to identify the specific locations that have available on- and off-street parking spaces within the study area. Restrictions, locations, parking types and other applicable data was included as a part of the inventory process. In total, the inventory identified 397 publically available spaces within the study area.

As stated above, on-street parking spaces were counted as a part of the parking inventory. This inventory was performed for each block primarily along the Main Street, Market Street, Cherry Street, N. Short Street and the Water Street corridors within the study area. The parking inventory determined that of the 397 spaces within the study area, 230 are for the use of on-street parking, while the remaining 167 spaces are for the use of off-street parking. See Table 1 for a summary of the on-street parking capacity available within the study area.

Table 1: On-Street Parking Capacity

On-Street Parking Location	Public Parking Capacity (Spaces)
Main Street Corridor	
Short Street to Plum Street	13
Plum Street to Cherry Street	27
Cherry Street to Market Street	12
Market Street to Walnut Street	13
Walnut Street to Mulberry Street	30
Market Street Corridor	
Race Street to Canal Street	21
Canal Street to Franklin Street	38
Franklin Street to Main Street	27
Main Street to Water Street	16
Short Street Corridor	
Main Street to Water Street	19
Water Street Corridor	
Short Street to Cherry Street	14
Totals	**230**

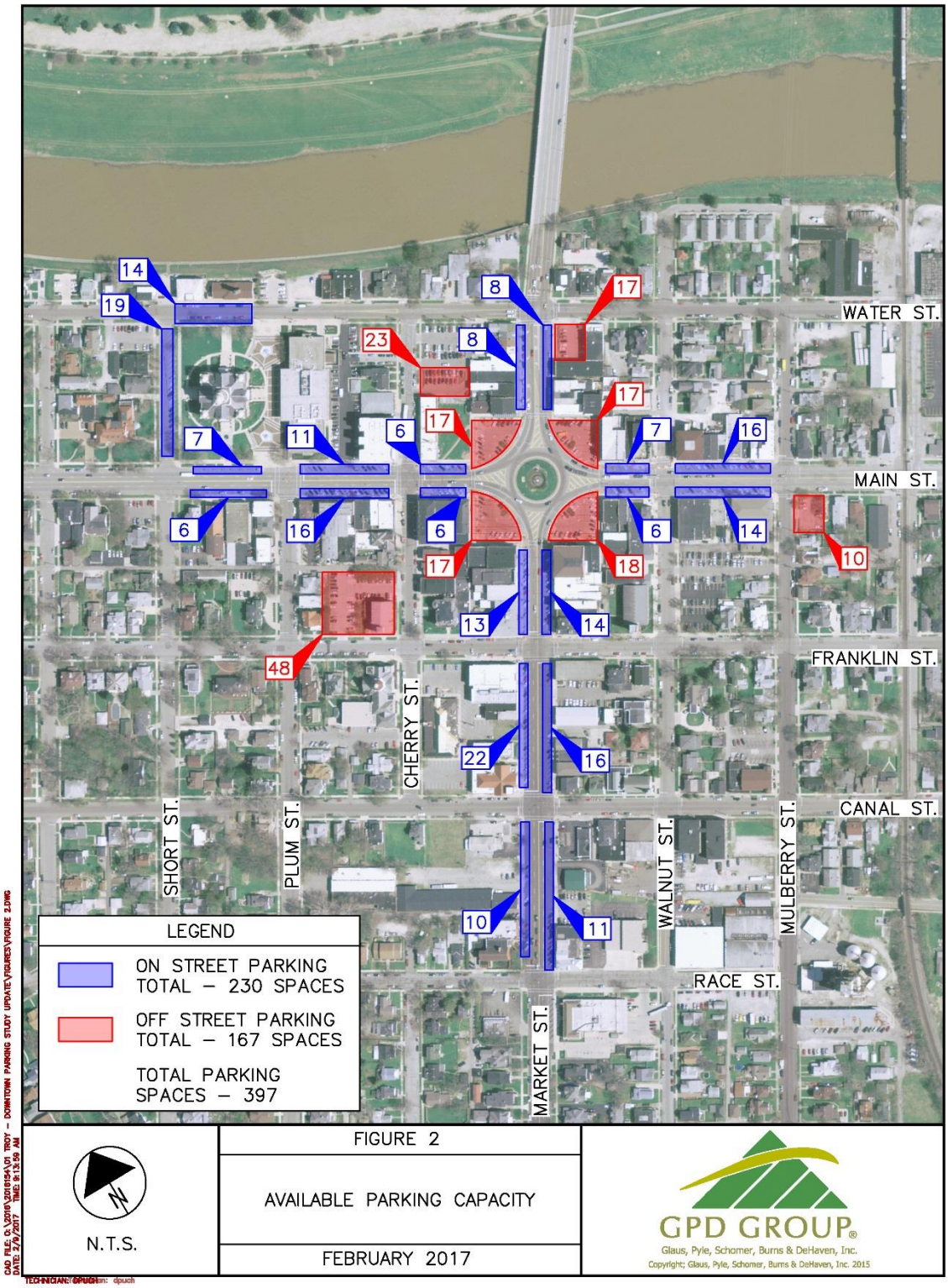
As shown in Table 1, the on-street parking inventory identified 230 general public parking spaces (approximately 58% of the publically available spaces within the study area).

In addition to the on-street parking spaces, the parking inventory included publicly accessible parking lots. The off-street parking inventory was performed for eight (8) public parking lots within the study area. The parking inventory determined that of the 397 publically available spaces within the study area, 167 are for the use of off-street parking. It is important to note that while private off-street parking exists within the study area, these spaces were not observed for occupancy levels. See Table 2 for a summary of the number of off-street parking spaces available within the study area.

Table 2: Off-Street Parking Capacity	
Parking Lot	Public Parking Capacity (Spaces)
Cherry Street Kiosk Lot	48
North Cherry Street Lot	23
Northwest Public Square Lot	17
Northeast Public Square Lot	17
Southeast Public Square Lot	18
Southwest Public Square Lot	17
Troy Rec Lot	17
Mulberry Lot	10
Totals	**167**

As shown in Table 2, the off-street parking inventory identified 167 general public parking spaces (approximately 42% of the publically available spaces within the study area). See Figure 2 on the following page for an aerial depicting the available parking capacity within the study area.

Figure 2: Available Parking Capacity



2.2 Parking Data

For this study, parking occupancy count data was obtained from the City of Troy Police Department. The recording of parking occupancy count data was performed for a two (2) week period for both on- and off-street parking locations within the study area. The following list outlines the days the City of Troy Police Department collected the parking occupancy data:

- Monday, March 7, 2016
- Tuesday, March 8, 2016
- Wednesday, March 9, 2016
- Thursday, March 10, 2016
- Friday, March 11, 2016
- Monday, March 14, 2016
- Tuesday, March 15, 2016
- Wednesday, March 16, 2016
- Thursday, March 17, 2016
- Friday, March 18, 2016

The parking occupancy counts were performed once per hour from 8:00 AM to 8:00 PM. This 12-hour period was selected due to the likelihood of capturing the peak parking period. The raw hourly parking occupancy data recorded by the City of Troy Police Department and is contained in **Appendix A**.

2.3 Parking Occupancy

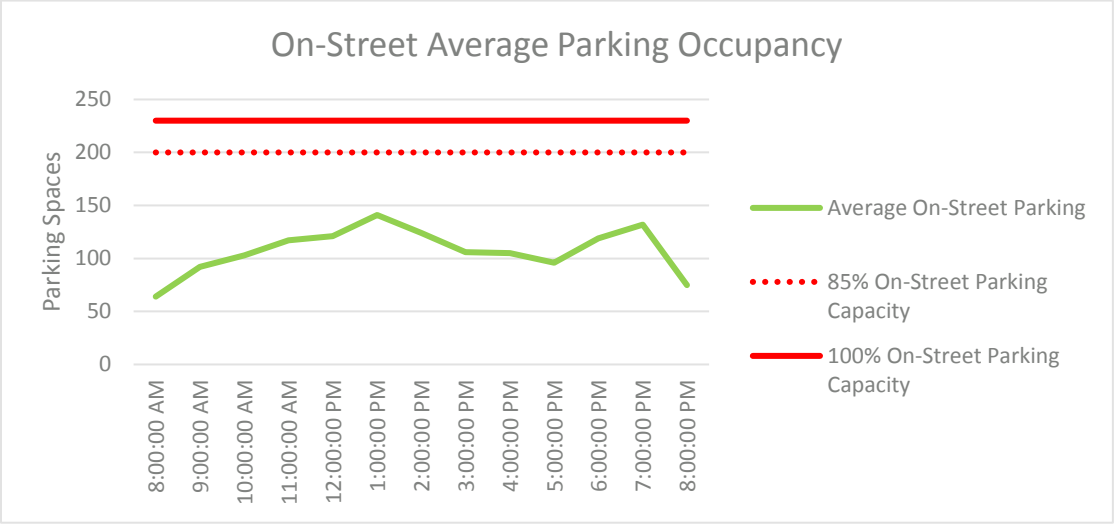
Based on the two (2) week period of raw parking occupancy count data, an average parking occupancy count was compiled for each parking location within the study area for the purpose of determining the peak hour of occupancy for both on- and off-street locations. See Table 3 for a summary of the average parking occupancy data for the entire study area.

Table 3: Average Parking Occupancy

	Time of Day													
	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	Available Capacity
On-street Occupancy	64	92	103	117	121	141	124	106	105	96	119	132	75	230
Off-Street Occupancy	34	54	73	87	107	104	88	83	86	91	118	121	87	167
Totals	98	146	176	204	228	245	212	189	191	187	237	253	162	397

Chart 1 details the number of occupied on-street parking spaces at each hourly interval for the study area. As specified in the Institute of Transportation Engineers (ITE) Parking Generation, 4th Edition handbook, a general guideline for parking capacity indicates that when on- and off-street parking locations reach an 85% occupancy rate, the parking location is perceived as full, as it becomes increasingly difficult to find a vacant spot when occupancy levels exceed this generalized threshold. Therefore this study will consider any on- or off-street parking location within the study area that exceeds an 85% occupancy rate to be at full capacity. The 85% and 100% capacity thresholds are delineated in the chart by a dashed and solid line respectively.

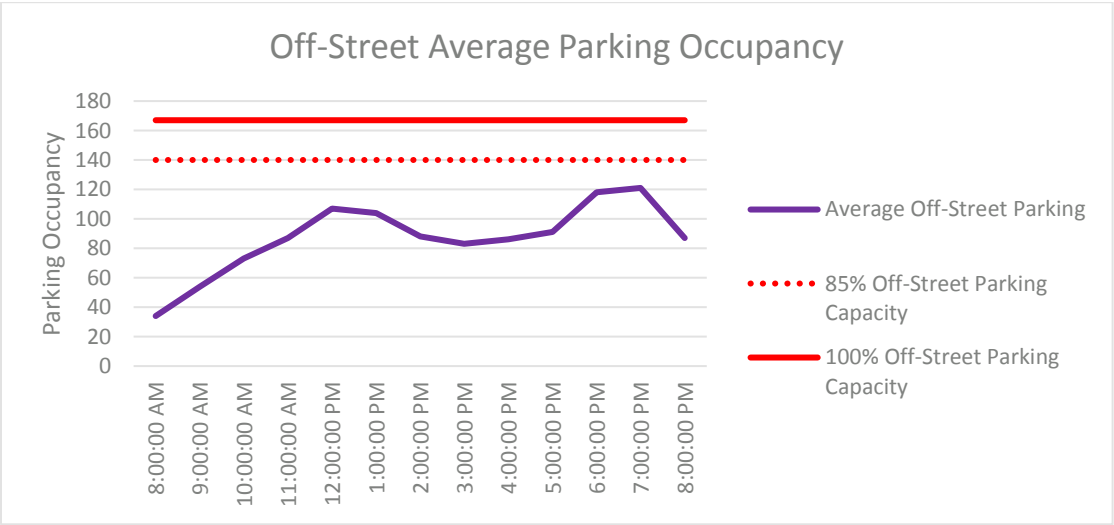
Chart 1: On-Street Average Parking Occupancy



As shown on Chart 1 and verified in Table 3, peak occupancy of the on-street parking conditions occurred during the 1:00 PM hour for an average weekday. The chart indicates a general increase in parking demand between 10:00 AM and 1:00 PM, as well as 5:00 PM and 7:00 PM. Note that on-street occupancy for the entire study area under the average weekday conditions never exceeded the 85% and 100% capacity thresholds, indicating spaces could be found throughout the study area during the highest hour of occupancy. While on-street parking spaces were found to be available during the peak hour, it is anticipated that locating an unoccupied space required users to dedicate more time and effort.

Chart 2 details the number of occupied off-street parking spaces at each hourly interval for the study area. In addition to showing the total number of occupied off-street parking spaces for the entire study area, the chart also displays the 85% and 100% capacity thresholds.

Chart 2: Off-Street Average Parking Occupancy



As shown on Chart 2 and verified in Table 3, peak occupancy of the off-street parking conditions occurred during the 7:00 PM hour for the average weekday. The chart indicates a general increase in parking demand between 8:00 AM and 12:00 PM, as well as 5:00 PM and 7:00 PM. Similar to the on-street average parking chart, off-street occupancy for the entire study area under average weekday conditions never exceeded the 85% and 100% capacity thresholds, indicating spaces could be found during the highest

hour of occupancy. Again, while off-street parking spaces were found to be available during the peak hour, it is anticipated that locating an unoccupied space required users to dedicate more time and effort.

The average peak occupancy count data (1:00 PM hour) for on-street parking locations within the study area were compared to the available parking capacity within each on-street parking corridor segment for the purpose of identifying general parking trends and locations of high parking utilization. See Table 4 for a summary of the on-street parking utilization within the study area.

Table 4: On-Street Parking Occupancy Summary

On-Street Parking Location	Available Capacity	Weekday Peak Occupancy
Main Street Corridor		
Short Street to Plum Street	13	10 77%
Plum Street to Cherry Street	27	17 63%
Cherry Street to Market Street	12	10 83%
Market Street to Walnut Street	13	7 53%
Walnut Street to Mulberry Street	30	19 63%
Market Street Corridor		
Race Street to Canal Street	21	11 52%
Canal Street to Franklin Street	38	11 29%
Franklin Street to Main Street	27	12 44%
Main Street to Water Street	16	13 81%
Short Street Corridor		
Main Street to Water Street	19	18 95%
Water Street Corridor		
Short Street to Cherry Street	14	13 93%
Total	***230***	***141*** **61%**

Note: Occupancy rates: Blue = 0% – 49%, Green = 50% - 74%, Yellow = 75% - 84%, Red = 85% - 100%

As shown in Table 4, two (2) locations (Short Street Corridor: Main Street to Water Street and Water Street Corridor: Short Street to Cherry Street) were found to meet or exceed the 85% capacity threshold, indicating the availability of on-street parking spaces are limited near the immediate areas surrounding the Miami County Courthouse. Generally, this type of pattern is typical of any downtown area as parking locations near high destination areas are likely to have a greater occupancy rate than parking locations further away.

The average peak occupancy count data (7:00 PM hour) for off-street locations within the study area were compared to the available parking capacity within each off-street parking location, for the purpose of identifying general parking trends and locations of high parking utilization. See Table 5 for a summary of the off-street parking utilization within the study area.

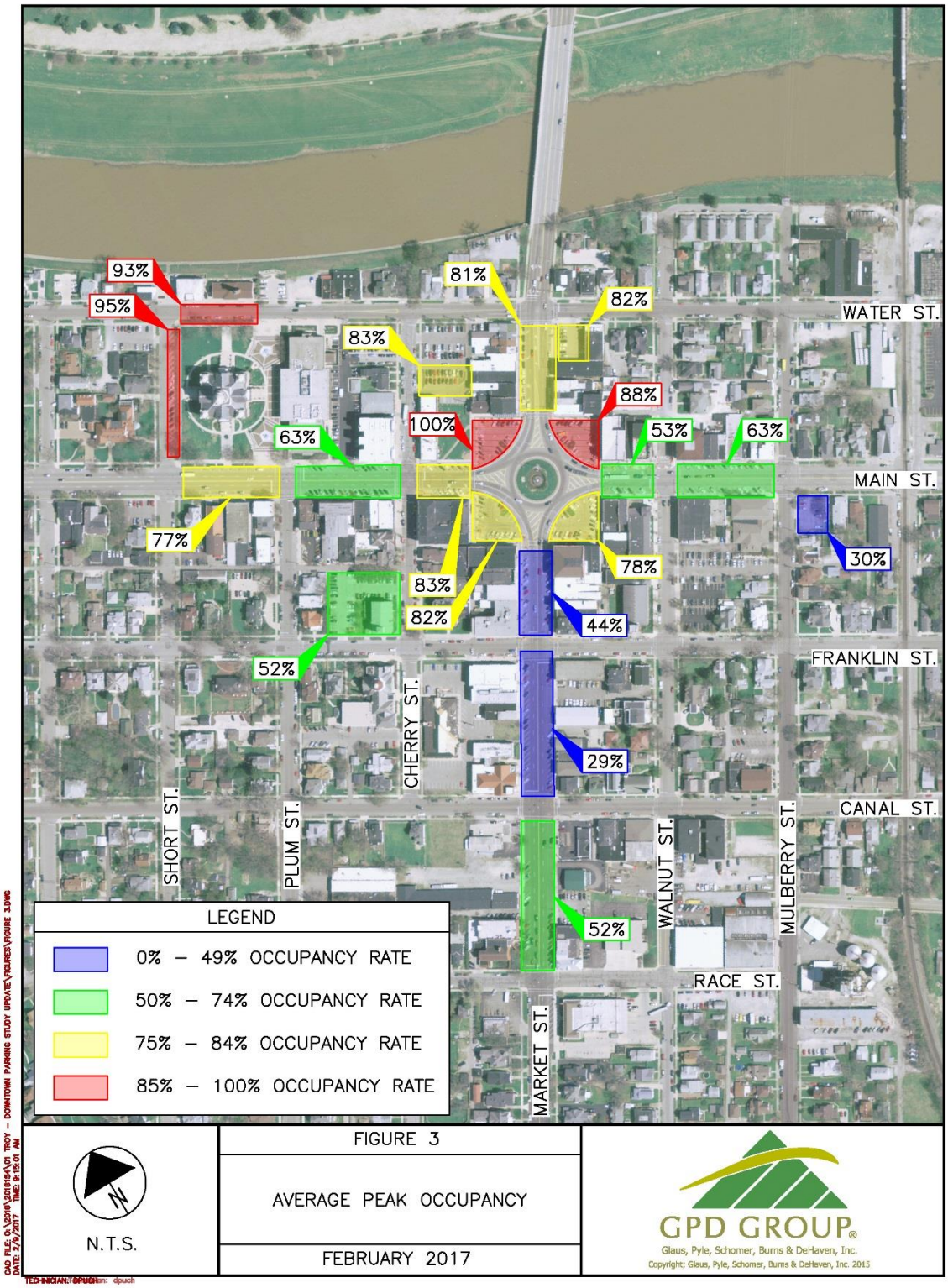
Table 5: Off-Street Occupancy Summary

Off-Street Parking Location	Available Capacity	Weekday Peak Occupancy
Cherry Street Kiosk Lot	48	25
		52%
North Cherry Street Lot	23	19
		83%
Northwest Public Square Lot	17	17
		100%
Northeast Public Square Lot	17	15
		88%
Southeast Public Square Lot	18	14
		78%
Southwest Public Square Lot	17	14
		82%
Troy Rec Lot	17	14
		82%
Mulberry Street Lot	10	3
		30%
Total	***167***	**121**
		72%

Note: Occupancy rates: Blue = 0% – 49%, Green = 50% - 74%, Yellow = 75% - 84%, Red = 85% - 100%

As shown in Table 5, two (2) locations (Northwest Public Square lot, Northeast Public Square Lot) were determined to exceed the 85% capacity threshold, with the Northwest Public Square Lot operating at a 100% occupancy rate. Similar to the results of the peak occupancy data for on-street parking locations, the total occupancy rates indicate that off-street parking is available within the study area during the highest period of occupancy, however, parking may not be immediately adjacent to the public's preferred destination. See Figure 3 for a map depicting the average peak occupancy count data for both on- and off-street parking locations.

Figure 3: Average Peak Occupancy



2.4 Parking Demand Analysis

In order to perform parking projections for the purpose of determining the anticipated parking demand within the study area, the City of Troy provided a comprehensive list of development and current land use data that included information regarding the businesses location, type of business, size in square feet, number of employees, general zoning information, and vacant land uses. This data was sorted by location and grouped into blocks corresponding to the downtown area. Using the Institute of Transportation Engineers (ITE) Parking Generation, 4th Edition handbook, which includes data from numerous parking studies of different land uses that have been performed by public agencies, developers, consulting firms and associations and submitted to ITE, a mathematical model was created for each block to forecast the anticipated future parking demand. The mathematical model projects the anticipated parking demand by multiplying a parking generation rate that is specific to a certain land use by the square footage the land use occupies. Note that the mathematical model will use a calibrated parking generation rate based on the data collected in the field to help establish the projected future parking demand for the City of Troy downtown area. Table 6 summarizes the recorded amount of 1st floor square feet for each respective downtown block within the study area, while Table 7 summarizes the calibrated parking rates established for The City of Troy versus the rates published by ITE. See **Appendix B** for a list of businesses within the study area, building square footage, number of employees, and zoning information.

Table 6: Summary of Land Use Gross Floor Area Square Footage

Land Use Category	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Block 7	Block 8	Block 9	Block 10	Block 11	Block 12	Block 13
Health/ Fitness Club (LUC 492)	-	-	1,884	3,062	-	-	-	-	-	-	-	-	-
Recreational Center (LUC 495)	-	-	2,720	-	-	-	-	-	-	-	-	-	-
Church (LUC 560)	-	1,320	-	-	-	-	-	-	-	2,750	-	-	-
Library (LUC 590)	7,332	-	-	-	-	-	-	-	-	-	-	-	-
Office Building (LUC 701)	8,673	17,801	5,097	2,990	9,606	20,764	33,791	6,823	-	-	10,636	2,329	5,459
Government Office Building (LUC 730)	102,479	-	-	-	-	-	-	-	1,200	3,410	-	-	-
Shopping Center (LUC 820)	7,528	10,992	33,391	22,203	-	2,100	39,427	30,525	20,158	4,956	7,771	2,470	8,364
High-Turnover (Sit-Down) Restaurant (LUC 932)	-	16,485	7,420	4,600	-	11,217	14,420	-	-	-	-	-	-
Vacant	-	993	-	6,873	1,628	-	8,710	-	2,301	1,862	17,295	10,151	2,800

Table 7: Parking Rate Summary			
Land Use Category	Code	ITE Average Parking Rates (Spaces per 1,000 GFA)	Parking Rates Established for Troy (Spaces per 1,000 GFA)
Health/Fitness Club	492	3.93	1.80
Recreational Center	495	1.82	1.80
Church	560	3.88	1.50
Library	590	1.99	1.80
Office Building	701	2.24	2.00
Government Office Building	730	4.15	3.25
Shopping Center	820	2.20	2.00
High-Turnover (Sit-Down) Restaurant	932	3.86	3.86
Vacant	---	---	2.25

The ITE Parking Generation, 4th Edition handbook publishes a range of peak hour parking generation rates that are based on national statistical data. Because this data encompasses information from a variety of locations throughout the country that includes suburban areas with high growth and low pedestrian accessibility, these rates are generally considered to be overly conservative for downtown urban locations that support more specialized land uses with an emphasis on pedestrian accessibility. To more accurately model the anticipated future parking demand for the City of Troy downtown area, the parking rates specified by the ITE handbook have been calibrated based on data collected in the field and engineering judgment.

While no specified land use parking generation rate was utilized for the vacant land uses, it was determined that an average of all the land use parking generation rates would be utilized in an effort to model the potential land uses that may utilize these spaces in the future. While there are many diverse businesses in the City of Troy downtown area, it should be noted that the ITE manual has limited data for unique land uses. Businesses that may not meet the complete ITE description of the above land uses were classified and placed into the 'best fit' land use category.

The City of Troy's pedestrian friendly downtown area promotes the use of shared parking, where visitors and customers can park at one location and walk to multiple destinations. This indicates that each land use does not necessarily need its own dedicated supply of parking, as most land uses have different demands throughout the day (i.e. restaurants may utilize a peak period around dinner time, while an office may have a peak period earlier in the morning). If each land use built enough parking to accommodate the peak parking demand, then the supply of spaces would be underutilized. To model this type of activity, this study will utilize the guidelines and strategies specified in the Urban Land Institute's (ULI) Shared Parking Manual, 2nd Edition. Two reductions were considered applicable for this study, peak hour adjustments (adjusting the parking utilization for a land use under the specified peak hour) and a reduction in parking demand for internal capture (referred to as a noncaptive adjustment where visitors and customers will park once, and opt to walk to other destinations throughout the study area). It's important to note that the ULI Shared Parking Manual does not specify specific rates for noncaptive adjustments, therefore observations of the study area and engineering judgment were utilized to perform this reduction.

Utilizing the first floor gross floor area and the calibrated parking rates, two (2) parking generation scenarios were created. The first scenario will analyze the theoretical anticipated unadjusted parking demand for the purpose of providing a baseline analysis for the study area. Then, utilizing the guidelines specified in the ULI manual, the second scenario, which is dependent on the baseline analysis, will analyze the theoretical anticipated adjusted parking demand. The second scenario is anticipated to provide the most accurate model for the study area.

Both scenarios assume that the generated parking demand will not be dependent on parking availability, price and location. It is important to note that some businesses within the study area provide dedicated on-site private parking. It is assumed that these spaces will be utilized by either employees or customers and therefore the demand for these spaces will be removed from the parking demand calculations. Table 8 summarizes the theoretical weekday unadjusted parking demand calculations and details the current and future parking surplus and deficits that are anticipated to be experienced under the unadjusted baseline analysis conditions.

Table 8: Scenario 1 - Summary of the Theoretical Unadjusted Parking Demand

Land Use Category	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Block 7	Block 8	Block 9	Block 10	Block 11	Block 12	Block 13	Totals
Health/ Fitness Club (LUC 492)	-	-	4	6	-	-	-	-	-	-	-	-	-	10
Recreational Center (LUC 495)	-	-	5	-	-	-	-	-	-	-	-	-	-	5
Church (LUC 560)	-	2	-	-	-	-	-	-	-	5	-	-	-	7
Library (LUC 590)	14	-	-	-	-	-	-	-	-	-	-	-	-	14
Office Building (LUC 701)	18	36	11	6	20	42	68	14	-	-	22	5	11	253
Government Office Building (LUC 730)	334	-	-	-	-	-	-	-	4	12	-	-	-	350
Shopping Center (LUC 820)	16	22	67	45	-	5	79	62	41	10	16	5	17	385
High-Turnover (Sit-Down) Restaurant (LUC 932)	-	64	29	18	-	44	56	-	-	-	-	-	-	211
									Total Unadjusted Parking Demand					**1235**
Current Unadjusted Demand														
Current Unadjusted Demand	**382**	**124**	**116**	**75**	**20**	**91**	**203**	**76**	**45**	**27**	**38**	**10**	**28**	**1422**
Private Parking	*200*	*5*	*-*	*1*	*12*	*9*	*1*	*-*	*40*	*49*	*12*	*4*	*5*	*338*
Parking Supply	*51*	*54*	*49*	*16*	*6*	*64*	*36*	*38*	*24*	*22*	*16*	*10*	*11*	*397*
Current Unadjusted Parking Surplus / Deficit	***-131***	***-65***	***-67***	***-58***	***-2***	***-18***	***-166***	***-38***	***19***	***44***	***-10***	***4***	***-12***	***-500***
Future Unadjusted Demand														
Vacant (future)	-	3	-	16	4	-	20	-	6	5	39	23	7	123
Future Unadjusted Demand	**382**	**127**	**116**	**91**	**24**	**91**	**223**	**76**	**51**	**32**	**77**	**33**	**35**	**1358**
Private Parking	*200*	*5*	*-*	*1*	*12*	*9*	*1*	*-*	*40*	*49*	*12*	*4*	*5*	*338*
Parking Supply	*51*	*54*	*49*	*16*	*6*	*64*	*36*	*38*	*24*	*22*	*16*	*10*	*11*	*397*
Future Unadjusted Parking Surplus / Deficit	***-131***	***-68***	***-67***	***-74***	***-6***	***-18***	***-186***	***-38***	***13***	***39***	***-49***	***-19***	***-19***	***-623***

As shown in Table 8, the general trend in the theoretical unadjusted parking demand for both current and future conditions indicates a deficit of parking spaces within the study area. Note that Blocks 9 and 10 indicate a surplus of parking spaces as this is primarily driven by the private parking deductions (the assumption that customers and employees may utilize these spaces on a regular basis). Note that Blocks 1 and 7 have the highest deficit in parking supply and this correlates to the parking occupancy rates observed in the Parking Occupancy section of the report.

As previously stated in this report, the Urban Land Institute's (ULI) Shared Parking Manual, 2nd Edition outlines guidelines and strategies to model both peak hour and noncaptive adjustments. These adjustments will be applied to the unadjusted current and future parking demand totals for each land use for the purpose of modeling shared parking principles within the study area. Table 9 summarizes the anticipated shared parking adjustments made for the weekday current and future parking conditions and details the anticipated reduction of parking demand for both current and future conditions.

Table 9: Anticipated Shared Parking Adjustments

Land Use Category	Code	Unadjusted Weekday Demand	Peak Hour Adjustment	Noncaptive Adjustment	Adjusted Demand
Health/Fitness Club	492	10	70%	100%	7
Recreational Center	495	5	70%	100%	4
Church	560	7	100%	100%	7
Library	590	14	100%	100%	14
Office Building	701	253	70%	80%	142
Government Office Building	730	350	70%	100%	245
Shopping Center	820	385	100%	70%	270
High-Turnover (Sit-Down) Restaurant	932	211	90%	80%	152
Vacant	---	123	80%	80%	79
Current Shared Parking Adjustments					
Total Current Parking Demand		1235			841
Reduction		32%			
Future Shared Parking Adjustments					
Total Future Parking Demand		1358			920
Reduction		32%			

As shown in Table 9, the shared parking calculations indicate a 32% calibration factor in the current and future parking demand for a typical weekday to best model the parking behavior.

The adjusted parking demand for each land use within the study area was redistributed back into their respective block based on a percentage of parking demand for each land use. For instance, the Health / Fitness Club land use is anticipated to have an unadjusted parking demand of 4 spaces in Block 3, and 6 spaces in Block 4. This means Block 3 has a 40% parking demand for this specific land use, while Block 4 has a 60% parking demand. The adjusted parking demand for the Health /Fitness Club was then redistributed based on these percentages. Table 10 summarizes the percentage of utilization based on land use.

Table 10: Percent of Utilization

Land Use	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Block 7	Block 8	Block 9	Block 10	Block 11	Block 12	Block 13	Totals
Health/ Fitness Club (LUC 492)	-	-	40%	60%	-	-	-	-	-	-	-	-	-	100%
Recreational Center (LUC 495)	-	-	100%	-	-	-	-	-	-	-	-	-	-	100%
Church (LUC 560)	-	29%	-	-	-	-	-	-	-	71%	-	-	-	100%
Library (LUC 590)	100%	-	-	-	-	-	-	-	-	-	-	-	-	100%
Office Building (LUC 701)	7%	14%	4%	2%	8%	17%	27%	6%	-	-	9%	2%	4%	100%
Government Office * Building (LUC 730)	96%	-	-	-	-	-	-	-	1%	3%	-	-	-	100%
Shopping Center (LUC 820)	4%	6%	17%	12%	-	1%	21%	16%	11%	3%	4%	1%	4%	100%
High-Turnover (Sit-Down) Restaurant (LUC 932)	-	30%	14%	9%	-	21%	26%	-	-	-	-	-	-	100%
Vacant (future)	-	2%	-	13%	3%	-	16%	-	5%	4%	32%	19%	6%	100%

Using the percentages outlined in Table 10, the adjusted parking demand, shown on Table 9 was redistributed throughout the study area. Table 11 summarizes the theoretical adjusted parking demand calculations and details the current and future parking surplus and deficits that are anticipated to be experienced under the adjusted conditions (Scenario 2).

Table 11: Scenario 2 - Summary of the Theoretical Adjusted Parking Demand

Land Use Category	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Block 7	Block 8	Block 9	Block 10	Block 11	Block 12	Block 13	Totals
Health/ Fitness Club (LUC 492)	-	-	3	4	-	-	-	-	-	-	-	-	-	7
Recreational Center (LUC 495)	-	-	4	-	-	-	-	-	-	-	-	-	-	4
Church (LUC 560)	-	2	-	-	-	-	-	-	-	5	-	-	-	7
Library (LUC 590)	14	-	-	-	-	-	-	-	-	-	-	-	-	14
Office Building (LUC 701)	10	20	6	3	11	24	38	8	-	-	13	3	6	142
Government Office Building (LUC 730)	234	-	-	-	-	-	-	-	3	8	-	-	-	245
Shopping Center (LUC 820)	11	15	47	32	-	4	55	43	29	7	11	4	12	270
High-Turnover (Sit-Down) Restaurant (LUC 932)	-	46	21	13	-	32	39	-	-	-	-	-	-	151
													Total Adjusted Parking Demand	**840**
Current Adjusted Demand														
Current Adjusted Demand	**269**	**83**	**81**	**52**	**11**	**60**	**132**	**51**	**32**	**20**	**24**	**7**	**18**	**840**
Private Parking	*200*	*5*	*0*	*1*	*12*	*9*	*1*	*0*	*40*	*49*	*12*	*4*	*5*	*338*
Parking Supply	*51*	*54*	*49*	*16*	*6*	*64*	*36*	*38*	*24*	*22*	*16*	*10*	*11*	*397*
Current* Adjusted *Parking Surplus / Deficit	***-18***	***-24***	***-32***	***-35***	***7***	***13***	***-95***	***-13***	***32***	***51***	***4***	***7***	***-2***	***-105***
Future Adjusted Demand														
Vacant (future)	0	2	0	10	3	0	13	0	4	3	25	15	4	79
Future Adjusted Demand	**269**	**85**	**81**	**62**	**14**	**60**	**145**	**51**	**36**	**23**	**49**	**22**	**22**	**919**
Private Parking	*200*	*5*	*0*	*1*	*12*	*9*	*1*	*0*	*40*	*49*	*12*	*4*	*5*	*338*
Parking Supply	*51*	*54*	*49*	*16*	*6*	*64*	*36*	*38*	*24*	*22*	*16*	*10*	*11*	*397*
Future* Adjusted *Parking Surplus / Deficit	***-18***	***-26***	***-32***	***-45***	***4***	***13***	***-108***	***-13***	***28***	***48***	***-21***	***-8***	***-6***	***-184***

As shown in Table 11, with the theoretical adjusted parking demand, it is anticipated that the study area models an overall deficit of 105 parking spaces under the current conditions, and projects an overall deficit of 184 parking spaces under the future conditions. See Figure 4 for a map depicting the theoretical current generated parking surplus / deficit, while Figure 5 depicts the theoretical future generated parking surplus / deficit.

Figure 4: Current (Scenario 2) Theoretical Parking Surplus/Deficit

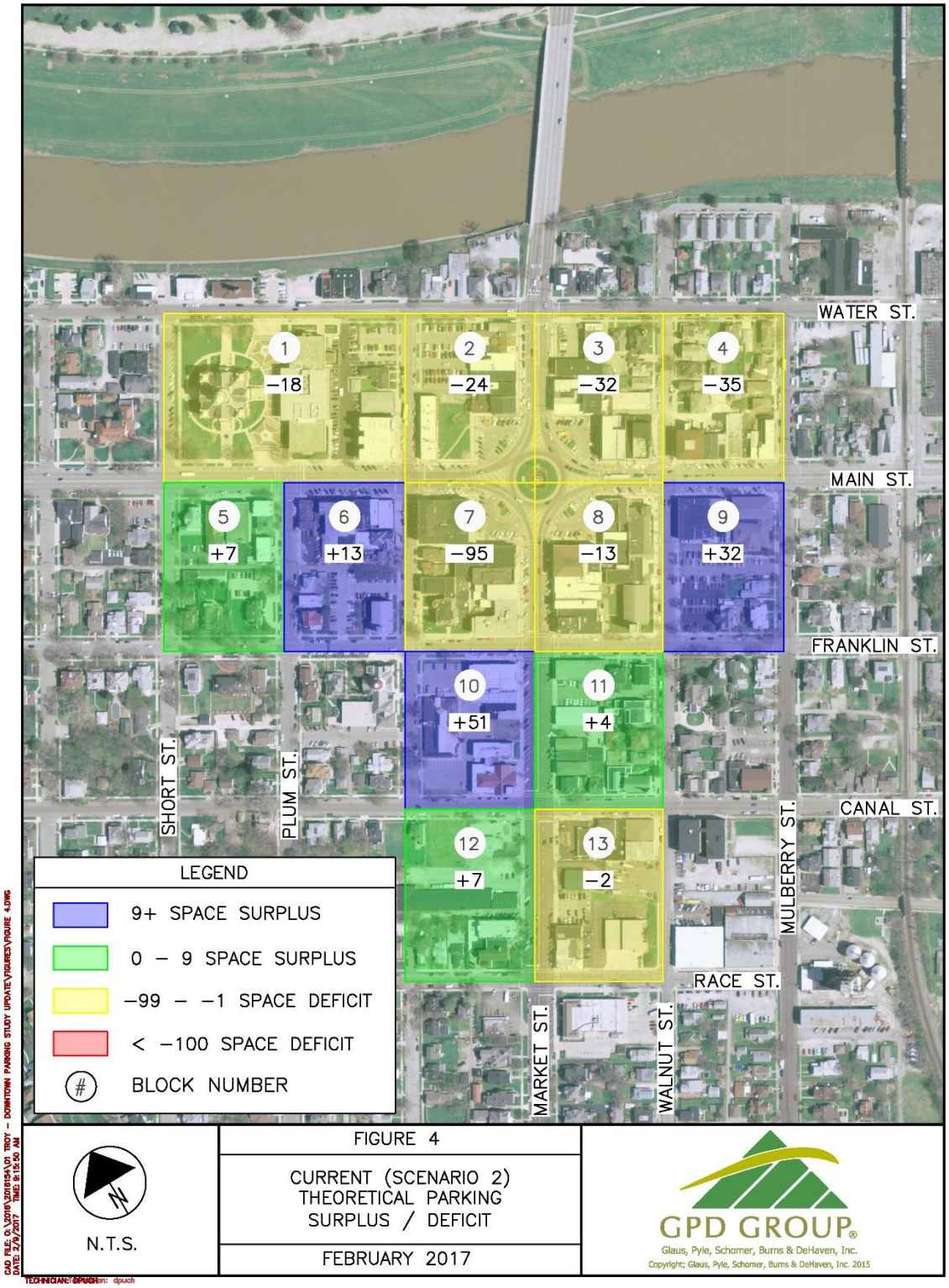
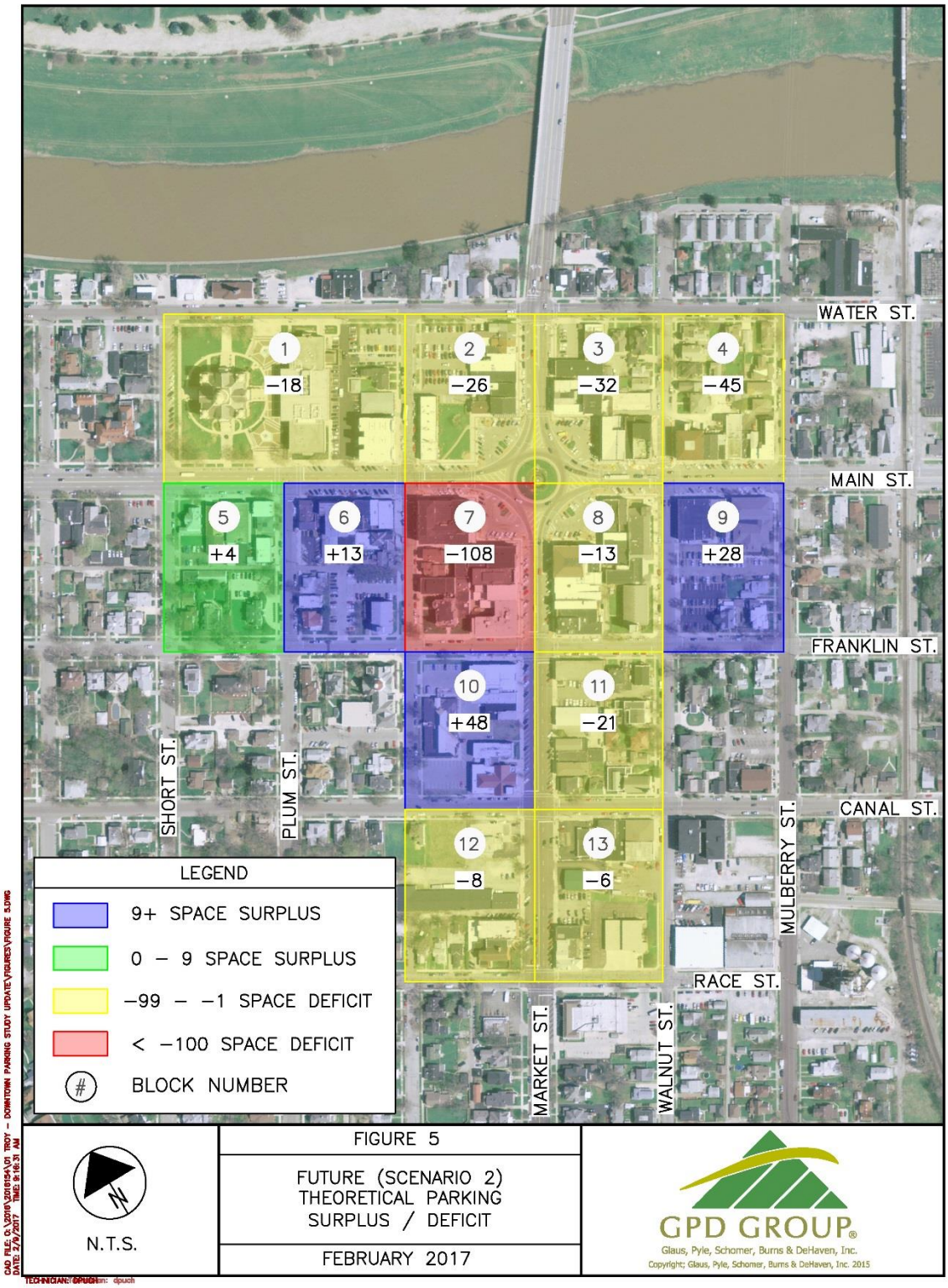


Figure 5: Future (Scenario 2) Theoretical Parking Surplus/Deficit



Note that scenario 2, (Figure 4 and Figure 5) is anticipated to represent a conservative, worse case modeled representation of the parking demand in the downtown area as the computations represent the maximum densities each land use utilizes (i.e. the mathematical model assumes every square foot of the land use is being utilized, and does not take into account unoccupied spaces that may not generate parking demand (i.e storage space). Again, this analysis method provides a worse case estimate of the future potential parking demand so the study will account for future maximum growth within the current land use buildings. Under these circumstances, this study believes the current parking situation is a perceived issue, however, the City of Troy should plan for the potential future growth of the parking demand in the downtown area.

2.5 Public Survey

As a part of this study, an online downtown parking survey was created to reach out to business owners within the study area for the purpose of gaining a qualitative input from the actual users of the parking system. The survey was administered utilizing the online software service SurveyMonkey, which allows for the intuitive creation, administration and analysis of online surveys. The survey link was distributed within the downtown area by the City of Troy with an informative flyer that directed the respondent on how to access the survey along with the ultimate goal of addressing parking concerns.

Of the estimated 170 businesses within the study area, the online downtown parking survey received 55 responses. Of the 55 survey responses, the breakdown was as follows: 95% of the survey responses identified themselves as the Main Response (the business owner), 4% identified themselves as the Secondary Response (Business employee), while the remaining 1% identified themselves as a resident. The survey summary reports were analyzed for the purpose of gaining a better understanding of the similarities or differences of opinions and attitudes towards parking in the City of Troy downtown area. The detailed summary reports for each survey respondent are included in **Appendix C**.

A general summary of the findings revealed by the survey responses include:

- Business owners believe that the bulk of their employees attempt to utilize both on- and off-street parking locations, however the data indicates significantly more employees park on-street as opposed to off-street.
- Respondents indicate that 61% of their customers park on-street.
- The majority of customers are estimated to stay at a business either less than 1 hour (42%), or between 1 to 2 hours (35%).
- On a typical weekday, the majority of the respondents believe finding a parking space downtown is either somewhat easy, 1–3 minutes (38%) or somewhat difficult, 3-5 minutes (33%).
- On a typical weekday lunchtime, the majority of the respondents believe finding a parking space is either somewhat difficult, 3-5 minutes (36%) or difficult, greater than 5 minutes (44%).
- On a typical weekend or evening, the majority of the respondents believe finding a parking space is either somewhat easy, 1-3 minutes (24%) or somewhat difficult, 3-5 minutes (36%).
- 45% of respondents have observed employees parking in front of their businesses on a daily basis.
- 67% of the respondents believe that the current parking situation within the downtown area deters customers from their business.
- 59% of the respondents believe that on-street parking enforcement within the downtown area is inconsistent.

- 44% of the respondents believe that $-.00 - $-.50 per hour is a reasonable fee to pay for on- and off-street parking, while 38% of the respondents are not willing to pay for parking.

- 98% of the respondents believe the City/tax dollars should pay for the cost of building and maintaining parking facilities.

- Respondents either strongly agree or agree that there is insufficient parking in the downtown area.

- Respondents either strongly agree or agree that the time frame allowed for parking at one location is not long enough for customer's needs.

- Respondents either disagree or strongly disagree that better parking enforcement / increased fines for parking violations are needed.

The final question of the online downtown parking survey asked for respondents to provide any additional thoughts, comments and/ or recommendations they may have regarding the current parking accommodations within the downtown area. The following list outlines some of the most common and repeated comments that were submitted as a part of the online downtown parking survey:

- One of the most predominant and repeated comments obtained from the final question of online downtown parking survey was the need for (or in support of) additional parking locations.

- Respondents are concerned with the 2 hour parking time restrictions. It is believed that this restriction keeps customers from walking downtown, eating lunch or dinner, or visiting multiple stores, without moving their vehicle multiple times. Business owners are concerned with the loss of commerce and revenue under the 2 hour time restrictions.

- Respondents are concerned with the number of employees parking in front of businesses within the downtown area, as it is believed that these occupied parking spaces are taking away from customer parking that promotes the utilization of the business. Respondents would like better parking enforcement to decrease the occurrence of this issue.

- Respondents are concerned with the lack of accessible and free places they may direct their employees to park.

- Respondents believe the Cherry Street Kiosk Lot metering system is confusing. They believe the payment kiosk has too many key prompts, and often times the kiosk does not work. Additionally, the lot is perceived as inaccessible to disabled users as the parking spaces are too far away from the payment kiosk. Respondents would like more/additional signage that delineates parking rates and fines.

2.6 Parking Management

While the observed field data indicates that parking spaces are available throughout the study area over the duration of an entire day, the perception, according to survey respondents, is that there is parking 'problem' in the downtown area. Parking dynamics in a downtown area are complex, but are fundamentally driven by human behavior. It is a function of supply and demand. A specific parking demand is governed by psychological (convenience expectations) and economic (value of time, price of convenience) variables determined by the general parking public. The outcome of these said variables results in distinctive parking behavioral patterns that governs the way users perceive a parking 'problem'. By attempting to understand these behavioral beliefs, it can be determined which parking management strategies are best suited to solve the problem.

In general, people want to park as close to their destination as possible and they are usually unwilling to search for extended period of time to find an available parking space. The type of trip destination also factors into this decision. A scheduled appointment will allow a longer duration to find parking while a shopping or restaurant trip is discretionary and lack of perceived available parking may change the trip destination. When occupancy rates are high, this leads circling, traffic congestion and an increased perception

that parking spaces are unavailable even when there are unoccupied parking spaces. Moreover, parking in a downtown setting is often times distributed amongst various blocks and streets and this requires users to actively search for spaces. Finally, the survey indicates downtown employees are occupying prime parking spaces that further challenges the ability to supply and meet parking expectations. All three issues define the parking 'problem' and are influenced by the expectation that a parking spot is only available if it's within a distance from the destination that one is willing to walk.

Generally, strategies for managing parking within a downtown area go beyond just supplying parking spaces. It is the development of policies and practices that can accommodate high levels of parking demand within the constraints of limited geographic space. A comprehensive and well managed parking system should have the ultimate goal of providing convenient and available parking that can easily be found and clearly defines regulations and fines. An effective parking management system utilizes key elements that include parking strategies, policies and regulations, and the management and enforcement of those policies. The following list describes effective parking management strategies and potential ideas for the City of Troy to employ:

- Marketing

  Marketing efforts should be directed towards downtown employers, employees and visitors to the downtown area. These initiatives could include providing brochures, maps, parking information kiosks and on-line information. The information contained in these initiatives should include parking regulations, parking locations (both on- and off-street), hours of enforcement, special event parking, fines, permits and payment information, along with any potential changes to the parking system. By providing these materials, visitor familiarity with the downtown area is enhanced which improves parking confidence and attracts more visitors to the downtown area.

- Parking Meters and Parking Enforcement

  Strategies such as limiting free parking locations and adding parking meters or payment kiosks offer the ability to regulate the use of the parking spaces. If there is a disincentive for abusing parking regulations, then violators of those parking regulations may be deterred from abusing the posted regulations. Parking meters offer the ability to control occupancy through the use of pricing. Short term parking spaces in areas with high occupancy levels and demand should be priced higher than areas of lower occupancy in an effort to control occupancy levels and encourage longer-term parkers to park at another location further away from the high destination area. Parking meters have the ability to dynamically change rates to appropriately serve the community (i.e. reduced/free rates after a certain time during the day, or a change in rates for special events). Additionally, the revenue obtained from metered parking could be used to fund enforcement, marketing, and mobility management programs throughout the City. However, parking meters do have some potential drawbacks. First and foremost, if the metered parking is not managed or enforced, then the purpose behind the meter has been voided. Additionally, metered parking has an initial purchase and installation cost, the potential to clutter the streetscape and can be viewed as an overall eyesore.

  Parking enforcement should cover the entire City parking system and should vigilantly enforce regulations. Parking enforcement should be firm, but should not deter customers from the downtown area. Good enforcement policies provides a fine structure that gives leniency to first time offenders, but penalizes repeat abusers. Monitoring these types of systems are often times aided with the help of computerized parking enforcement and handheld parking ticket writing systems.

- Shared Parking Techniques and Mobility Programs

  Private parking in a downtown setting is often underutilized on certain days and times. The City of Troy could pursue shared parking techniques with local businesses, government offices and churches. An agreement or lease could be made with these types of land uses to allow visitors, customers and employees to park in these private parking locations during their respective off-peak periods. Some examples include the following:

  - The City could attempt to lease parking from a Church property
  - Permit the public to park in the reserved courthouse parking spaces on a non-court day such as weekends and sign the lots accordingly.
  - Promote local businesses to share private parking thru the use of peak hour offsets (an office could allow employees at a restaurant to use their private parking after hours).

  The City of Troy could consider mobility programs (shuttle services) from locations further away from the downtown area. The City could promote the use of parking lots near the Troy Aquatic Park, parks and baseball fields, and the fairgrounds where shuttle services could drop visitors and / or business employees off near the center of the downtown area. Additionally, parking lots could be constructed further away from the downtown area at a cheaper price and construction may be less impactful to the downtown area.

- On-Street Parking Conversions

  On-street parking is a key factor in the economic development of a downtown area. Due to the fact that multiple motorists can utilize a single space throughout the duration of an entire day, on-street parking allows for an efficient way to directly access businesses located adjacent to the street. On-street parking promotes pedestrian activity and provides space between the edge of the traveled way and the sidewalk.

  Throughout most downtown areas, three (3) general types of on-street parking configurations can be found on most streets. These three (3) types of on-street parking configurations, better known as parallel parking, angled parking, and back-in parking each have general advantages and disadvantages. The following outlines these advantages and disadvantages for each of the three (3) on-street parking configurations:

  Parallel Parking – One of the most widely used types of on-street parking, parallel parking, has many advantages when used in an urban setting. Generally, motorists are familiar with this type of on-street parking configuration which promotes the utilization of the allotted space. Motorists can exit this type of parking space conveniently and are able to visually see conflicting vehicles rather easily. Additionally, parallel parking requires the least amount of encroachment to the curb and sidewalks. However, parallel parking does have disadvantages. While it is easy for motorists to exit a parallel parking space, it has been regarded as one of the more difficult spaces to enter. Entering vehicles generally cause a small amount of delay and traffic congestion. Finally, parallel parking utilizes the lowest parking density out of the three (3) types of on-street parking, making the conversion to parallel parking less desirable in locations with high parking demands.

  Angled Parking – Similar to parallel parking, angled parking is another common type of on-street parking and also has many advantages when used in an urban setting. Again, motorists are familiar with this type of on-street parking configuration which promotes the utilization of the allotted space. Generally, angled parking is the easiest type of on-street parking space for a motorist to enter. When utilizing this space, motorist don't have to worry about opening their car door into traffic. Finally, angled parking utilizes a high parking density, as more parking stalls can be striped in an allotted amount of space compared to parallel parking. However, there are some drawbacks to angled parking. Visibility is low when exiting the space and while it is easy for motorist to enter the space, it can be difficult to exit due to the fact that motorist are backing into oncoming traffic. Exiting vehicles generally cause a small amount of delay and traffic congestion. Finally, angled parking requires more space to be taken from the curb and sidewalk.

Back-In Parking – Out of the three (3) types of on-street parking configurations, back-in parking is generally regarded as the least common. Motorists can exit this type of parking space conveniently and are able to visually see conflicting vehicles rather easily. When utilizing this space, motorists do not have to worry about opening their car door into traffic. Similar to angled parking, back-in parking utilizes a high parking density, as more parking stalls can be striped in an allotted amount of space compared to parallel parking. However, back-in parking does have drawbacks. It can be difficult for motorist to back into the parking stall. Additionally, due to the fact that motorist are required to back into the parking stall, vehicles wishing to park can cause a small amount of delay and traffic congestion similar to that associated with parallel parking.

The City of Troy could consider converting the parallel parking within the study area to angled parking in an effort to increase the amount of on-street parking available to the public. This could be completed by potentially converting the Square into a modern roundabout, and implementing a road diet along the Main Street and Market Street Corridors. Such modifications would typically entail the reduction from two (2) thru lanes in each direction to one (1) thru lane in each direction with the excess pavement used to provide left turn lanes and additional width for the conversion of parallel parking spaces to angled parking.

Additionally, if in the future the City wishes to implement bike lanes within the downtown area to complement the City of Troy's Trail System, then the AASHTO Guide for the Development of Bicycle Facilities (2012) should be utilized. This Guide states "Bike lanes should normally not be placed adjacent to conventional front-in diagonal parking, since drivers backing out of parking spaces have poor visibility of a bicyclist in the bike lane. The use of back-in diagonal parking can help mitigate the conflicts normally associated with bike lanes adjacent to angle parking." Under these specifications, the City should consider back-in angled parking if future bike lanes are constructed within the study area. Note that bike lanes and other active transportation initiatives may allow for an increase in walking and bike trips and a potential decrease in parking space dependency. See **Appendix D** for the City of Troy's Trail Connectivity Master Plan.

- Form a Downtown Parking Committee

  Managing the parking within the downtown area should be advertised and coordinated amongst the City of Troy Public Service staff, business owners, stakeholders and residents. The purpose behind forming these committees are to create stronger coordination, collaboration, and respect amongst the entities that utilize parking within the downtown area on a regular basis. Delegating responsibilities such as voicing input on long term parking improvements as well as monitoring day-to-day parking needs may offer the city invaluable information that will directly benefit the community.

  Moreover, cities, for instance the City of Columbus, are organizing parking advisory teams that include representatives of the business community, tourism and recreational neighborhoods whose purpose is to advise and recommend improvements and changes to the city about the current downtown parking situation.

- Residential Parking and City Zoning

  Previously, the City of Troy managed parking in front of residential properties through the use of parking meters. It was determined in the 1996 *Downtown Troy Parking Assessment and Management Study* that these meters were placed in an inconsistent manner with varying time limits and costs. This resulted in complaints from residents in the downtown area and the City of Troy was faced with the issue of either removing the meters in front of residential properties, potentially increasing the long term parking for employees but potentially decreasing the parking availability for residents, or keeping the meters in place which would seemingly be unresponsive to residential needs. Ultimately, the 1996 study recommended to keep the meters in place, price the meters consistently and designate some of the on-street spaces as two (2) hour free zones. Later, the City of Troy opted to remove parking meters in front of residential properties and converted many of these spaces to unrestricted use.

Today, the City of Troy is again faced with balancing the parking needs of visitors, employees and residents of the downtown area. Currently, the City of Troy Zoning code, Section 1155.04, Subsection (a),(b) and (d) stipulate that single and multi-family dwellings must provide a minimum of two (2) parking spaces for each dwelling unit, and Rooming Houses shall provide one (1) parking space for each two (2) roomers or boarders based on the designed capacity of the building plus two (2) spaces for a resident owner or resident manager. These rates specified in the Troy City Zoning Code are comparable to the ITE Parking Generation, 4th Edition handbook, as it estimates the need for two (2) parking spaces per single-family housing and approximately one (1) space for low/mid-rise apartment dwelling. This indicates that the City of Troy's zoning code accurately represents to the anticipated parking demand generated by these land uses.

According to ITE Trip Generation Manual, 9th Edition, the two (2) parking spaces that are anticipated to be needed by a single-family house are anticipated to generate approximately ten (10) trips throughout the day (5 entering and 5 exiting). For example, two (2) people leaving for work would represent 4 trips (2 trips to work and 2 trips from work). This land use has the highest trip generation rate per dwelling unit of all residential uses because they are the largest units in size and have more residents and vehicles than any other residential land uses. Note that this trip generation rate is geared towards suburban residential subdivisions and it is anticipated that the projected daily trips could be less than 10 trips given the denser land use and other modes of travel (i.e. walking, bikes and ride sharing).

When investigating apartment dwellings, the one (1) space that is anticipated to be needed is anticipated to generate approximately six (6) trips throughout the day (3 entering and 3 exiting). These rates and number of trips generated by each residential land use are used to gain a sense of the magnitude of utilization of the number of spaces that are generated by the land use.

The current zoning within the downtown area does not restrict the development of residential properties, which indicates there is a potential demand for long term parking within the downtown area. A potential issue is that the urban downtown environment provides little opportunity to expand the long term parking supply. Research indicates numerous cases where communities with an urban downtown area provide a residential parking permit program. These permit programs grant overnight parking privileges (8 PM – 8 AM) to residents of the downtown area for spaces that typically have hourly restrictions. Generally, applicants must provide proof of residency, such as piece of mail with the applicant's name, address, and postmarked within the last 30 days, picture identification, such as a driver's licenses, and a copy of the vehicle registration for which they wish to display the permit. Generally, cities within these case studies charge annual or monthly fees to renew the permit.

Typically, within the resident parking permit program timeframe (8 PM – 8 AM), land uses that compete for parking demand would include the end of the dinner period (restaurant land use) and land uses that offer evening entertainment (theatres, community halls etc.). Land uses such as government and business offices, fitness and recreational centers, libraries and a significant portion of retail uses typically offer little parking demand during this period, indicating much of the short term parking is available for use in the downtown area. Cities are now serving residential parking needs within downtown areas by better utilizing the current supply of parking spaces by dynamically changing short term parking regulations during off-peak period.

Finally, cities are now placing some responsibility on the private developer to provide dedicated long term parking that is integrated into the newly constructed residential development. If the private developer does not provide the specified amount of parking spaces, then cities may have the option to make the private developer financially responsible for every space short of the requirements.

An additional case study published by the Mid-Ohio Regional Planning Commission (MORPC) on good parking management strategies can be found in **Appendix E.** Additional citywide parking case studies can also be found in **Appendix E**.

In addition to effective parking management strategies, this study investigated the handicap accommodations for the seven (7) off-street parking locations. Americans with Disability Act (ADA) requires one (1) handicap space for parking lots that utilize 1 – 25 spaces, and two (2) handicap spaces for parking lots that utilize 26 – 50 spaces, where of the two (2) spaces handicap spaces provided, one (1) handicap space must be van accessible. These spaces must be a minimum of eight (8) feet wide and must have a minimum accessible aisle of five (5) feet. Van accessible spaces must have either an eleven (11) foot wide space with a five (5) foot wide aisle or an eight (8) foot wide space with an eight (8) foot aisle. Table 12 outlines the required number of ADA handicap spaces for the off-street locations within the study area.

Table 12: Off-Street Handicap Space Summary

Off-Street Parking Location	Number of Parking Spaces Provided	Number of Required Handicap Spaces	Number of Provided Handicap Spaces	ADA Compliant
Cherry Street Kiosk Lot	48	2	2	Yes
Northwest Public Square Lot	17	1	1	Yes
Northeast Public Square Lot	17	1	1	Yes
Southeast Public Square Lot	18	1	1	Yes
Southwest Public Square Lot	17	1	1	Yes
Troy Rec Lot	17	1	1	***No***
Mulberry Street Lot	10	1	1	Yes

The photos below show the available ADA accessible parking spaces in the various surface lots throughout the study area.

Troy Rec Lot (Non-ADA compliant) - A delineated aisle dedicated to the user does not exist.

Cherry Street Kiosk Lot – Two (2) ADA compliant spaces share one (1) accessible aisle.

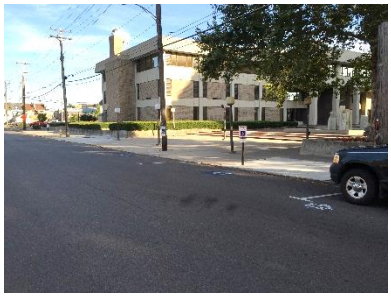
Southwest Public Square Lot – One (1) ADA compliant space with an accessible aisle and dedicated curb ramp.

Southeast Public Square Lot – One (1) ADA compliant space with an accessible aisle and dedicated curb ramp.

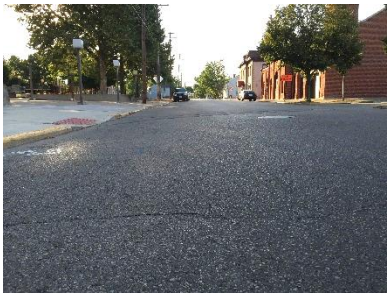
Northeast Public Square Lot – One (1) ADA compliant space with an accessible aisle and dedicated curb ramp.

Northwest Public Square Lot – One (1) ADA compliant space with an accessible aisle and dedicated curb ramp.

ADA requirements must also be provided for on-street parking locations. There are 253 on-street parking spaces within the study area. For 201 – 300 parking spaces, ADA standards require seven (7) handicap spaces, where one (1) of those spaces must provide van accessible parking. The study area provides eight (8) handicap on-street spaces with the handicap space in Block 7 representing the van accessible space, however one (1) handicap space on Main Street (within Block 1) does not provide a delineated accessible aisle or an appropriate curb ramp, and two (2) handicap spaces on Water Street (Block 1) do not provide a flush accessible aisle or curb ramp. Additionally, one (1) handicap space on Main Street (Block 7) does not meet the ADA requirements for a properly sized accessible aisle. The photos below demonstrate both ADA compliancy and violations for some of the available ADA accessible parking spaces within the study area.



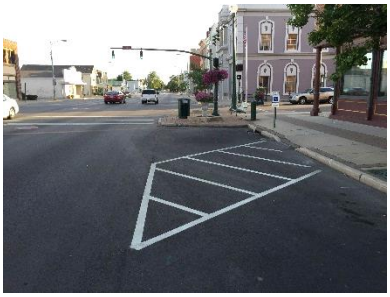
Water Street (Block 1) – Sidewalk is not flush with parallel handicap parking spaces. Accessible path and curb ramp is not in a convenient location.



Water Street (Block 1) – Sidewalk is not flush with parallel handicap parking spaces.

Main Street (Block 7) – The handicap space does not provide an ADA compliant accessible aisle.

Market Street (Block 8) – The handicap space meets ADA requirements.



Market Street (Block 7) – The handicap space meets ADA requirements and could be considered a van accessible space.

The City of Troy should evaluate and modify the existing handicap parking spaces within the study area to ensure the spaces are in compliance with current ADA requirements and are adequately signed. Additionally, the City should also continue to evaluate ADA slope requirements for the accessible ramps. Further information on the requirements for both on- and off-street ADA parking standards can be found in the 2010 ADA Standards for Accessible Design.

2.7 Parking Signage

An important feature of any downtown metropolitan parking system is the way in which the parking public is informed of on and off-street parking locations, parking rates, and if any restrictions exist at the desired parking locations. As a part of this study, the delineation and location of parking signage throughout the City of Troy downtown area was assessed. It was determined that there are potential shortfalls with the parking signage in the City of Troy downtown area. However, there are current plans to implement a wayfinding project in the City of Troy.

Generalized observations determined that the off-street public parking lots within the City of Troy downtown area do not have adequate lot identification, as parking signage is either not present or it is not easily identifiable. Directional parking and vehicular wayfinding signs are not prevalent within the City of Troy downtown area, leaving visitors who are unfamiliar with the City without a sense of guidance and confidence when attempting to find available parking. In addition to the issues described above, the online downtown parking survey determined that existing signs denoting where and how to pay for off-street public parking that are managed by kiosk payment stations in the City of Troy downtown area utilize an unclear message and have the potential to confuse the parking public, in some cases leading to unintentional parking violations and fines.

Generally speaking, downtown areas often use three (3) types of parking signs to inform motorists of public parking locations, while also increasing parking efficiency. These types of signs are as follows:

- Identification – Generally, identification signs are placed at the entryway of surface public parking lots. These type of signs typically identify the name of the parking lot, indicate the hours of operation and inform the parking public if any parking fares exist.

- Directional / Location – Directional / Location signage offers advanced information on directing motorist to off-street public parking lots. These signs utilize the conventional parking "P" icon and are accompanied by a directional arrow. Often times, these signs are placed at systematic locations throughout the city and provide a sense of direction for visitors who may be unfamiliar with parking locations within the downtown area.

D4-1. Digital image. OMUTCD, 13 Jan. 2012. Web. 9 Aug. 2016.

- Vehicular Wayfinding – Vehicular Wayfinding signage offers advanced information on places of interest, parking locations, public buildings, landmarks and attractions within the downtown area. These signs are limited to conventional roads, offer a directional arrow and are intended to help motorist orient themselves with the downtown area.

Wayfinding Sign. Digital image. OMUTCD, 13 Jan. 2012. Web. 9 Aug. 2016.

Wayfinding Sign. Digital image. OMUTCD, 13 Jan. 2012. Web. 9 Aug. 2016.

Each of these three (3) types of signs should use common and conventional logos, color and text style. These signs should utilize reflective sheeting materials to help aid motorists during hours of low visibility and should be placed in a location of high visibility. Signs specifying where and how to pay for parking that are managed by kiosk payment stations at off-street public parking locations should depict a brief, clear and concise message. When each of these types of signs are used properly, it decreases the time a motorist spends searching for a parking spot; therefore reducing vehicular circulation, driver inattentiveness of the road, and achieves lower fuel consumption rates. Proper signage also provides a sense of confidence and eliminates the potential for the parking public to become confused by an unclear sign message.

The following list outlines effective practices when implementing signage throughout a downtown area:

- A system of identification, direction / location, and vehicular wayfinding signs should be developed that utilize consistent logos, color and text style, that markets the available parking options within the downtown area.
- Identification signs should be used for the purpose of notifying visitors of what off-street parking lots are available to the public as well as hours of operation, restrictions and parking fares. Identification signs should be placed at the entrance of the off-street parking lot in locations of high visibility.
- Directional / Location signs should be erected in the downtown area that direct visitors to public parking lots. These signs should be placed in systematic locations (intersections) of high visibility, and should offer advanced warning prior to when the motorist reaches their parking destination.
- While not mandatory, vehicular wayfinding signs should be considered in the City of Troy downtown area that highlights and promotes places of interest, parking locations, public buildings and attractions within the downtown area.
- The City of Troy should consider systematically reevaluating on-street parking signage for the purpose of verifying consistency in message and location of signs, verifying mounting height and sign angle as specified in the Ohio Manual of Uniform Traffic Control Devices (OMUTCD) and checking for general sign wear.
- For the Cherry Street Kiosk lot, the City of Troy should consider removing the existing signage and simplifying the payment method. The existing signage should be replaced with an identification sign at the entrance of the lot, specifying hours of operation, restrictions and parking fares. Additionally, the City should place signs around the lot specifying the parking public to "Pay at Machine" with directive arrows to the kiosk station. In lieu of requiring motorists to input their license plate number, the City

The Cherry Street Kiosk lot identification sign. The sign is lengthy and confusing. The City should consider simplifying verbiage. (Example below)

should consider numbering the parking spaces within the lot and require motorists to input their respective parking stall number.

See **Appendix F** for the implementation of a wayfinding system for the City of Troy.

2.8 City Parking Options

There are three (3) distinct components of the parking solution / improvement in downtown Troy. They are as follows:

1. Parking for employees of downtown businesses. (Long Term)
2. Parking for customers and other visitors to the downtown area. (Short term)
3. Parking for residents in the downtown area. (Overnight)

These three (3) components function somewhat dependently, as the currently observed employee parking behavior demonstrates that there appears to be the perception of limited long term parking options so they park in prime locations on the street and space hop every two hours. This space hopping then effects the availability of short term parking for customers. Forcing these employees out of the downtown area then effects the parking availability for residence. Additionally, the City of Troy has expressed their concern with the available parking that accommodates both employees and visitors of the Miami County Courthouse. Currently, there are forty-six (46) individuals that are on a waiting list to get a permit for the Courthouse private parking. The following list outlines options and recommendations to help manage the parking situation in the City of Troy downtown area.

<u>Short Term Recommendations</u>

1. Convert the Cherry Street Kiosk system to a more conventional 'pay per hour' for a specific spot versus the current 'pay per a timeframe' for any spot system.

   The survey respondents indicate people think the current system is cumbersome and it does not support higher levels of parking turnover. According to the field observation, the lot is underutilized, operating at an average peak hour occupancy rate 52% (approximately 25 parked cars). It is believed that by converting the operating system to simpler format, users may opt into utilizing the lot more frequently. Additionally, with the 'pay per hour' system, drivers can visually see if a parking spot is unoccupied, as there is no preconceived notion that a parking spot may not be available even if the spot currently unoccupied (as the current system promotes the notion that a vehicle can leave a parking spot and still have the spot reserved when it returns).

   1A. To implement this recommendation, the City of Troy needs to remove the signage associated with the 'pay per timeframe' system and erect signage that locates the payment kiosk. Additionally, parking spaces need to be numbered through the use of pavement markings or signs.

   1B. The City of Troy should also consider moving the payment kiosk in closer proximity of handicap accessible spaces.

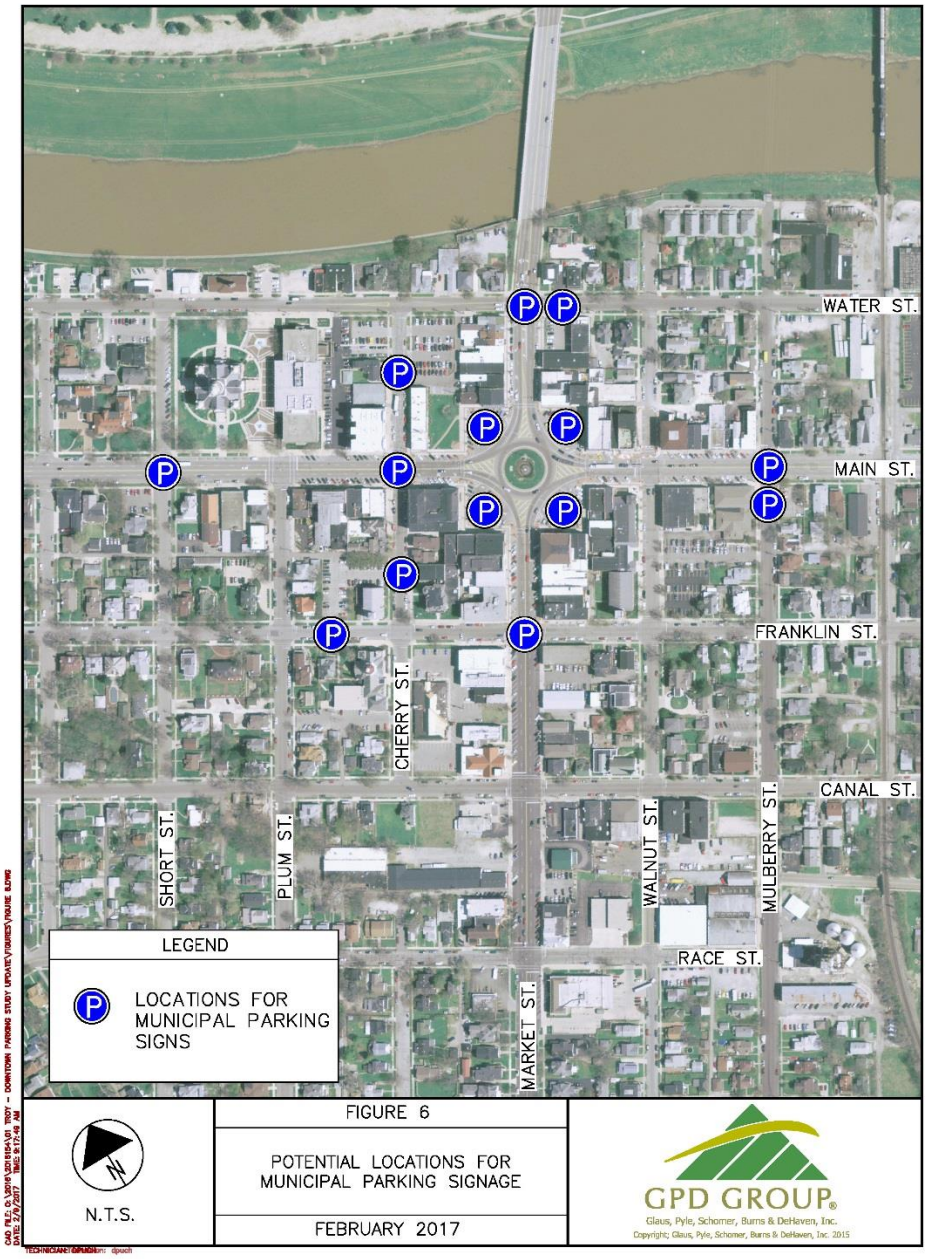
2. The City of Troy should undertake a coordinated program to increase awareness of the existing parking supply.

   A key element of parking strategies is assuring that customers and visitors of the downtown area clearly understand where public parking is available and what restriction apply to the parking. To accomplish this, the City of Troy should consider the following:

   2A. Develop the wayfinding system outlined in **Appendix F** that includes the implementation of identification, directional / location, and wayfinding signs throughout the downtown area. The design of these signs should complement one another and should follow a consistent scheme. This signing system will help drivers who are unfamiliar with the downtown area find parking locations and it will guide users to underutilized parking lots. The

system will help direct court house visitors to underutilized lots, such as the Cherry Street Kiosk Lot, by placing advanced signage on Main Street and Market Street. Visitors then have the option to follow the guidance signs to an off-street parking location. Prior to implementing this recommendation, the City of Troy should consider developing a wayfinding plan. This plan should look beyond just the signage needed for parking, accounting for elements such as information kiosks, banners, and general branding efforts. Figure 6 indicates viable and recommended locations for the implementation of municipal parking signage. Note that each public off-street parking lot should utilize an identification sign that clearly specifies parking regulations. Municipal parking directional and location signs should be placed on main corridors of the study area, such as Main Street and Market Street, and should utilize complementing signs to guide users from these corridors to public parking lots.

Figure 6: Potential Locations for Municipal Parking Signage



2B. Market all of the available public parking options by creating a map and placing it in a brochure. The map should depict location of public parking (including locations that offer long term parking opportunities, such as the Cherry Street Kiosk Lot) hours of enforcement, parking rates. This map should be posted online on The City of Troy's website and the brochure should be printed on paper to distribute to visitors, employers and employees of the downtown area. Below is an example of a parking brochure for the City of Savanna, Georgia. Note that while Savanna has a larger downtown area than the City of Troy, the concepts on how parking information is conveyed remains the same.

SMART CARDS
Smart cards are prepaid parking cards that can be used at pay-and-display meters in addition to coins, currency, and credit cards. Smart cards are available in denominations of $2.5, $5, $7.5, and $10.00 and can be purchased at Mobility & Parking Services in the Bryan Street Garage at Bryan and Abercorn Streets. Pay and display meters are located in the general area bounded by River Street, Oglethorpe Avenue, Martin Luther King Jr. Boulevard, and East Broad Street.

DISABILITY PARKING
The City provides disability parking spaces for the exclusive use of vehicles displaying the appropriate permit. The spaces are dispersed in all areas of the city and include free spaces as well as metered spaces. The spaces are located on-street throughout the City, in City owned garages, and in the River Street lots. Disability permit spaces in the Historic District will require payment for parking.

METERED SPACES
The City provides 3,000 metered spaces in Savannah's Historic District with time limits ranging from 30 minutes to 10 hours. The cost per hour for parking on the meters range from $.30 per hour to $1.00 per hour depending on the location of the meter. Parking meter rates in the three River Street parking lots are $1.00 per hour.

Parking meters and time limit zone regulations are enforced Monday through Friday from 8AM until 5PM. Safety regulations, fire hydrants, fire lanes, yellow lines, etc., are enforced 24 hours a day, seven days a week by Mobility & Parking Services and the Metro Police Department.

COMMERCIAL VEHICLE DECAL
A commercial vehicle parking permit (decal) can be purchased to park business vehicles in marked freight zones, lanes, or alleys, or at officially bagged parking meters for the purpose of loading or unloading merchandise or providing maintenance, repair, or construction services. The fee is $150.00 annually.

FIRE HYDRANTS
Blocking a fire hydrant could prevent fire equipment form reaching its destination and could cause serious property damage and loss of life. Never park within 15 feet of a fire hydrant.

PASSENGER LOADING ZONES
Passenger loading zones accommodate the receiving and discharging of passengers at downtown establishments. Parking is limited to the expedient loading and unloading of passengers.

SIDEWALKS
Sidewalks provide pedestrians a safe place to walk. Parking any portion of your vehicle on a sidewalk is prohibited.

DRIVEWAYS
Please keep driveways open by not blocking or parking in front of them. A sign is not needed to enforce this regulation. Vehicles may need the full width of the driveway to get to and from the street.

STREET CLEANING
Be on the lookout for street sweeping signs when parking in the city. Certain hours are set aside to allow easy passage for street cleaning vehicles.

YELLOW LINES
To prevent serious traffic congestion or to allow for turning of larger vehicles, please do not park at yellow lines.

TRAFFIC SIGNALS, CORNERS, AND CROSSWALKS
For safety reasons, traffic signals, crosswalks, and intersections must be visible to motorists and pedestrians. Blocking visibility at a corner can result in a serious accident.

PARKING GARAGES

ROBINSON GARAGE (912) 651-6478
Location: York and Montgomery Streets
Hours of Operation: 24 hours a day/7 days a week
Daily Rate: $1.00 per hour or portion thereof, minimum $10 per day
Evening Rate: Monday - Friday, 6PM to 7AM, flat rate of $2, before 6PM and after 7AM the daily rate applies
Weekend Rates: 7AM Saturday until 7AM Sunday a flat rate of $3 per day. 7AM Sunday until 7AM Monday a flat rate of $3 per day, after 7AM the daily rate applies

BRYAN STREET GARAGE (912) 651-6477
Location: Bryan and Abercorn Streets
Hours of Operation: 24 hours a day/7 days a week
Daily Rate: $1.00 per hour or portion thereof, minimum $10
Evening Rate: Monday - Friday, 6PM to 7AM, flat rate of $2, before 6PM and after 7AM the daily rate applies
Weekend Rates: 7AM Saturday until 7AM Sunday a flat rate of $3 per day. 7AM Sunday until 7AM Monday a flat rate of $3 per day, after 7AM the daily rate applies.

STATE STREET GARAGE (912) 651-6473
Location: State and Abercorn Streets
Hours of Operation: Sunday-Friday, 5AM to 1AM
Saturday, 5AM to 5AM
Daily Rate: $1.00 per hour or portion thereof, minimum $10
Evening Rate: Monday - Friday, 6PM till closing, flat rate of $2, before 6PM and after 7AM the daily rate applies
Weekend Rates: 5AM Saturday until 5AM Sunday a flat rate of $3 per day. 5AM Sunday until 1AM Monday a flat rate of $3 per day, after 1AM the daily rate applies

LIBERTY STREET GARAGE (912) 644-5934
Location: Liberty and Montgomery Streets
Hours of Operation: Sunday-Friday, 5AM until 1AM
Saturday 5AM until 3AM
Daily Rate: $1.00 per hour or portion thereof, minimum $10
Evening Rate: Monday - Friday, 6PM till closing, flat rate of $2, before 6PM and after 7AM the daily rate applies
Weekend Rates: 5AM Saturday until 3AM, Sunday a flat rate of $1 per day. 5AM Sunday until 1AM, Monday a flat rate of $1 per day, after 1AM the daily rate applies

WHITAKER STREET GARAGE (912) 525-2820
Location: Whitaker Street just past Bay Lane
Hours of operation 24 hours a day seven days a week
Daily Rate: $2 per hour, minimum daily rate $16 per day
Monthly Rate: Monday through Friday 5AM until 6PM, $80
Unlimited access during hours of operation, $95
Reserved space, unlimited access 24/7, $280

SPECIAL EVENT RATES FOR ALL GARAGES
Rates: $5 to $20 depending on event

SDRA
SAVANNAH DEVELOPMENT AND RENEWAL AUTHORITY
CITY OF Savannah
10/09

PARKSMART
DOWNTOWN
CITY OF SAVANNAH
MOBILITY AND PARKING SERVICES
912-651-6470 • WWW.SAVANNAHGA.GOV

The City of Savannah welcomes you as a resident, visitor, business owner and/or student to Greater Downtown Savannah. To ensure that your visit is pleasant and to answer questions you may have regarding parking and traffic regulations within our downtown area, we have provided the following information to assist you. Enjoy your experience in downtown Savannah!

PARKING SMART DOWNTOWN

RESIDENTIAL PERMIT PARKING
The City provides permits for residents who live on metered streets. The permit allows residents to park free on meters within the block on which they live and one additional block in each direction.

Residential parking permits are available for students. To qualify, a student must live on a metered block and not in a dormitory. For more information and cost, call Mobility & Parking Services.

RIDE, PARK AND SHOP
Participating merchants subsidize parking for downtown shoppers with $.50 and $1.00 stamps good at all five City garages. Look for decals in store windows and ask merchants for details about their individual program.

VISITOR PARKING DAY-PASS
Tourists may purchase, for $12.00, a two-day parking pass or, for $7.00, a single day parking pass from the Savannah Visitors Center, the Mobility & Parking Services Department, and various hotels and inns. This pass authorizes free parking on meters of one hour or more, free parking in the City's lots and parking garages upon availability, and allows exceeding the time limit in time-limit zones. Visitor Day Passes must be filled out with appropriate information to be valid and will not be honored during special events.

PUBLIC PARKING INFORMATION
REDUCED-RATE CIVIC CENTER PARKING
The City offers discounted parking at the Civic Center parking lot located at Liberty and Montgomery Streets. The parking rate is $.30 per hour. Free weekday shuttle services are offered at the Liberty Street Garage to the downtown area. For more information, visit our website at www.catchacat.org. Parking is enforced in the Civic Center Parking Lot 24 hours a day, seven days a week. (Civic Center parking is limited and/or prohibited during Civic Center events).

HUTCHINSON ISLAND
The City offers free permitted parking at the International Trade & Convention Center on Hutchinson Island. Employees can park their vehicles on Hutchinson Island and take the ferry to their workplace. A limited number of spaces are available.

REDUCED EVENING MONTHLY PARKING RATE
Monthly parking is available in the Robert E. Robinson, Bryan Street and Whitaker Street Garages seven days a week from 3PM to 6AM for $35/per month. For more information, call (912) 651-6477.

dot

MOBILITY OPTIONS
Downtown Transportation—referred to as dot—is Savannah's fare-free mobility system that gets you where you want to go, when you need to get there, in and around the Historic District. Components of dot include the shuttle, streetcar and ferry. Please note the following operating hours for dot.

- Express Shuttle: Operating seven days a week, 11AM to 9PM
- River Street Streetcar: Operating Thursday-Sunday, 12 noon to 8PM
- Ferry: Operating seven days a week from 7AM to midnight

Please refer to the map for these routes. For more information, visit dot's website at www.connectonthedot.com or call (912) 447-4026.

Chatham Area Public Transit (CAT) has been providing transportation in Chatham County since 1987 and it's only $1.50 a ride. Pick up a bus book with complete route and schedule information at convenient locations around town or call one of their transit agents at 912-233-5767. CAT's transit agents are ready to assist you in planning your next trip...to work, shopping, the movies etc...anywhere! Catch a CAT. Just a $1.50 and you're riding. CAT's downtown shuttle provides Historic District transportation for residents and visitors free of charge. For more information, visit CAT's website at www.catchacat.org or call (912) 236-2111.

HUTCHINSON ISLAND
SAVANNAH RIVER
Colonial Park Cemetery
Battlefield Park
Forsyth Park
SYMBOLS
Public Parking Garages and Lots
Visitor Information Center
Ferry Landing
dot Shuttle Stop
dot Streetcar Stop
Talmadge Bridge
Elevator

WHAT TO DO...

IF YOU GET A TICKET
The City provides five business days for you to pay your fine. After five business days, a $12.00 penalty is added to the fine. A parking ticket not paid within 30 calendar days after the date of issue receives an additional $17.00 penalty. Failure to pay tickets can subject you to a court summons and/or immobilization of your vehicle. Tickets can be paid by check, Visa, MC or on-line.

TO CONTEST A TICKET AND FINE
Take the ticket within five business days of the ticket date to Mobility & Parking Services in the Bryan Street Parking Garage at 100 E. Bryan Street, or call Mobility & Parking Services at (912) 651-6470.

IF YOUR VEHICLE IS BOOTED
The boot is used to encourage compliance with parking regulations and payment of tickets and fees. Once the boot is placed, it will not be removed until you've paid your delinquent tickets, late penalties and the boot removal fee. Payment must be made for the release of a vehicle within 24 hours of the date and time of immobilization. If payment has not been made, the vehicle will be towed and impounded at the owner's expense.

IF YOUR VEHICLE IS TOWED
Vehicles parked on properly marked private property may be towed at the request of the property owner. Vehicles parked in a tow away zone will be towed because they interfere with pedestrians, cause safety hazards, and/or obstruct the flow of traffic. If your vehicle is towed from private property, call the telephone number of the company listed on the sign in the lot, Mobility and Parking Services, or the Savannah Chatham Metropolitan Police Department at (912) 651-6676. Some violations for which your car may be towed include but are not limited to the following: parking on private property, failure to pay tickets once a vehicle has been immobilized, and parking in driveways or fire lanes.

FOR YOUR INFORMATION

General Parking Info:	(912) 651-6470
Parking Enforcement:	(912) 651-6474
Booting Information:	(912) 644-7995
Abandoned Cars:	(912) 651-6770
Non-Emergency Number:	(912) 652-6500
Chatham Area Transit (CAT):	(912) 236-2111
Emergency Number:	911
Police/Fire/Ambulance 24 hours a day	

Source: *ParkSmart Downtown Brochure*, savannaga.org. Accessed 12 Jan. 2017.

2C. The City of Troy should review and revise, where necessary, the signing and curb painting for on-street parking spaces to assure that drivers have an understanding of where parking is permitted and what restrictions may apply.

3. The City of Troy should reevaluate parking meter rates.

The occupancy data indicates the North Cherry Street Lot and the Troy Rec Lot both have average peak occupancy rates of greater than 80%, while the Cherry Street Kiosk Lot and the Mulberry Street lot have average occupancy rates of approximately 50% or less. Currently, parking rates for the North Cherry Street lot (greater than 80% average peak occupancy) are 0.10 cents an hour while the Cherry Street Kiosk Lot (approximately 50% average peak occupancy) are 0.25 cents an hour, indicating it is cheaper to park in a more convenient downtown location. The North Cherry Street Lot and the Troy Rec Lot should focus on parking turnover rather than parking duration and should be priced accordingly. Without a change in parking meter rates, parking behavior will not change. To facilitate this change, the City of Troy should consider the following:

3A. The City of Troy should consider increasing the parking meter price at the North Cherry Street Lot and Troy Rec Lot to 0.50 cents an hour to emphasize parking turnover. This is at the upper limit of what the survey respondents believe is an acceptable price.

3B. Keep pricing at the Cherry Street Kiosk Lot the same and offer lower meter rates at the Mulberry Street Lot (0.10 cents to 0.25 cents) to entice more motorists and visitors to utilize this lot.

3C. Occupancy rates at the Public Square Lots are over or approaching an 85% occupancy rate. This parking is indented to be utilized as short term parking for visitors. As a way to enforce this concept and emphasize turnover, the City of Troy should consider implementing paid parking kiosks that use the rate of 0.50 cents per hour at these locations.

3C. The City should periodically track occupancy rates and reassess parking meter fees accordingly until parking utilization for off-street lots stabilizes.

4. The City of Troy should consider a more proactive management of the supply of short term parking to maximize its availability for customers and visitors to the downtown area.

The survey responses suggest that employees are parking in locations that are designated for short term use limiting the availability of these spaces for customers and visitors in the downtown area. Therefore, it is essential that the existing supply of two (2) hour parking be managed to maximize the availability of this parking for customer use. To accomplish this, the City of Troy should consider the following:

4A. The City of Troy should undertake a cooperative program to discourage employees from using the short term parking supply, including the space hopping throughout the day. This program should include an effort to identify and educate employees who regularly park in the short term spaces about the importance of having customer parking available in the downtown area.

4B. The City should consider developing an ordinance to stop employees from space hopping every two (2) hours which occupies short term parking opportunities designated for customers and visitors in the downtown area. The following is an excerpt of an ordnance used in La Crosse, WI, Chapter 44, Article IV, Section 44-103, Subsection (b):

> "In an area where parking on the street or in a parking ramp or lot is restricted to two hours or less at a time, and signs are properly posted to indicate such parking time limitations, any vehicle parked along a single block face, as herein defined, or in the same parking ramp or lot in excess of the time restriction, shall be considered to have continuously parked, and shall be subject to citation for violation of such parking time restriction. A block face shall be defined as one side of a single street between two consecutive intersecting streets. For example, the south side of the 300 block of Main Street would be a single block face, and the west side of 3rd Street between Main Street and State Street would be a single block face."
>
> The creation of this ordinance enables the city to legally issue parking citations to address the problematic parking behavior.

4C. The City of Troy should continue to consistently enforce the short term parking regulations with an emphasis on motorists who park for long periods of time or space hop within the short term parking locations.

5. The City of Troy should work cooperatively with property owners within the downtown area to expand the supply of long term employee parking.

The City of Troy is at a critical decision point with respect to parking in the downtown area. While the occupancy data indicates that spaces can be found throughout the study area over the duration of a day, there is limited availability for long term employee parking as most of these spaces are designated for short term use. It is recommended that the City of Troy and the private property owners work together to expand the supply of long term, employee parking opportunities. To accomplish this, the City of Troy should consider the following:

5A. The City of Troy could attempt to lease weekday parking from St. Patrick's Church. There appears to be approximately 100 parking spaces in the parking lot adjacent to St. Patrick's Church. This lot is four (4) blocks from the center of the downtown area and could serve as a location for long term employee parking usage.

5B. The City of Troy could attempt to lease weekday parking from First Church of the Nazarene. There appears to be approximately 29 parking spaces in the parking lot adjacent to the Church. This lot is two (2) blocks from the center of the downtown area and could also serve as a location for long term employee parking usage.

6. The City of Troy should permit controlled overnight parking in locations with short term hourly regulations to increase the supply of residential parking in the downtown area.

As previously stated in this study, the City of Troy removed parking meters in front of residential properties years ago, and it is not recommended to reverse policy on this issue. The current zoning within the downtown area does not restrict the development of residential properties, which indicates there is a potential demand for long term parking within the downtown area. Currently, many spaces within the downtown area are regulated with two (2) hour parking restrictions, which prohibits long term overnight usage by residents. The occupancy data indicates a steady decline in occupied spaces after 7:00 PM. Therefore, the City of Toy should consider the following:

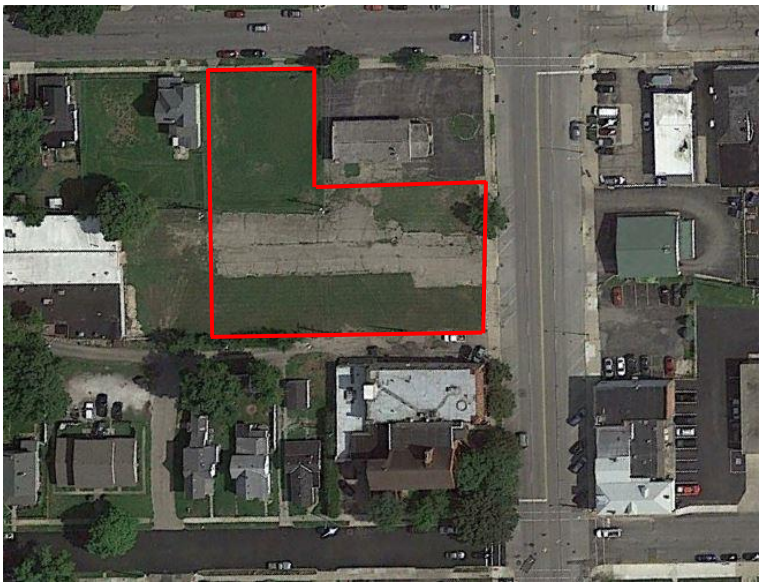
6A. The City of Troy should consider a permit programs that grants overnight parking privileges to residents of the downtown area for spaces that typically have two (2) hour restrictions. The conditions of the overnight parking program should permit residents to park their cars in these restricted locations between the hours of 8 P.M. and 8 A.M, when occupancy levels in the downtown area are at their lowest. This program would require users to verify the location of their residents, and register their vehicle with the City of Troy. Permits can then be issued to the user for a nominal monthly fee.

Medium and Long Term Recommendations

1. The City of Troy could consider expanding the supply of long term parking away from the center of the downtown area.

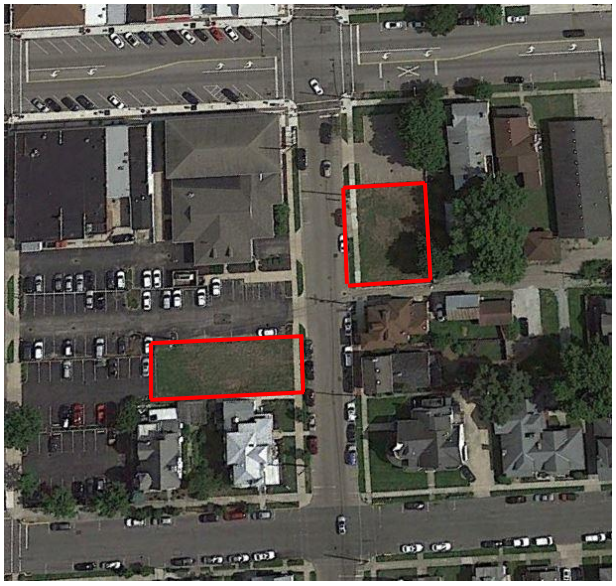
   A key piece in the City of Troy's parking management strategy is managing the supply of short term parking, and implementing new city code that prohibits the practice of space hopping every two (2) hours. By addressing either of these parking issues, the City of Troy is effectively limiting the locations available for long term parking. For the above strategies to work, the City of Troy should designate areas for employees to park. In general these lots should be placed away from the center of the study area and should serve as a long term opportunity for employees to park and general parking overflow.

   Similar to short term parking, there are few opportunities to easily expand the supply of long term parking within the study area. Because land acquisition can be rather difficult to accomplish this study will locate areas of vacant or low land density usage. The following aerial photograph indicates vacant parcels that could be utilized as a parking lot devoted to long term employee parking or parking overflow.



As shown in the aerial photograph, the vacant parcels are located on the corner of Market Street and Canal Street and represent approximately 0.80 acres of land that could be converted into a municipal long term parking lot for employees and general parking overflow.

Additionally, the following locations were also considered for long term parking. The photo below indicates vacant parcels that could be utilized as a parking lot devoted to long term employee parking or parking overflow.



The above potential long term parking opportunities are located on Mulberry Street between Main Street and Franklin Street. While these parcels are rather small, measuring in at approximately 0.13 acres for the southern potential lot and 0.15 acres for the northern potential lot, they do add the opportunity to supply additional long term parking locations. Interestingly enough, the northern potential lot is directly adjacent to the Mulberry Street lot, and the City of Troy could consider expanding the amount of spaces. The occupancy data indicates the Mulberry Street lot is underutilized and the City could consider extending the parking regulations to include long term parking.

2. The City could consider converting the Square to a modern roundabout, implementing a road diet on Main and Market Street, and increasing the number of short term on-street parking spaces along these roadway corridors.

   In general there are few opportunities to easily expand the supply of conveniently located, short term parking in the City of Troy downtown area. However, by converting the Square into a modern roundabout and implementing a road diet that would propose to reduce the number of lanes on the Main Street and Market Street corridors, additional lateral space between the curbs could be reallocated for converting the existing parallel parking to angled parking. This potential improvement could add approximately 43 new on-street parking spaces within the study area.

   Under this potential improvement, Block 1 (and west of Short Street) could add eleven (11) additional parking spaces along Main Street to help mitigate the potential parking deficit. Both Block 2 and Block 3 could each add six (6) additional parking spaces along Market Street, and two (2) spaces in the Northwest and Northeast Public Square Lots. Block 5 (and west of Short Street) could add ten (10) additional parking spaces along Main Street. Block 7 and Block 8 could add two (2) additional parking spaces in the Southwest and Southeast Public Square Lots, while two (2) additional parking spaces could be added along Market Street in Block 12.

3. The City of Troy could consider constructing a parking garage.

   The construction of a parking garage was investigated as a way to add additional parking. The potential parking garage would ideally be located within 1 or 2 blocks of the square, where parking demand is higher. However the city does not currently own property in the vicinity of the square large enough to construct a garage. Parking lots in the vicinity of the square do exist but again, are not owned entirely by the City. If an area of similar size to the existing lots were to be purchased (110 feet by 165 feet), it would occupy roughly a quarter of a block and contain roughly 45 to 50 parking

spaces. A garage with only a single deck and one ramp, would be challenging to construct due to the short length available for the ramp to the upper level, resulting in steeper than desired ramp grades or diminished number of overall parking spaces to provide acceptable ramp slopes within the parking structure. Additionally the ramp would occupy space previously available for parking on the ground level. A 2 level garage (ground and 1 elevated level) might yield a total of 70 to 80 parking spots, an increase of roughly 30 parking spots. Costs for a garage are estimated to be around $35,000 per elevated parking space. For the 2-level garage described, costs are likely to be as follows:

- Elevated structure with 40 spaces $1,400,000
- Ground level site work $125,000

Cost for parking garages can vary depending on configuration and construction methods. Costs shows are planning level estimates to show order of magnitude and indicate substantial costs to gain a relatively limited number of parking stalls. Additionally, a new parking garage is similar to a bridge in respect to ongoing maintenance costs for the life of the structure. The new city facility will require yearly inspections and annual maintenance (lighting costs, security, fire suppression, ventilation based on the size, snow and salt removal, additional insurance premiums and will have to be staffed to some level operationally even with automated entry and exit controls.

4. The City of Troy could consider reconstructing the North Cherry Street Parking Lot at Water Street.

Existing parking lots on west and east sides of North Cherry Street at Water Street have 61 and 48 parking spots respectively, equaling 109 plus 3 on street parking spots adjacent to the lots on North Cherry Street, 112 total spots. North Cherry Street could be closed and both parking lots reconfigured to stretch across Cherry Street. This would result in about 135 total parking spaces, an increase of 23 parking spaces. Note that neither existing parking lots are under city ownership or control. This parking lot reconstruction option would likely require the vacation of North Cherry Street to move forward with this option. This may be problematic for the city to vacate public right-of-way for a privately owned and operated parking lot. To advance this option may require that the city assume ownership of both private parking lots and the operations of the expanded design.

3 Traffic and Pedestrian Data Analysis

3.1 Roadway Existing Conditions

The roadway classification for both Main Street and Market Street is Urban Minor Arterial with a 25 miles per hour (mph) speed limit though the study area. Main Street runs east/west and connects the City of Troy to Interstate 75 to the west. West Main Street is a four lane roadway and has angled and parallel parking within the study area. East Main Street is a three lane roadway just east of the Square with angled on-street parking. The Ohio Department of Transportation (ODOT) reported Annual Daily Traffic (ADT) volumes of 5,035 Vehicles per Day (VPD) and 14,945 VPD for the East and West side of the Square, respectively. Market Street runs north/south and connects the City of Troy to the City of Piqua to the north and also to Interstate 75 on the north and south. ODOT reported ADT volumes of 14,392 VPD and 11,330 VPD for the north and south side of the Square. Table 13 shows the volumes in a tabular format.

Table 13: 2015 Volumes	
Street	2015 ADT
East Main Street	5,035
West Main Street	14,945
North Market Street	14,392
South Market Street	11,330

Crash data was extracted from ODOT's website using the GIS Crash Analysis Tool (GCAT) using a three (3) year time period from 2013-2015. The area of concern was along Main Street from Mulberry Street to Short Street and along Market Street from Water Street to Race Street. There were 150 crashes reported and of those 150, 43 occurred in 2013, 53 in 2014, and 54 in 2015. There were 13 injury crashes and 137 property damage crashes. There is further analysis contained within Section 3.5.

There is a sense of a walkable community in the Square area. For this reason there are traffic signals in place at the entry of the Square on all four approaches. These traffic signals provide a reassurance to a pedestrian they will be able to cross the roadway safely. A pedestrian traffic signal will cause delays along the roadway that could impede traffic flow along a corridor. Traffic signal warrants were conducted at each of the four approaches to determine if a signal was warranted for the pedestrian activity. The City of Troy collected pedestrian counts for the anticipated peak four (4) hours within a typical weekday (Tuesday, Wednesday, or Thursday) for two (2) consecutive days. The data is used to analyze the need for a traffic signal for the pedestrian traffic. The collected pedestrian volumes in Pedestrians per Hour (PPH) are shown in Table 14.

Table 14: Pedestrian Count Volumes								
Time Period	East Leg		West Leg		North Leg		South Leg	
	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2
	PPH		PPH		PPH		PPH	
11:15 AM-12:15 PM	18	14	11	27	14	22	37	24
12:15-1:15 PM	23	17	27	40	24	37	33	41
4:15-5:15 PM	21	16	18	37	37	30	21	17
5:15-6:15 PM	37	19	37	17	33	23	30	16

3.2 Traffic Data

The traffic data utilized by this study consisted of video turning movement counts. The counts were collected by Cummins Consulting Services on Wednesday, November 30, 2016 at ten (10) intersections along the Market Street and Main Street corridors. The count sheets are included in **Appendix G**. The intersections are:

1. Market Street and Main Street
2. Adams Street and E. Main Street
3. Canal Street and S. Market Street
4. Cherry Street and W. Main Street
5. Franklin Street and S. Market Street
6. Monroe Street and W. Main Street
7. Plum Street and E. Main Street
8. Race Street and S. Market Street
9. Walnut Street and E. Main Street
10. Water Street and N. Market Street

The peak hour traffic data was utilized in calculating the Average Daily Traffic (ADT) volumes. The hourly profile for an urban minor arterial was obtained from ODOT's functional classification charts. The hourly profile for an urban minor arterial is included in **Appendix H**. The peak hour accounts for 8.4% of the ADT. This percentage was used to determine the 2016 ADT's listed within Table 15. Miami Valley Regional Planning Commission (MVRPC) provided an expected growth in the study area of 11% from 2010 to 2040, which computes to 0.367% linear growth per year. The anticipated ADT volumes during the horizon year (2036) are also shown in Table 15.

Table 15: Projected ADT Volumes

Street	Direction	2016 ADT	2036 ADT
East Main Street	Eastbound	3388	3637
	Westbound	3005	3226
West Main Street	Eastbound	6903	7410
	Westbound	6633	7120
North Market Street	Northbound	8200	8802
	Southbound	6443	6916
South Market Street	Northbound	7676	8239
	Southbound	6538	7018

The peak hour analysis was performed using the peak hour volume counts along each side of the Square. The peak hour volumes for the 2036 year were obtained by growing the 2016 traffic counts with a linear growth rate 0.367%. The peak hour for the years 2016 and 2036 were listed in Table 16. These volumes are used for capacity analysis of the Main Street and Market Street corridors.

Table 16: Peak Hour Volumes

Street	Direction	Peak Hour (VPH)	
		2016	2036
East Main Street	Eastbound	280	300
	Westbound	257	276
West Main Street	Eastbound	603	647
	Westbound	534	573
North Market Street	Northbound	680	730
	Southbound	550	591
South Market Street	Northbound	639	685
	Southbound	555	596

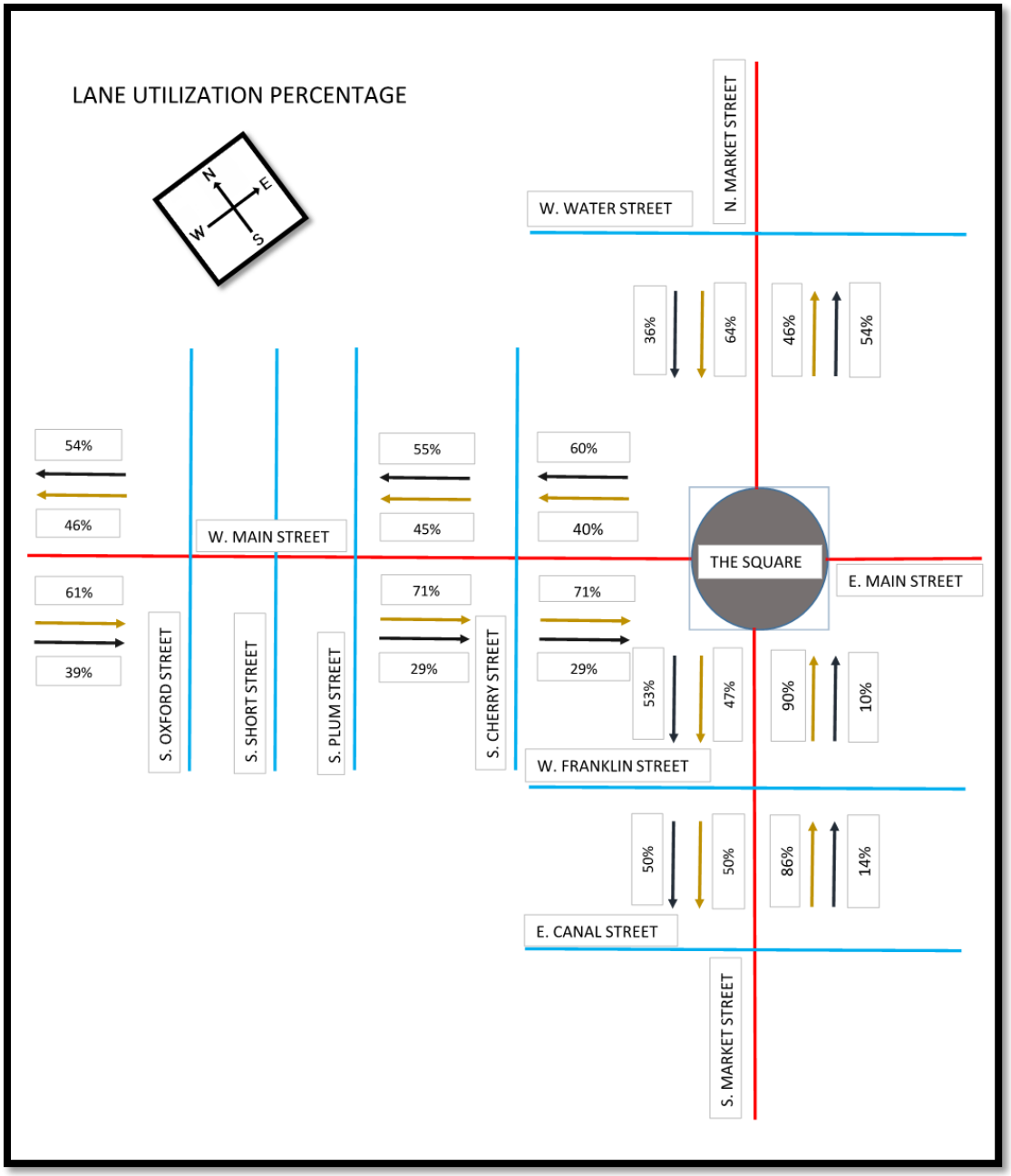
The traffic counts collected for the Square (Market Street and Main Street) were grown by the linear growth rate of 0.367% to determine the 2036 turning movement volumes. Table 17 outlines the turning movement volumes utilized for analysis for the years of 2016 and 2036.

Table 17: Turning Movement Volumes

Direction	Movement	Hourly Turning Movement Volumes (VPH)	
		2016	2036
Eastbound	Left	232	249
	Through	196	210
	Right	175	188
Westbound	Left	58	62
	Through	163	175
	Right	36	39
Northbound	Left	166	178
	Through	412	442
	Right	61	65
Southbound	Left	23	25
	Through	322	346
	Right	205	220

Lane utilization counts were conducted at six (6) road segments along the study area and shown in Figure 7. The count sheets are included in **Appendix I**. The locations included Main Street between Monroe Street and Oxford Street, between Plum Street and Cherry Street, and between Cherry Street and Market Street. The counts also included Market Street between Water Street and Main Street, between Main Street and Franklin Street, and between Franklin Street and Canal Street. The majority of the vehicles traveling towards the Square were utilizing the inside lane away from the curb and there is almost an equal share of lane utilization by the vehicles leaving the Square. Along Main Street angled on-street parking begins just east of Plum Street, this is where the eastbound traffic appears to favor the inside lane. Westbound traffic in this area slightly favors the curb lane but this is likely attributed to a single exiting lane from the square that dumps into the curb lane and the inside lane acts as a left turn lane at Cherry Street and Plum Street. Similar tendencies were found along Market Street with traffic favoring the inside lane traveling northbound towards the square.

Figure 7: Lane Utilization Percentage



3.3 Pedestrian Data

The City of Troy collected pedestrian counts on Wednesday, May 18, 2016 and Thursday, May 19, 2016 at all four (4) approaches of the Square. The counts were taken in 15 minute increments for a total of four (4) hours during each day. The periods collected were from 11:15 AM-1:15 PM and 4:15-6:15 PM. The raw counts are included in **Appendix J**. The peak hour varied per leg of the Square and per day. The bolded values in Table 18 represent the peak hour for the particular day and leg of the Square.

Table 18: Pedestrian Peak Hours

Time Period	East Leg		West Leg		North Leg		South Leg	
	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2
	PPH		PPH		PPH		PPH	
11:15 AM-12:15 PM	18	14	11	27	14	22	**37**	24
12:15-1:15 PM	23	17	27	**40**	24	**37**	33	**41**
4:15-5:15 PM	21	16	18	37	**37**	30	21	17
5:15-6:15 PM	**37**	**19**	**37**	17	33	23	30	16

In order to compare the Square to a conventional intersection the legs were all totaled to also analyze the pedestrian signal as if there were not four (4) different signals but one (1) centralized traffic signal for the Square. Table 19 shows the totals for both days if the intersection were operated by one (1) centralized traffic signal.

Table 19: Pedestrian Total Count Volumes

Time Period	Total Pedestrians at the Square	
	Day 1	Day 2
	PPH	
11:15 AM-12:15 PM	80	87
12:15-1:15 PM	107	**135**
4:15-5:15 PM	97	100
5:15-6:15 PM	**137**	75

3.4 Roadway Capacity

The capacity of each side of the Square was computed along with the Square itself. East Main Street extends from the Square to Mulberry Street, West Main Street extends from the Square to Adams Street, North Market Street extends from the Square to Water Street and South Market Street extends from the Square to Race Street. The roadway segments were analyzed as their existing 4-lane condition as well as a proposed 3-lane configuration. The 3-lane configuration would allow for a center turn lane and longer parking stalls to reduce the conflicts of parked vehicles hanging out into the roadway. The Square was analyzed as a roundabout since the intersection most closely resembles that type of intersection. The pedestrian signals were not included in the analysis since having a traffic signal right at the entry of a roundabout is not a typical configuration. It should be noted that the capacity of the roundabout is expected to be slightly worse than shown due to these signals at the entry.

Level of Service (LOS) is a letter designation that describes a range of operating conditions. The traffic flow conditions are categorized by:

- A- Free Flow
- B- Reasonably Free Flow
- C- Stable Flow
- D- Approaching unstable Flow
- E- Unstable Flow
- F- Forced or Breakdown Flow

Standards for LOS typically are governed by the maintaining agency for the roadway. In the urban downtown type environment of the City of Troy a D would be considered an acceptable LOS for the peak periods of travel.

The *Highway Capacity Manual (HCM) 2010* provides guidance on determining the LOS of a particular segment of roadway. Chapter 14 'Multilane Highways' provides an exhibit to determine the LOS for a segment of roadway by determining the density of that particular roadway segment. The exhibit 14-5 from the HCM 2010 is shown in Chart 3.

Chart 3: Exhibit 14-5- HCM LOS

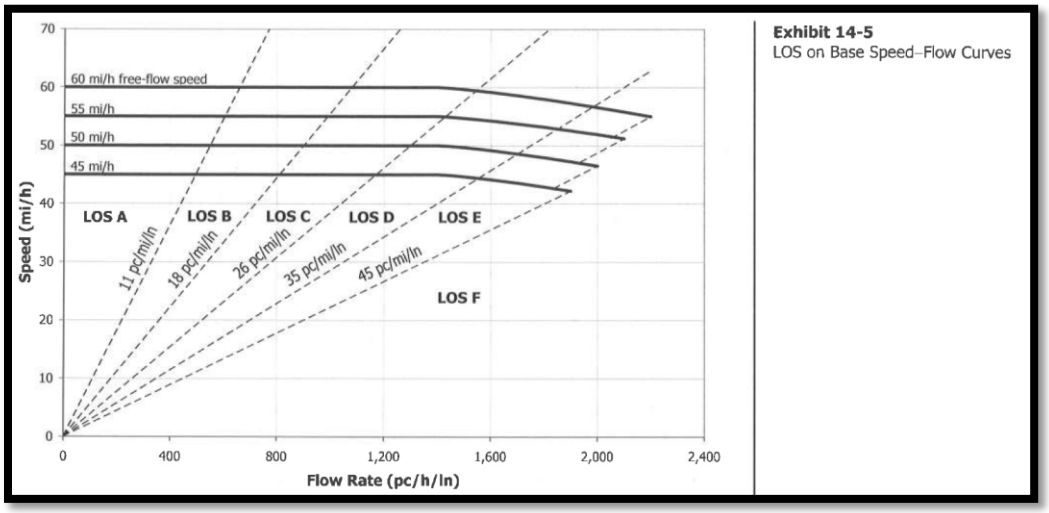


Table 20 shows the results of utilizing Chart 3 to plot the density of the existing roadway configuration (4-lanes) on the graph.

Table 20: HCM Existing Level of Service (4-Lane)

Street	Direction	2016		2036	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
East Main Street (Ex. 3-Lane)	Eastbound	11.4	B	12.2	B
	Westbound	12.7	B	13.6	B
West Main Street	Eastbound	22.5	C	24.2	C
	Westbound	20.3	C	21.3	C
North Market Street	Northbound	23.4	C	25.1	C
	Southbound	17.1	B	18.3	C
South Market Street	Northbound	22.4	C	24.0	C
	Southbound	20.4	C	21.8	C

The LOS for each segment of roadway are operating at either “reasonably free flow” (LOS B) or “stable flow” (LOS C) conditions for both the current (2016) year and the horizon (2036) year.

Table 21 shows the results of utilizing Chart 3 to plot the density of the build configuration (3-lanes) with the same traffic volumes as the existing roadway configuration.

Table 21: HCM Build Level Of Service (3-Lane)

Street	Direction	2016		2036	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
East Main Street	Eastbound	10.1	B	10.8	B
	Westbound	11.7	B	12.6	B
West Main Street	Eastbound	25.4	C	27.3	D
	Westbound	23.6	C	24.7	C
North Market Street	Northbound	28.2	D	30.4	D
	Southbound	21.2	C	22.7	C
South Market Street	Northbound	26.4	D	28.3	D
	Southbound	24.0	C	25.7	C

The LOS for each segment of roadway still operates at an acceptable level for an urban condition. During the 2036 build condition (3-lane) the LOS degrades slightly but still maintains a D or better on every roadway segment.

Roundabout analysis was completed for the Square using the Highway Capacity Software (HCS) 2010. HCS allows inputs such as the number of entry lanes, bypass lanes, circulating lanes, and turning movement volumes. The results are based upon the criteria outlined in Table 22 for an unsignalized/roundabout intersection control. The results of the HCS analysis was also compared to Table 23 for a signalized intersection control. The theory behind comparing this to the delay parameters for a signalized intersection is that if the intersection did not have a roundabout type control then the intersection would be controlled by a traffic signal. This is a more realistic snapshot of how the delay is perceived by the driver.

Table 22: Unsignalized/Roundabout LOS Criteria	
Level of Service	Control Delay (seconds/vehicle)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

Table 23: Signalized LOS Criteria	
Level of Service	Control Delay (seconds/vehicle)
A	0-10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

The results of the HCS analysis for the existing 4-lane and the build 3-lane option are shown in Table 24 and in **Appendix K**. The 3-lane option was modeled to consist of one entry lane and one exit lane at the eastbound and northbound approaches and dual entry lanes with a dedicated turn lane at the westbound and northbound approaches. The LOS criteria utilized was from Table 22, for an unsignalized/roundabout intersection control.

Table 24: HCS Roundabout Analysis (Main Street and Market Street Square)			
Direction	Year	LOS (Delay in Sec)	
		Existing (4-Lane)	Build (3-Lane)
Eastbound (Main Street)	2016	B(14.1)	B(13.5)
	2036	C(16.8)	C(16.0)
Westbound (Main Street)	2016	C(16.2)	B(13.0)
	2036	C(19.4)	B(14.8)
Northbound (Market Street)	2016	D(34.8)	C(18.5)
	2036	F(53.7)	C(23.8)
Southbound (Market Street)	2016	B(10.7)	C(24.2)
	2036	B(12.1)	D(33.5)
Intersection LOS	2016	C(19.9)	C(17.9)
	2036	D(27.3)	C(23.0)

The LOS for the existing 4-lane and build 3-lane configuration is acceptable as the approaches and the total intersection LOS are all D or better. The 2036 existing roadway configuration for northbound Market Street is deficient but improves in the build 3-lane roadway configuration. The deficiency is indicated in red in Table 24.

For comparison, the same delay indicated in Table 24 was compared to the criteria found in Table 23 since the intersection would be a signalized intersection if the Square was not a roundabout type control. The results are found in Table 25.

Table 25: Signalized Approach LOS (Main Street and Market Street Square)			
Direction	Year	LOS (Delay in Sec)	
		Existing (4-Lane)	Build (3-Lane)
Eastbound (Main Street)	2016	B(14.1)	B(13.5)
	2036	B(16.8)	B(16.0)
Westbound (Main Street)	2016	B(16.2)	B(13.0)
	2036	B(19.4)	B(14.8)
Northbound (Market Street)	2016	C(34.8)	B(18.5)
	2036	D(53.7)	C(23.8)
Southbound (Market Street)	2016	B(10.7)	C(24.2)
	2036	B(12.1)	C(33.5)
Intersection LOS	2016	B(19.9)	B(17.9)
	2036	C(27.3)	C(23.0)

Intersection capacity analysis was performed utilizing Synchro Version 9 for the ten (10) counted intersections listed in Section 3.2. The PM peak hour for all intersections was analyzed. The studied scenarios were 2016 Existing condition (4-lane)/Build condition (3-lane) and 2036 Existing condition (4-Lane)/Build condition (3-Lane). The results of the analysis generally showed either a very minor increase in delay of 2.5 seconds at Main Street and Cherry Street to an improvement in delay at the Square of 4.7 seconds. The results are shown in Table 29.

Table 26: Summary of PM Peak Hour Capacity Analysis					
Int #	Intersection	PM Peak Hour			
		2016 Existing (4-Lane)	2016 Build (3-Lane)	2036 Existing (4-Lane)	2036 Build (3-Lane)
1	S. Market Street & Race Street	A-5.5	A-6.2	A-5.6	A-6.5
2	S. Market Street & Canal Street	A-5.5	A-5.9	A-5.5	A-6.0
3	S. Market Street & Canal Street	A-5.5	A-6.0	A-5.6	A-6.2
4	The Square (Roundabout)	C-21.3	C-18.9	D-29.8	C-24.5
5	N. Market Street & Water Street	A-9.3	B-10.9	A-9.6	B-11.5
6	E. Main Street & Walnut Street	B-12.8	B-12.8	B-12.5	B-13.0
7	W. Main Street & Cherry Street	A-6.7	A-8.9	A-6.9	A-9.4
8	W. Main Street & Plum Street	A-8.3	A-3.3	A-9.1	A-3.4
9	W. Main Street & Monroe Street	A-8.5	A-4.0	A-8.7	A-4.7
10	W. Main Street & Adam Street	B-11.4	B-12.0	B-12.2	B-12.9

The volume to capacity (V/C) ratio is referred to as degree of saturation. The V/C ratio represents the sufficiency of an intersection to accommodate the vehicular demand. A V/C of less than 0.85 corresponds to an intersection operating under capacity and excessive delays are not experienced. A V/C ratio between 0.85 and 0.95 resembles an intersection operating near capacity, but continuously increasing queues should not occur. A V/C ratio between 0.95 and 1.0 corresponds to an intersection experiencing unstable flow results and intersection improvements will be required soon to avoid excessive delays. A V/C ratio greater than 1.0 resembles an intersection with demand that exceeds capacity and excessive delays and queuing are anticipated. The V/C ratios for all intersections are reported within the Synchro reports included in **Appendix L**. The Square (Roundabout) intersection for the 2036 Existing (4-Lane) configuration reports a maximum V/C ratio of 1.023 for the northbound left/through lane. In the 2036 Build (3-lane) configuration the lane assignment was altered based on the lane utilization and the V/C ratios were improved to 0.293 for the northbound left and 0.73 for the northbound through/right lane. The 2036 Build (3-Lane) configuration reports a maximum V/C ratio of 0.906 for the southbound left/through/right lane indicating that the approach is anticipated to operate near capacity in the 2036 horizon year. The remaining lanes do not exceed a V/C ratio of 0.72 indicating that the lanes are not expected to operate below capacity.

3.5 Crash History

The crash history was pulled from ODOT's GCAT system and was found that during the last three (3) years (2013-2015) within the study area. A total of 150 crashes were reported and of those 150, 43 occurred in 2013, 53 in 2014, and 54 in 2015. There were 13 injury crashes and 137 property damage crashes. ODOT's Crash Analysis Module (CAM) Tool provided the type of crash breakdown as shown in Table 27. The CAM tool results are provided in **Appendix M**.

Table 27: Study Area Type of Crash

Type of Crash	Number	%
Rear End	37	24.7%
Parked Vehicle	31	20.7%
Angle	27	18.0%
Backing	25	16.7%
Sideswipe-Passing	18	12.0%
Fixed Object	8	5.3%
Left Turn	3	2.0%
Sideswipe-Meeting	1	0.7%
Total	150	100%

The crashes that occurred within the study area were investigated for patterns of common reasons the crashes happened. Table 28 shows the breakdown of reasons for the rear end and sideswipe-passing/parked vehicle type crashes.

Table 28: Study Area Reason for Crash

Reason for Crash	Type of Crash	
	Rear End	Sideswipe-Passing/ Parked Vehicle
Stopped for pedestrian signal at the Square	5	
Vehicles backing out of parking spaces	8	
Hitting the vehicles that are parked in adjacent parking spot	10	
Swerving to miss a parked vehicle hanging out of a parking spot		1
Hitting parked vehicles hanging out of parking spots		16 (8 on West Main Street)
Total	**23 (15%)**	**17 (11%)**

Of the 150 crashes throughout the study area 5 rear end crashes were due to a vehicle stopping for the pedestrian signal, 8 were due to vehicles backing out of parking spaces and 10 occurred when a vehicle was backing out of a parking space and hit a vehicle in an adjacent parking spot. These rear end crashes attributed to 15% of the total crashes in the study area.

Of the 150 crashes throughout the study area 1 sideswipe-passing/parked vehicle crash was due to a vehicle swerving to miss a parked vehicle that was hanging out of a parking spot into the travel lane and 16 were due to vehicles hitting parked vehicles that were hanging out of a parking spot. These two reasons are ultimately the same and attribute to 11% of the total crashes in the study area. Along West Main Street it was found that 50% of the crashes involved sideswipe-passing/parked vehicles. It should be noted that just by increasing the parking spot depth along Main and Market Streets, it should lower the occurrence of crashes related to parked vehicles.

The crash history was pulled separately from ODOT's GCAT system for each of the four sides of the Square during the same three year period (2013-2015). East Main Street from Mulberry Street to the Square had a total of 12 crashes reported and of those 12, 5 occurred in 2013, 1 in 2014, and 6 in 2015. There was 1 injury crash and 11 property damage crashes. ODOT's Crash Analysis Module (CAM) Tool provided the type of crash breakdown as shown in Table 29.

Table 29: East Main Street Type of Crash		
Type of Crash	Number	%
Backing	4	33.3%
Rear End	3	25.0%
Angle	2	16.7%
Sideswipe-Passing	2	16.7%
Parked Vehicle	1	8.3%
Total	12	100%

West Main Street from Short Street to the Square had a total of 41 crashes reported and of those 41, 12 occurred in 2013, 14 in 2014, and 15 in 2015. There were 2 injury crashes and 39 property damage crashes. ODOT's Crash Analysis Module (CAM) Tool provided the type of crash breakdown as shown in Table 30.

Table 30: West Main Street Type of Crash		
Type of Crash	Number	%
Parked Vehicle	14	34.1%
Rear End	9	22.0%
Backing	6	14.6%
Angle	6	14.6%
Sideswipe-Passing	4	9.8%
Left Turn	1	2.4%
Fixed Object	1	2.4%
Total	41	100%

North Market Street from Water Street to the Square had a total of 7 crashes reported and of those 7, 3 occurred in 2013, 2 in 2014, and 2 in 2015. There was 1 injury crash and 6 property damage crashes. ODOT's Crash Analysis Module (CAM) Tool provided the type of crash breakdown as shown in Table 31.

Table 31: North Market Street Type of Crash		
Type of Crash	Number	%
Backing	3	42.9%
Sideswipe-Passing	2	28.6%
Angle	1	14.3%
Parked Vehicle	1	14.3%
Total	7	100%

South Market Street from Race Street to the Square had a total of 55 crashes reported and of those 55, 13 occurred in 2013, 19 in 2014, and 23 in 2015. There were 5 injury crashes and 49 property damage crashes. ODOT's Crash Analysis Module (CAM) Tool provided the type of crash breakdown as shown in Table 32.

Table 32: South Market Street Type of Crash

Type of Crash	Number	%
Parked Vehicle	13	23.6%
Rear End	12	21.8%
Backing	10	18.2%
Angle	10	18.2%
Sideswipe-Passing	7	12.7%
Left Turn	2	3.6%
Fixed Object	1	1.8%
Total	55	100%

3.6 Pedestrian Signal Warrants

The Ohio Manual on Uniform Traffic Control Devices (OMUTCD) was utilized to complete traffic signal warrants for the traffic signals that are at the Square. There are nine (9) different traffic signal warrants within the OMUTCD. Warrant #4, Pedestrian Volume is the warrant of interest. Figure 4C-5 and 4C-7 in the OMUTCD are shown in Chart 4 and Chart 5.

Chart 4: Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume

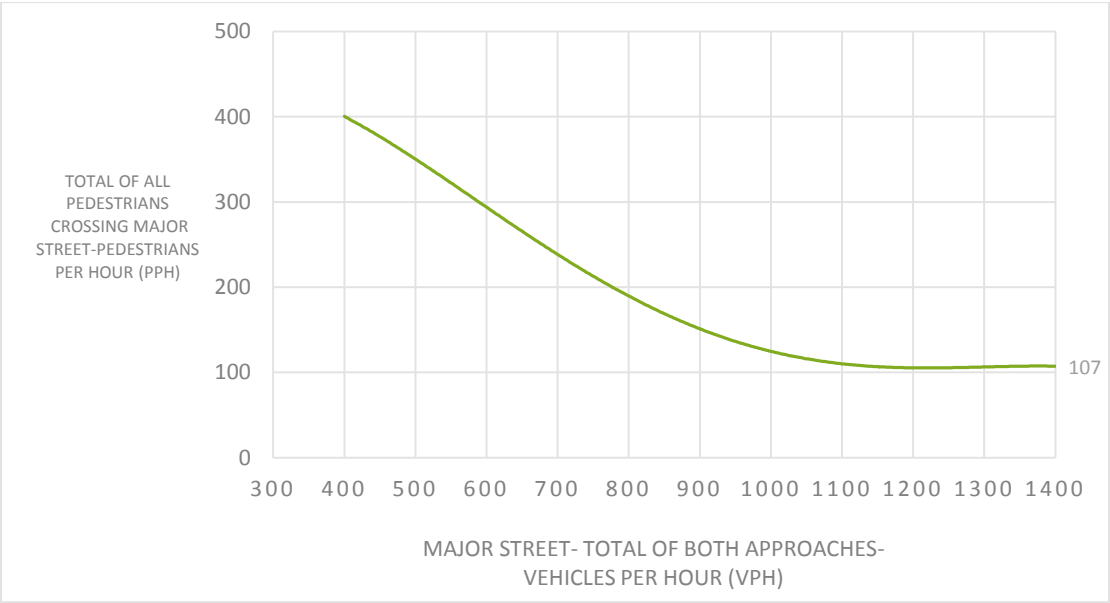
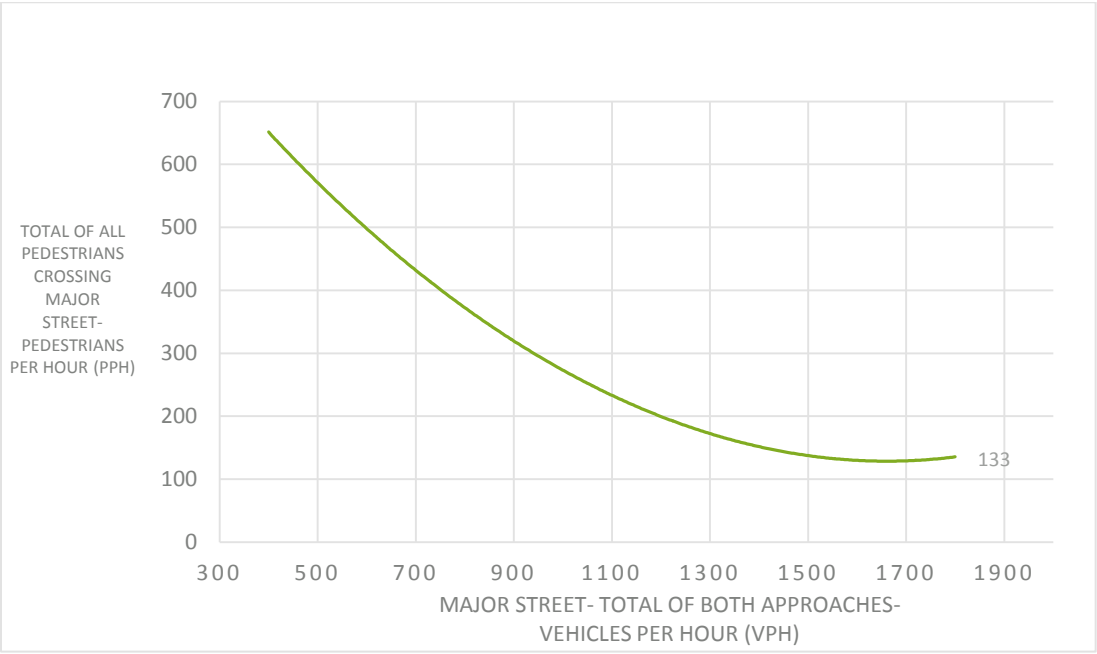


Chart 5: Figure 4C-7. Warrant 4, Pedestrian Peak Hour Volume



The traffic signals at the Square are standalone signals so the first warrant analysis scenario applies to looking at each of the four (4) signals individually to determine if a traffic signal is warranted. Table 33 shows the results of plotting the pedestrian volumes on Chart 4 and Chart 5. The 2016 VPH were developed from using the ODOT hourly profile as described in Section 3.1 for the 11AM, 12PM, 4PM, and 5PM hours.

Table 33: Warrant #4 Pedestrian Volume

Time Period	East Leg			West Leg			North Leg			South Leg		
	Day 1	Day 2	2016 VPH	Day 1	Day 2	2016 VPH	Day 1	Day 2	2016 VPH	Day 1	Day 2	2016 VPH
	PPH			PPH			PPH			PPH		
11:15 AM-12:15 PM	18	14	364	11	27	772	14	22	835	37	24	810
12:15-1:15 PM	23	17	396	27	40	839	24	37	908	33	41	881
4:15-5:15 PM	21	16	518	18	37	1096	37	30	1186	21	17	1151
5:15-6:15 PM	37	19	537	37	17	1137	33	23	1230	30	16	1194
Four Hour Warrant	**0**	**0**	**Not Warranted**	**0**	**0**	**Not Warranted**	**0**	**0**	**Not Warranted**	**0**	**0**	**Not Warranted**
Peak Hour Warrant	**0**	**0**	**Not Warranted**	**0**	**0**	**Not Warranted**	**0**	**0**	**Not Warranted**	**0**	**0**	**Not Warranted**

The results shown in Table 33 show that the traffic signals at each of the four (4) entries of the Square are not warranted. Each of the four (4) entries (signals) were analyzed separately resulting in lower pedestrian volumes.

In Table 34 the total pedestrian count that entered the intersection was compared to Chart 4 and Chart 5. This would be how the pedestrian warrant would be conducted for a typical intersection.

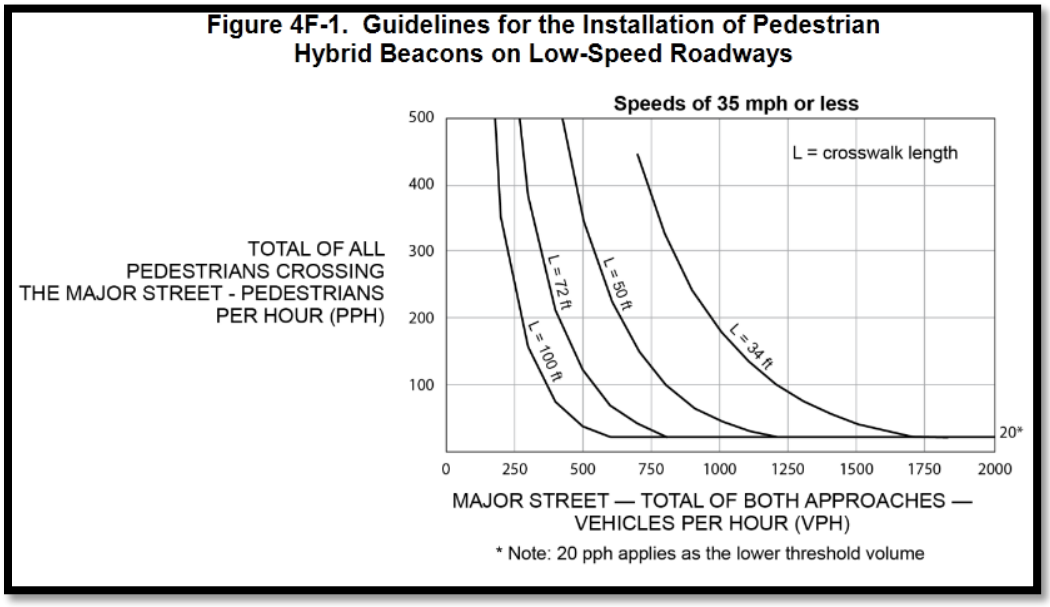
Table 34: Total Intersection

Hour of the day	Day 1	Day 2	2016 VPH (West and North Leg)
	PPH		
11:15 AM-12:15 PM	80	87	1,607
11:15 AM-12:15 PM	**107**	**135**	1,747
4:15-5:15 PM	97	100	2,282
5:15-6:15 PM	**137**	75	2,367
Four Hour Warrant	**2**	**1**	**Not Warranted**
Peak Hour Warrant	**1**	**1**	**Warranted**

Since the pedestrian volumes were not above the minimum threshold of 107 for the four studied hours throughout one day, the four hour warrant was not met. The peak hour warrant was met for one hour out of the four hours collected on each day, since the pedestrian count was above the minimum threshold of 133 pedestrians. It should also be noted that just because a traffic signal is warranted does not mean it has to be installed. Engineering judgment should be used when necessary.

The OMUTCD provides additional guidance on installation of Pedestrian Hybrid Beacons. A Pedestrian Hybrid Beacon is used to warn and control traffic at an unsignalized location to assist pedestrians in crossing a street at a marked crosswalk. Figure 4F-1 in the OMUTCD is shown as Chart 6. This figure shows the recommended guidelines to install a hybrid beacon based upon the crosswalk length, vehicles per hour and the number of pedestrians crossing per hour.

Chart 6: Figure 4F-1



The Table 35 shows the results of plotting the collected data on Chart 6. The OMUTCD states this should be used as a guide for locations that do not meet a traffic signal warrant but have pedestrian activity. The crosswalk lengths for each leg are indicated on the table.

Table 35: Pedestrian Hybrid Beacon

Time Period	East Leg (46' length)			West Leg (45' length)			North Leg (57' length)			South Leg (44' length)		
	Day 1	Day 2	2016 VPH	Day 1	Day 2	2016 VPH	Day 1	Day 2	2016 VPH	Day 1	Day 2	2016 VPH
	PPH			PPH			PPH			PPH		
11:15 AM-12:15 PM	18	14	364	11	27	772	14	22	835	37	24	810
12:15-1:15 PM	23	17	396	27	40	839	24	**37**	908	33	41	881
4:15-5:15 PM	21	16	518	18	37	1096	**37**	**30**	1186	21	17	1151
5:15-6:15 PM	37	19	537	37	17	1137	**33**	**23**	1230	30	16	1194
Number of Hours	**0**	**0**	**Not Considered**	**0**	**0**	**Not Considered**	**2**	**3**	**Consider**	**0**	**0**	**Not Considered**

The north leg of the intersection shows that a pedestrian hybrid beacon could be considered at that location. At the east, west and south leg a pedestrian hybrid beacon does not need to be considered at those locations.

4 Findings and Recommendations

4.1 City Parking Findings

This study is being prepared at the request of The City of Troy in association with an update to the *Downtown Troy Parking Assessment and Management Study* published in November 1996. The purpose of the parking portion of this study is to analyze the parking conditions within the study area to determine what, if any, parking deficiencies exist within the downtown area.

In Summary,

1. Occupancy count data was obtained from the City of Troy Police Department, where it was determined that the peak hour of occupancy for on-street parking locations occurred during the 1:00 PM hour for while the peak hour of occupancy for off-street parking locations occurred the 7:00 PM hour.

2. Two (2) on-street locations (Short Street Corridor: Main Street to Water Street and Water Street Corridor: Short Street to Cherry Street) were found to meet or exceed the 85% capacity threshold, while two (2) off-street locations (Northwest Public Square lot, Northeast Public Square Lot) were determined to exceed the 85% capacity threshold, with the Northwest Public Square Lot operating at a 100% occupancy rate.

3. The total occupancy rates indicate that both on- and off-street parking is available within the study area during the highest period of occupancy; however, parking may not be immediately adjacent to the public's preferred destination and may require more effort and time to locate a space.

4. Two (2) scenarios were created to model the theoretical parking demand within the study area. It was determined that Scenario 2, representing the adjusted parking demand based on the guidelines and strategies specified in the Urban Land Institute's (ULI) Shared Parking Manual, 2nd Edition, would represent the most accurate assessment of parking demand within the downtown area. The Scenario 2 adjusted parking demand computations, indicate that the study area models an overall deficit of 105 parking spaces under the current conditions, and projects an overall deficit of 184 parking spaces under the future conditions. However, the scenario 2 computations are anticipated to represent a conservative, worse case representation of the parking demand in the downtown area as the computations represent the maximum densities each land use utilizes (i.e. the mathematical model assumes every square foot of the land use is being utilized, and does not take into account unoccupied spaces that may not generate parking demand (i.e storage space)). Again, this analysis method provides a worse case estimate of the future potential parking demand so the study will account for future maximum growth within the current land use buildings. Under these circumstances, this study believes the current parking situation is a perceived issue, however, the City of Troy should plan for the potential future growth of parking demand in the downtown area.

5. Of the estimated 170 businesses within the study area, the online downtown parking survey received 55 responses. Of the 55 survey responses, the breakdown was as follows: 95% of the survey responses identified themselves as the Main Response (the business owner), 4% identified themselves as the Secondary Response (Business employee), while the remaining 1% identified themselves as a resident.

6. The online downtown parking survey indicates business owners believe the downtown area has a parking problem. Respondents either strongly agree or agree that there is insufficient parking in the downtown area. 67% of respondents believe the current parking situation deters customers from their business. The respondents indicated that lunchtime was the most difficult timeframe to find a place to park. Almost half (45%) the respondents believe employees are parking in front of businesses in the downtown area, reducing the amount of parking capacity for customers. Over half (59%) of the respondents believe that on-street parking enforcement within the downtown area is inconsistent. Finally, respondents believe the Cherry Street Kiosk Lot metering system is cumbersome and confusing. They believe the payment kiosk has too many key prompts, and often times the kiosk does not work. Additionally, the lot is perceived as inaccessible to disabled users as the parking spaces are too far away from the payment kiosk. Respondents would like more/additional signage that delineates parking rates and fines.

7. The Study identifies attributes of an effective parking management system that includes key elements such as parking strategies, policies and regulations, and the management and enforcement of those policies.

8. The Study identifies that the City of Troy is providing an adequate number of handicap parking spaces for the study area, however the Troy Rec Lot handicap space is not ADA compliant as no delineated aisle exists for the dedicated use of the user. The handicap space on Main Street (Block 1) near the courthouse is also not ADA compliant as no accessible aisle exists and the appropriate curb ramps are not provided. The two (2) handicap spaces on Water Street (Block 1) near the courthouse do not have an accessible aisle flush with the parking spaces. Finally, one (1) handicap space on Main Street (Block 7) does not meet the ADA requirements for a properly sized accessible aisle.

9. It was determined that off-street public parking lots within the City of Troy downtown area do not have adequate lot identification, as parking signage is either non-existent or not easily identifiable. Directional parking and vehicular wayfinding signs do not exist within the City of Troy downtown area. Visitors who are unfamiliar with the City are left without a sense of guidance and confidence when attempting to find available parking. Additionally, some patrons of the Cherry Street Kiosk Lot have identified the parking signage and payment method to be confusing.

4.2 City Parking Recommendations

Based on the information and parking analysis in this study, the following outlines recommendations for the City of Troy downtown parking area:

1. The current parking situation within the downtown area is a perceived problem. However, the City of Troy should proactively plan for the future growth of parking demand in the downtown area.

2. The City of Troy should update the ADA deficient handicap parking spaces to compliance and implement and regularly reevaluate these spaces for appropriate signage.

3. The City should consider converting the Cherry Street Kiosk system to a more conventional 'pay per hour' for a specific spot versus the current 'pay per a timeframe' for any spot system.

    - The survey respondents indicate people think the current system is cumbersome and it does not support higher levels of parking turnover. According to the field observation, the lot is underutilized, operating at an average peak hour occupancy rate 52% (approximately 25 parked cars). It is believed that by converting the operating system to simpler format, users may opt into utilizing the lot more frequently. Additionally, with the 'pay per hour' system, drivers can visually see if a parking spot is unoccupied, as there is no preconceived notion that a parking spot may not be available even if the spot currently unoccupied (as the current system promotes the notion that a vehicle can leave a parking spot and still have the spot reserved when it returns).

    - To implement this recommendation, the City of Troy needs to remove the signage associated with the 'pay per timeframe' system and erect signage that locates the payment kiosk. Additionally, parking spaces need to be numbered through the use of pavement markings or signs.

    - The City of Troy should also consider moving the payment kiosk in closer proximity of handicap accessible spaces.

4. The City of Troy should consider undertaking a coordinated program to increase awareness of the existing parking supply.

    - Develop the wayfinding system outlined in **Appendix F** that includes the implementation of identification, directional / location, and wayfinding signs throughout the downtown area. The design of these signs should complement one another and should follow a consistent scheme. This signing system will help drivers who are unfamiliar with the downtown area find parking locations and it will guide users to underutilized parking lots and handicap parking. The system will help direct court house visitors to underutilized lots, such as the Cherry Street Kiosk Lot, by placing advanced signage on Main Street and Market Street. Visitors then have the option to follow the guidance signs to an off-street parking location. Prior to implementing this recommendation, the City of Troy should consider developing a wayfinding plan. This plan should look beyond just the signage needed for parking, accounting for elements such as information kiosks, banners, and general branding efforts.

    - Market all of the available public parking options by creating a map and placing it in a brochure. The map should depict location of public parking (including locations that offer long term parking opportunities, such as the Cherry Street Kiosk Lot) hours of enforcement, parking rates. This map should be posted online on The City of Troy's website and the brochure should be printed on paper to distribute to visitors, employers and employees of the downtown area. A window static sticker version can be provided to business to further promote the available parking areas.

    - The City of Troy should review and revise, where necessary, the signing and curb painting for on-street parking spaces to assure that drivers have an understanding of where parking is permitted and what restrictions may apply.

5. The City of Troy should reevaluate parking meter rates.

    - The City of Troy should consider increasing the parking meter price at the North Cherry Street Lot and Troy Rec Lot to 0.50 cents an hour to emphasize parking turnover. This is at the upper limit of what the survey respondents believe is an acceptable price and is comparable to meter rates within case studied cities. Note that without a change in parking meter rates, parking behavior will not change.

    - The City of Troy should consider keeping pricing at the Cherry Street Kiosk Lot the same and offer lower meter rates at the Mulberry Street Lot (0.10 cents to 25 cents) to entice more motorists and visitors to utilize this lot.

    - Occupancy rates at the Public Square Lots are over or approaching an 85% occupancy rate. This parking is indented to be utilized as short term parking for visitors. As a way to enforce this concept and emphasize turnover, the City of Troy should consider implementing paid parking kiosks that use the rate of 0.50 cents per hour at these locations.

    - The City of Troy should consider periodically tracking occupancy rates and reassess parking meter fees accordingly until parking utilization for off-street lots stabilizes.

6. The City of Troy should consider a more proactive management of the supply of short term parking to maximize its availability for customers and visitors to the downtown area.

    - The City of Troy should consider undertaking a cooperative program to discourage employees from using the short term parking supply, including the space hopping throughout the day. This program should include an effort to identify and educate employees who regularly park in the short term spaces about the importance of having customer parking available in the downtown area.

    - The City should consider developing an ordinance to stop employees from space hopping every two (2) hours which occupies short term parking opportunities designated for customers and visitors in the downtown area.

    - The City of Troy should continue to consistently enforce the short term parking regulations with an emphasis on motorists who park for long periods of time or space hop within the short term parking locations.

7. The City of Troy should consider working cooperatively with property owners with the downtown area to expand the supply of long term parking.

    - The City of Troy could attempt to lease weekday parking from St. Patrick's Church. There appears to be approximately 100 parking spaces in the parking lot adjacent to St. Patrick's Church. This lot is four (4) blocks from the center of the downtown area and could serve as a location for long term employee parking usage.

    - The City of Troy could attempt to lease weekday parking from First Church of the Nazarene. There appears to be approximately 29 parking spaces in the parking lot adjacent to the Church. This lot is two (2) blocks from the center of the downtown area and could also serve as a location for long term employee parking usage.

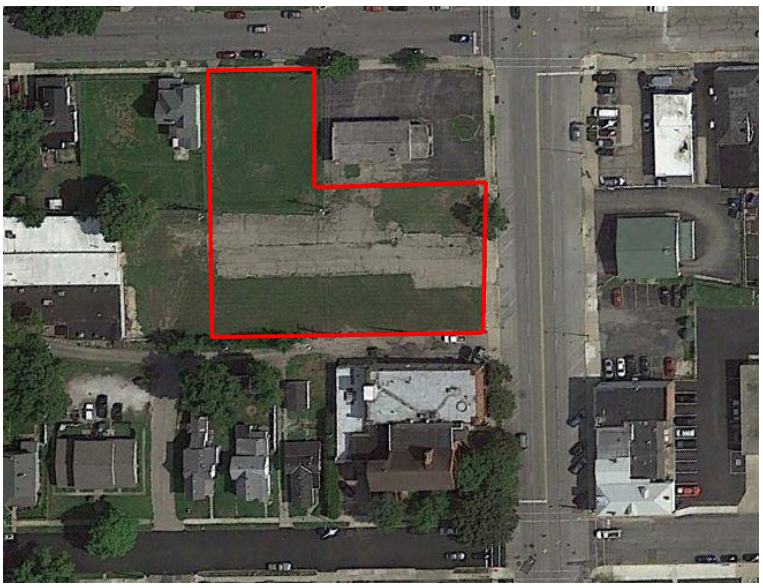
8. The City of Troy should consider implementing a residential parking permit program that permits controlled overnight parking in locations with short term hourly regulations to increase the supply of residential parking in the downtown area.

   The City of Troy should consider a permit programs that grants overnight parking privileges to residents of the downtown area for spaces that typically have two (2) hour restrictions. The conditions of the overnight parking program should permit residents to park their cars in these restricted locations between the hours of 8 P.M. and 8 A.M, when occupancy levels in the downtown area are at their lowest. This program would require users to verify the location of their residents, and register their vehicle with the City of Troy. Permits can then be issued to the user for a nominal monthly fee.

9. The City of Troy could consider expanding the supply of long term parking away from the center of the downtown area.

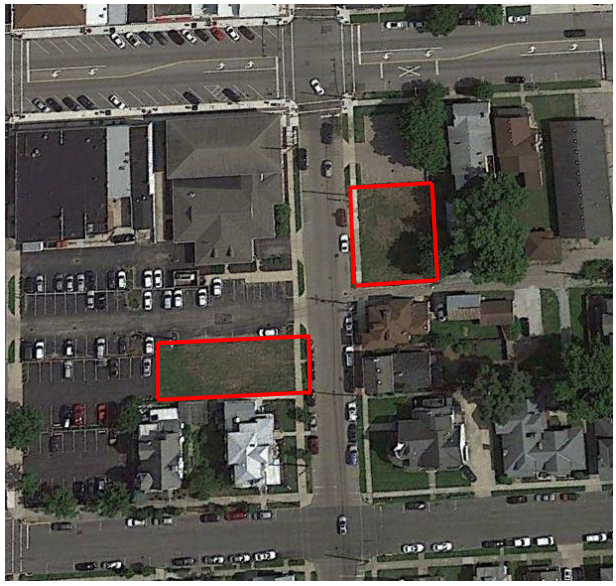
   A key piece in the City of Troy's parking management strategy is managing the supply of short term parking, and implementing new city code that prohibits the practice of space hopping every two (2) hours. By addressing either of these parking issues, the City of Troy is effectively limiting the locations available for long term parking. For the above strategies to work, the City of Troy should designate areas for employees to park. In general these lots should be placed away from the center of the study area and should serve as a long term opportunity for employees to park and general parking overflow.

   Similar to short term parking, there are few opportunities to easily expand the supply of long term parking within the study area. Because land acquisition can be rather difficult to accomplish, this study located areas of vacant or low land density usage. The following aerial photograph indicates vacant parcels that could be utilized as a parking lot devoted to long term employee parking or parking overflow.



   As shown in the aerial photograph, the vacant parcels are located on the corner of Market Street and Canal Street and represent approximately 0.80 acres of land that could be converted into a municipal long term parking lot for employees and general parking overflow.

Additionally, the following locations were also considered for long term parking. The photo below indicates vacant parcels that could be utilized as a parking lot devoted to long term employee parking or parking overflow.



The above potential long term parking opportunities are located on Mulberry Street between Main Street and Franklin Street. While these parcels are rather small, measuring in at approximately 0.13 acres for the southern potential lot and 0.15 acres for the northern potential lot, they do add the opportunity to supply additional long term parking locations. Interestingly enough, the northern potential lot is directly adjacent to the Mulberry Street lot, and the City of Troy could consider expanding the amount of spaces. The occupancy data indicates the Mulberry Street lot is underutilized and the City could consider extending the parking regulations to include long term parking.

10. The City could consider converting the Square to a modern roundabout, implementing a road diet on Main and Market Street, and increasing the number of Short term on-street parking spaces along these roadway corridors. Figure 10 shows the build 3-lane configuration. Figure 11 - Figure 13 show a closer view of the build configuration and the additional parking that will be gained.

In general there are few opportunities to easily expand the supply of conveniently located, short term parking in the City of Troy downtown area. However, by converting the Square into a modern roundabout and implementing a road diet that would propose to reduce the number of lanes on the Main Street and Market Street corridors, additional lateral space between the curbs could be reallocated for converting the existing parallel parking to angled parking. This potential improvement could add approximately 43 new on-street parking spaces within the study area.

Under this potential improvement, Block 1 (and west of Short Street) could add eleven (11) additional parking spaces along Main Street to help mitigate the potential parking deficit. Both Block 2 and Block 3 could each add six (6) additional parking spaces along Market Street, and two (2) spaces in each of the quadrants of the Public Square Lots (remove trees and widen the parking area by roughly 5 feet). Block 5 (and west of Short Street) could add ten (10) additional parking spaces along Main Street. Block 7 and Block 8 could add two (2) additional parking spaces could be added along Market Street in Block 12.

11. The City of Troy could consider constructing a parking garage.

    The construction of a parking garage was investigated as a way to add additional parking. The potential parking garage would ideally be located within 1 or 2 blocks of the square, where parking demand is higher. However the city does not currently own property in the vicinity of the square large enough to construct a garage. Parking lots in the vicinity of the square do exist but again, are not owned entirely by the City. If an area of similar size to the existing lots were to be purchased (110 feet by 165 feet), it would occupy roughly a quarter of a block and contain roughly 45 to 50 parking spaces. A garage with only a single deck and one ramp, would be challenging to construct due to the short length available for the ramp to the upper level, resulting in steeper than desired ramp grades or diminished number of overall parking spaces to provide acceptable ramp slopes within the parking structure. Additionally the ramp would occupy space previously available for parking on the ground level. A 2 level garage (ground and 1 elevated level) might yield a total of 70 to 80 parking spots, an increase of roughly 30 parking spots. Costs for a garage are estimated to be around $35,000 per elevated parking space. For the 2-level garage described, costs are likely to be as follows:

    - Elevated structure with 40 spaces $1,400,000
    - Ground level site work $125,000

    Cost for parking garages can vary depending on configuration and construction methods. Costs shows are planning level estimates to show order of magnitude and indicate substantial costs to gain a relatively limited number of parking stalls. Additionally, a new parking garage is similar to a bridge in respect to ongoing maintenance costs for the life of the structure. The new city facility will require yearly inspections and annual maintenance (lighting costs, security, fire suppression, ventilation based on the size, snow and salt removal, additional insurance premiums and will have to be staffed to some level operationally even with automated entry and exit controls. Yearly maintenance costs can range from 10% to 15% of the construction costs for automated gates and hirer if a cashier is present.

12. The City of Troy could consider reconstructing the North Cherry Street Parking Lot at Water Street.

    Existing parking lots on west and east sides of North Cherry Street at Water Street have 61 and 48 parking spots respectively, equaling 109 plus 3 on street parking spots adjacent to the lots on North Cherry Street, 112 total spots. North Cherry Street could be closed and both parking lots reconfigured to stretch across Cherry Street. This would result in about 135 total parking spaces, an increase of 23 parking spaces. Note that the majority of the parking lots in this area are owned by the county and not the City, though the City does own the southern half of the parking lot on the east side of the street. Based on current auditor values, the city could expect to pay around $150,000 to acquire all of the parking lots. Additionally, the public right-of-way of North Cherry Street would need to be vacated which could be problematic given existing utilities.

4.3 City Traffic and Pedestrian Findings

As a part of the parking study update, analysis was completed to evaluate the roadways in the study area along with a review of the existing pedestrian signals at the four entry/exits of the Square.

In Summary,

1. Turning movements were collected at ten (10) intersections along Market Street and Main Street. ADT volumes were determined by using the ODOT hourly profile for an urban minor arterial. The volumes were grown from the collected 2016 volumes to 2036 using a 0.367% linear growth rate per year. The growth rate was provided by MVRPC. The collected traffic counts were used for the peak hour volumes for 2016 and grown to 2036 for the studied intersections along Main Street and Market Street.

2. Pedestrian counts were collected by the City of Troy for a period of four (4) hours for two (2) days. The volumes were used to complete pedestrian signal warrant analyses.

3. Lane utilization counts were collected at six (6) different locations along Main Street and Market Street. The utilization was summarized as percentage of vehicles using the curb lane versus the inside lane. The majority of the vehicles traveling towards the square were using the inside lane.

4. Roadway capacity was conducted for each roadway segment around the Square along with the intersection of the roadways that create the Square. An LOS of a D or better was used as an acceptable level of service for the urban downtown environment.

5. Capacity analysis utilized 2016 and 2036 traffic volumes and compared the existing 4-lane roadway configuration with a build 3-lane configuration.

6. The HCM was utilized to determine the LOS of the roadway segments. The existing 4-lane and build 3-lane configurations all met an acceptable LOS of D or better. The build 3-lane configuration is a viable option for implementation.

7. In converting to a 3-lane roadway North Market Street parking could be converted into angled (or back in) parking rather than the existing parallel parking. This would help add parking to the desired downtown area. Other areas along Main Street would also benefit from converting the parallel parking to angled or back-in parking.

8. The Square was analyzed in HCS as a roundabout to compute the LOS of the intersection. The pedestrian signals were ignored (standard crosswalks included in the analysis) since this is not a typical configuration and later was found the signals were not required due to the lack of pedestrian volumes.

9. The Square was found to have LOS an acceptable level on all approaches except for the northbound direction in the existing (4-lane) configuration. The build (3-lane) configuration improved the northbound LOS and lowered the 2036 total intersection LOS by almost 5 seconds of delay. The LOS results were also compared to a signalized approach and all approaches were at an acceptable level of D or better.

10. Capacity analysis was completed for the ten (10) intersections within the study area. The analysis showed minor decreases in delay from the existing (4-lane) configuration to the build (3-lane) configuration.

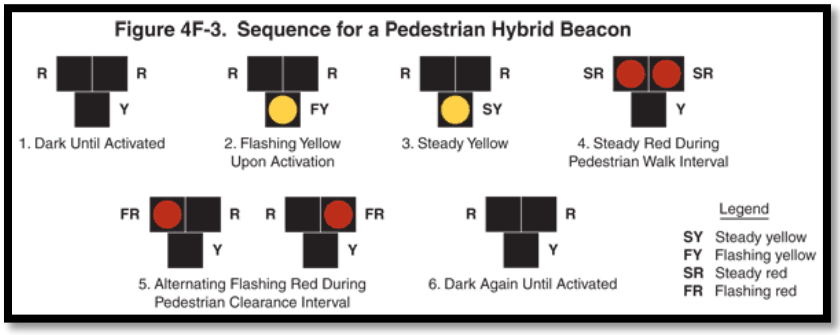
11. The maximum V/C ratio was analyzed for both the 2036 existing (4-lane) and 2036 build (3-lane) configurations. The 2036 existing (4-lane) configuration resulted in a maximum V/C ratio of 1.023 for the northbound left/through lane. In the 2036 build (3-lane) configuration the northbound lane assignment was altered and the V/C ratios were improved to 0.293 for the northbound left and 0.73 for the northbound through/right lane. The 2036 build (3-Lane) configuration reports a maximum V/C ratio of 0.906 for the southbound left/through/right lane indicating that the approach is anticipated to operate near capacity in the 2036 horizon year.

12. The crash history shows that there were 150 crashes within the study area from 2013 to 2015 where almost a quarter of all the crashes were due to rear end and 20% were due to parked vehicles. In order to reduce rear end crashes, the amount of stopping points should be reduced. Almost 15% of the rear end crashes, occurring within the study area, were caused by the pedestrian signals at the Square. The parked vehicle crashes could be reduced by creating longer parking stalls along the roadways to reduce the amount a vehicle would stick out into the roadway. With the implementation of a 3-lane roadway section along the study area there would also be a designated center turn lane at each intersection which would reduce the amount of sudden stopping in the inside through lane, which may reduce the rear end crash occurrence. The 3-lane roadway may also reduce the sideswipe-passing crash type, occurring 18 times within the 3 year period, since the majority of those crashes were caused by parked vehicles hanging out into the roadway.

13. The OMUTCD was utilized to determine if a traffic signal was warranted due to pedestrian activity. The warrant showed that when looking at each leg's pedestrian volumes separately Warrant #4 (Pedestrian Volume) was not met for either the four hour or the peak hour criteria. The intersection was then studied by totaling all four legs together to determine if the total pedestrians at the Square would warrant a signal if it was a normal intersection. The warrant was not met for the four hour but it did meet the warrant for the peak hour criteria for one hour out of the day. Even though the warrant was met engineering judgment should be considered. Other mitigative measures such as a pedestrian hybrid beacon or a pedestrian rapid flash beacon are suggestions that the City should consider.

14. The OMUTCD was also utilized to determine if a pedestrian hybrid beacon should be considered for this location. The guidelines were met for the north leg of the intersection. The east, west and south legs were not met. The pedestrian hybrid beacon would be a smoother transition away from the pedestrian signals for the public rather than completely removing the traffic signals at the four entry points of the Square. However, if a 3-lane roadway is implemented it will shorten the crossing distance, which then eliminates the need for the pedestrian hybrid beacon based on the guidance provided in the OMUTCD. Figure 8 shows a pedestrian hybrid beacon along with the sequence of operation that is included in the OMUTCD.

Figure 8: Pedestrian Hybrid Beacon



15. An alternative to the pedestrian hybrid beacon is a pedestrian rapid flash beacon. This device when activated by a pedestrian pushing the pushbutton, flashes the lights under the sign shown in Figure 9. These lights warn drivers that a pedestrian may be in the roadway and they will need to yield to the pedestrian. These devices can be solar powered so this mitigative measure is relatively inexpensive to install and maintain. This is a second option if the pedestrian signals are removed that would still provide the public with a smoother transition away from the signals.

Figure 9: Pedestrian Rapid Flash Beacon

4.4 Traffic and Pedestrian Recommendations

Based on the information from the traffic and pedestrian analysis in this study, the following outlines recommendations for the City of Troy:

1. Convert the existing 4-lane roadways in the study area to 3-lane roadways. This is expected to reduce the number of rear end, parked vehicles, and sideswipe type crashes that have occurred in the study area by adding additional length to the current parking stalls. A 3-lane roadway would also reduce the crossing distance for a pedestrian to cross the roadway. There is an opportunity to add an additional 43 parking spaces along Main and Market Streets with a 3-lane roadway. Figure 10 shows the build 3-lane configuration. Figure 11 - Figure 13 show a closer view of the build configuration and the additional parking that will be gained. The following outlines the design of the roadway alignment and parking stalls along each block of Main and Market Streets:
    - Main Street at Adams Street/Hobart Drive- Eastbound through/right turn lane converts to a right turn only to begin the 3-lane section heading east.
    - Adams Street to Plum Street- Angled parking is set at 30 degrees since the roadway width is slightly narrower in this section of Main Street. Parallel parking to remain on the south side of Main Street between Monroe Street and Oxford Street due to existing driveways that prohibit a benefit to convert to angled parking stalls. The through lanes are 10.5 feet with a 10 foot center turn lane/two-way-left-turn-lane. Widening of the roadway by 5' would allow for 45 degree angled parking and 11 foot wide travel lanes.
    - Plum Street to Mulberry Street- Angled parking is set at 45 degrees which allows for 11 foot through lanes and a 10 foot center turn lane/two-way-left-turn-lane. At the square the eastbound approach opens up to two approach lanes (shared left/through and right). The westbound approach at the square is a one lane approach.
    - Market Street at Race Street- The northbound inside lane converts to a left turn lane and the right lane remains a shared through/right turn lane.
    - Race Street to Water Street- Angled parking is set at 45 degrees which allows for 11 foot through lanes and a 10 foot center turn lane/two-way-left-turn-lane. At the square the northbound approach opens up to two approach lanes (left and shared through/right). The southbound approach at the square is a one lane approach.
    - Market Street at Water Street- The southbound through/right turn lane converts to a right turn only to begin the 3-lane section heading south.

2. Remove the pedestrian traffic signals at the four entry points of the Square. These signals are not needed and cause congestion at the Square. Install Pedestrian Rapid Flash Beacons at each crosswalk point outside of the roundabout.

3. Add raised pedestrian refuge islands in the center lane of the 3-lane section on the north and east legs to allow pedestrians with the ability to cross the roadway while only looking for a gap in traffic from one direction at a time. This should only be done if the pedestrian signals are removed. Example images can be found below.

4.5 Plan for Implementation

The recommendations presented in the City Parking section should be considered as an integrated package, rather than single standalone options. It is the intent to provide coordinated implementation as many of the recommendations have a direct cause-and-effect relationship that, if separated from one another may result in less optimal or negative results. Moreover, adequate time must be allowed for the implementation of the parking recommendations to occur and for the users of the parking system (employees, visitors and residents) to adjust to the changes.

The recommendations of this report can be implemented over a number of years. The items which should be considered immediately to either eliminate a problem or safety concern include:

1. Review the existing handicap parking spaces for ADA compliance and implement a plan for any necessary modifications.

2. Restripe to 3-lanes and use painted islands at first as opposed to raised islands. Portable short planters with low level plants can be set in the painted island areas to further define them. Planters and plantings should be kept below 18” in height to avoid obscuring children using the crosswalks. This will allow for extension of the angled parking and help reduce the number of crashes. Additionally it will add 35 parking spaces. This should be done in conjunction with the removal of the pedestrian signals and installation of Rapid Flash Beacons where the pedestrian signals were located. (Note that with the restriping, the layout/design of the roundabout should be further studied beyond this study to insure semi-trucks can still navigate the square. This may require the reconstruction of the brick apron on the center of the circle to allow trucks to use it as a truck apron.)

3. Reconstruct the center parking area in each of the four quadrants of the square to remove the trees and expand the available parking area by 5 feet in width. This will add two (2) additional parking spaces in each quadrant in the highest demand areas. Lower level plantings could be provided around the parking areas to offset the removal of the trees.

4. Implement wayfinding signage to direct the public to the parking available in the City.

5. Begin discussions with council on ordnances to discourage employee parking in the area of the square.

6. Adjust parking rates and modify the Cherry Street kiosk to be more user friendly.

Figure 10: Build 3-Lane Configuration

Figure 11: Main Street Build 3-Lane Configuration

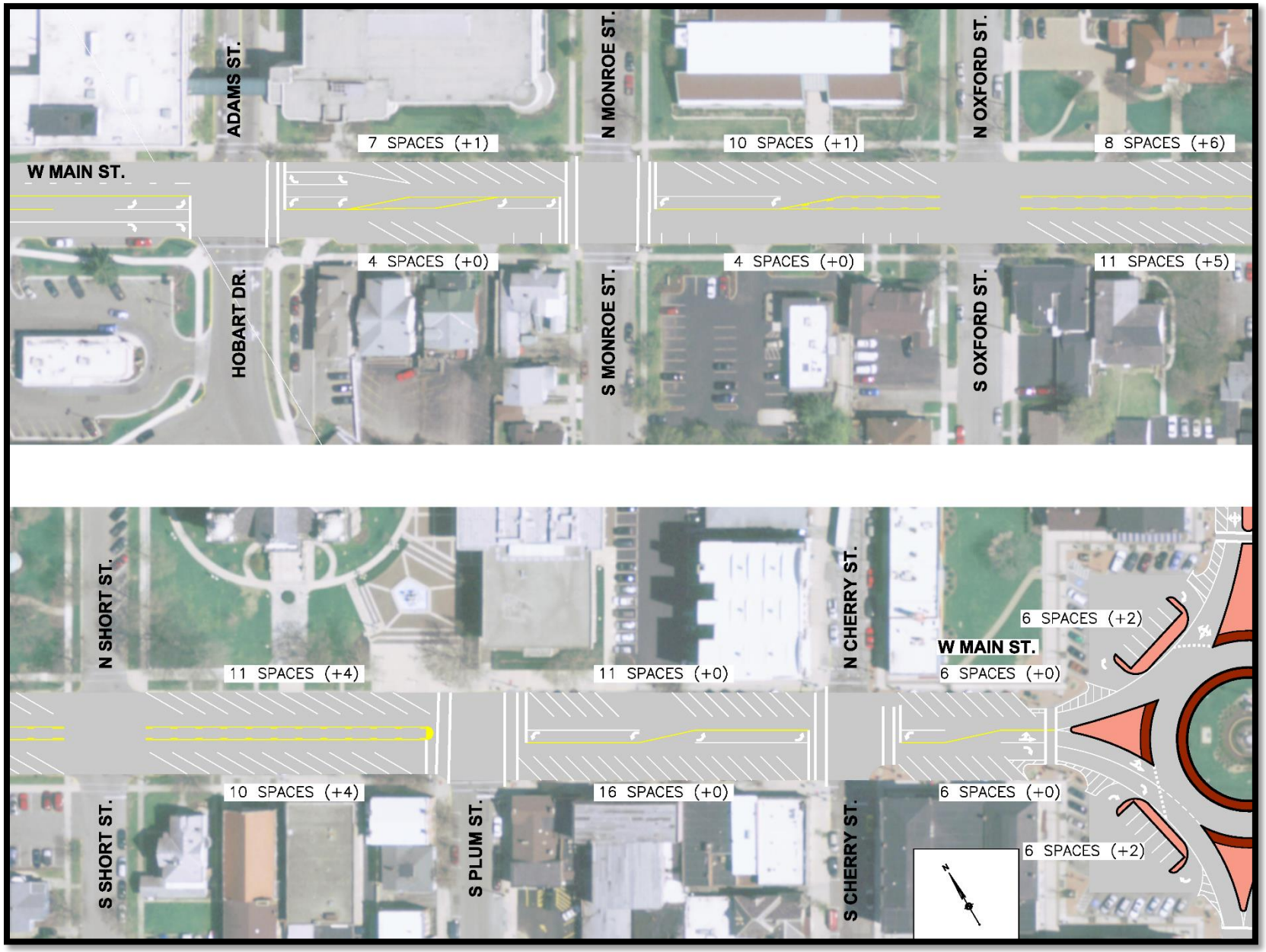


Figure 12: The Square Build 3-Lane Configuration

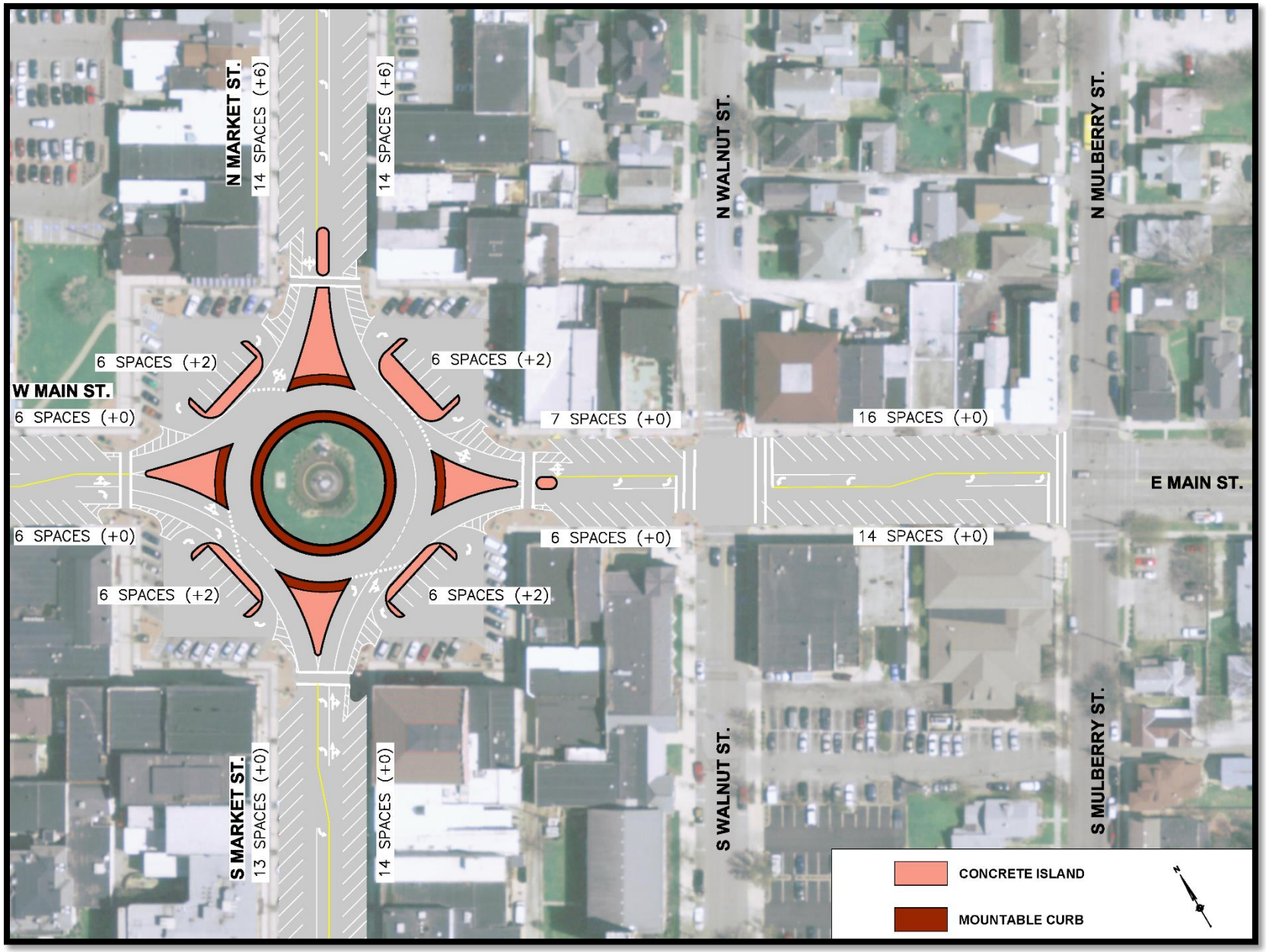
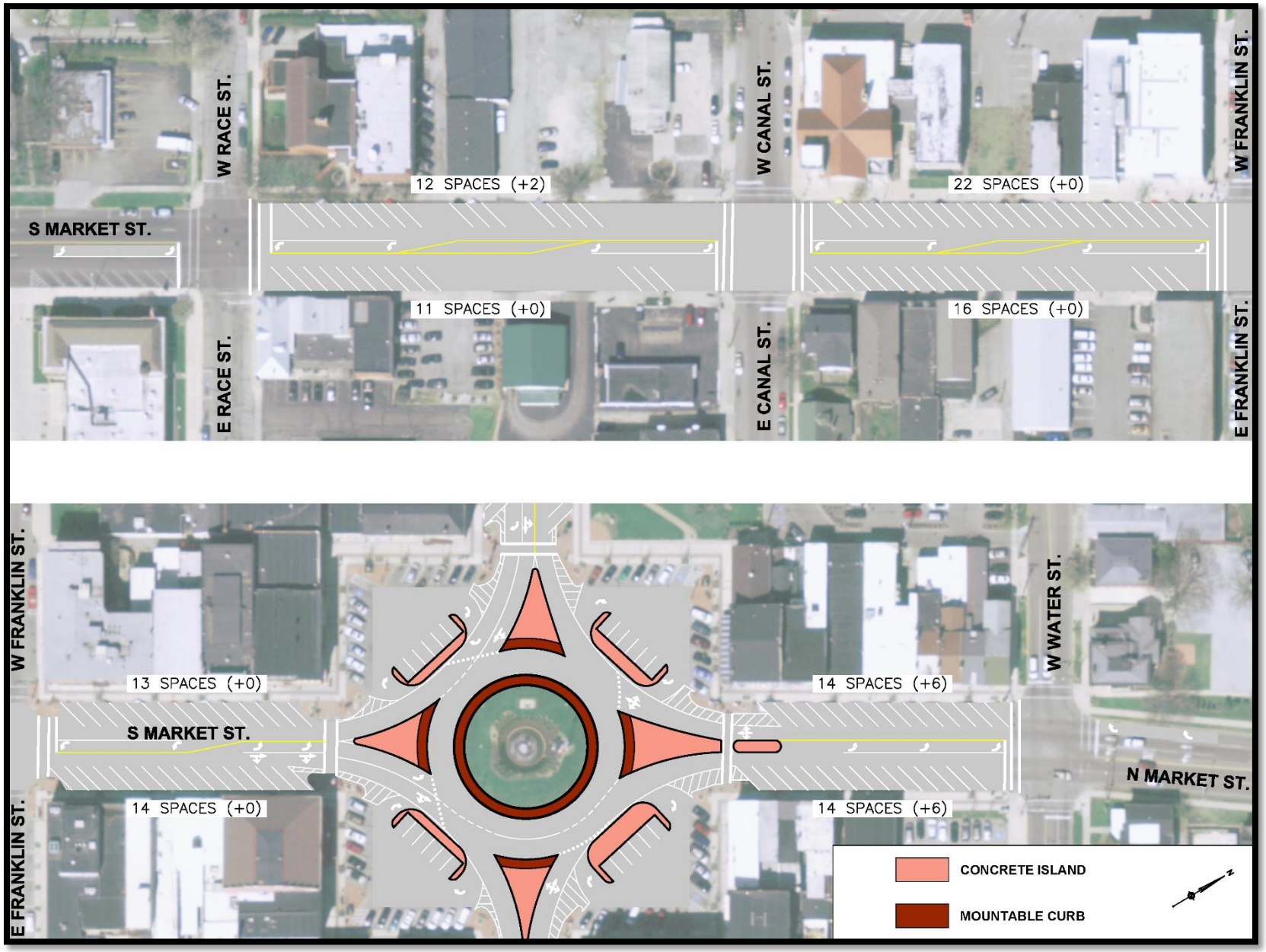


Figure 13: Market Street Build 3-Lane Configuration



APPENDIX A: PARKING OCCUPANCY COUNT DATA

3/18/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Main Street Corridor													
Short St. to Plum St.	4	5	9	9	5	5	9	5	3	0	0	N/A	1
Plum St. to Cherry St.	7	8	9	18	15	20	18	19	14	8	12	N/A	5
Cherry St. to Market St.	3	4	7	7	9	11	5	5	7	3	11	N/A	7
Market St. to Walnut St.	0	3	4	8	11	11	10	9	9	3	4	N/A	5
Walnut St. to Mulberry St.	13	26	19	16	21	28	12	10	21	21	25	N/A	22
Market Street Corridor													
Race St. to Canal St.	1	5	10	9	11	10	7	8	7	2	2	N/A	1
Canal St. to Franklin St.	1	2	4	14	12	11	20	9	11	3	13	N/A	5
Franklin St. to Main St.	5	5	10	11	15	12	6	10	7	13	23	N/A	18
Main St. to Water St.	9	6	9	11	14	14	11	9	10	11	12	N/A	8
Short Street Corridor													
Main St. to Water St.	4	10	17	16	8	11	11	5	2	1	1	N/A	1
Water Street Corridor													
Short St. to Cherry St.	11	12	2	9	8	9	10	11	7	2	4	N/A	0

3/17/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Main Street Corridor													
Short St. to Plum St.	9	11	8	7	5	12	6	5	4	3	3	8	6
Plum St. to Cherry St.	7	13	16	12	10	14	20	16	12	12	14	15	13
Cherry St. to Market St.	0	4	4	2	11	9	7	8	4	5	11	10	4
Market St. to Walnut St.	2	1	4	9	6	11	9	2	9	13	12	9	5
Walnut St. to Mulberry St.	9	12	15	13	29	25	18	17	23	23	27	26	29
Market Street Corridor													
Race St. to Canal St.	1	3	3	10	9	10	11	9	12	8	7	6	3
Canal St. to Franklin St.	1	2	6	5	7	7	8	5	7	6	11	4	3
Franklin St. to Main St.	4	8	5	9	9	16	10	7	26	20	24	22	12
Main St. to Water St.	7	6	7	8	16	15	12	14	8	16	16	10	7
Short Street Corridor													
Main St. to Water St.	19	12	14	15	5	19	15	15	5	6	7	13	9
Water Street Corridor													
Short St. to Cherry St.	13	13	12	12	9	13	13	12	4	1	3	8	4

3/16/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Main Street Corridor													
Short St. to Plum St.	3	12	11	6	5	11	9	6	3	2	0	2	N/A
Plum St. to Cherry St.	4	14	22	18	16	19	16	13	5	11	9	12	N/A
Cherry St. to Market St.	5	7	10	10	10	10	6	7	3	6	9	10	N/A
Market St. to Walnut St.	1	4	2	5	8	12	8	3	8	5	9	13	N/A
Walnut St. to Mulberry St.	7	17	14	10	23	15	13	10	11	22	19	22	N/A
Market Street Corridor													
Race St. to Canal St.	1	3	3	8	6	14	14	15	14	12	8	7	N/A
Canal St. to Franklin St.	3	5	9	14	6	7	7	6	6	6	16	16	N/A
Franklin St. to Main St.	4	5	6	9	11	9	10	6	7	12	26	22	N/A
Main St. to Water St.	7	6	5	8	15	14	7	5	14	11	16	15	N/A
Short Street Corridor													
Main St. to Water St.	14	18	16	15	11	17	15	14	6	7	6	8	N/A
Water Street Corridor													
Short St. to Cherry St.	12	12	12	9	7	13	11	10	11	3	4	4	N/A

3/15/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Main Street Corridor													
Short St. to Plum St.	9	7	3	9	7	11	10	5	3	1	5	9	N/A
Plum St. to Cherry St.	4	12	12	14	11	15	20	13	11	8	11	18	N/A
Cherry St. to Market St.	1	4	7	7	7	8	2	4	3	6	9	8	N/A
Market St. to Walnut St.	2	2	3	3	3	4	4	3	7	10	12	12	N/A
Walnut St. to Mulberry St.	13	12	15	11	21	19	12	7	14	20	25	27	N/A
Market Street Corridor													
Race St. to Canal St.	0	2	2	4	9	13	13	13	10	9	10	8	N/A
Canal St. to Franklin St.	2	10	12	12	11	15	11	8	9	6	2	12	N/A
Franklin St. to Main St.	3	7	3	11	14	8	8	7	11	12	21	27	N/A
Main St. to Water St.	7	5	6	9	13	13	7	8	8	11	12	16	N/A
Short Street Corridor													
Main St. to Water St.	19	19	7	9	7	16	19	10	12	4	2	0	N/A
Water Street Corridor													
Short St. to Cherry St.	13	13	12	12	11	13	13	12	9	7	13	11	N/A

3/14/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Main Street Corridor													
Short St. to Plum St.	7	10	12	5	5	11	8	8	3	2	1	0	0
Plum St. to Cherry St.	2	10	12	12	12	21	14	11	11	6	5	7	4
Cherry St. to Market St.	2	4	3	4	4	11	5	4	1	2	2	7	7
Market St. to Walnut St.	0	1	2	2	2	1	1	1	1	4	2	1	2
Walnut St. to Mulberry St.	9	10	11	16	16	16	11	8	6	8	17	16	6
Market Street Corridor													
Race St. to Canal St.	0	2	1	1	1	2	8	5	5	4	1	3	2
Canal St. to Franklin St.	6	4	7	12	12	10	6	6	9	7	9	9	3
Franklin St. to Main St.	3	6	9	9	9	10	10	12	12	22	24	19	7
Main St. to Water St.	5	5	5	9	9	13	8	10	11	12	12	15	7
Short Street Corridor													
Main St. to Water St.	6	9	9	16	16	19	15	8	2	1	2	11	7
Water Street Corridor													
Short St. to Cherry St.	13	13	13	11	11	13	12	10	8	3	4	3	2

3/11/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Main Street Corridor													
Short St. to Plum St.	1	5	10	7	9	8	9	7	7	3	0	1	1
Plum St. to Cherry St.	2	4	9	10	6	6	16	19	17	9	17	21	16
Cherry St. to Market St.	1	4	2	5	12	10	3	7	6	8	7	11	9
Market St. to Walnut St.	0	3	4	7	13	10	13	11	8	8	12	13	9
Walnut St. to Mulberry St.	17	18	23	18	26	17	26	21	27	22	30	29	24
Market Street Corridor													
Race St. to Canal St.	1	8	12	10	11	13	13	12	9	8	2	2	2
Canal St. to Franklin St.	4	9	11	17	7	10	16	7	9	10	8	10	6
Franklin St. to Main St.	5	6	10	12	14	12	11	11	13	16	17	27	15
Main St. to Water St.	6	9	11	10	16	14	15	10	10	13	16	15	15
Short Street Corridor													
Main St. to Water St.	3	13	14	18	7	19	19	15	19	5	8	6	7
Water Street Corridor													
Short St. to Cherry St.	12	13	13	12	11	12	12	11	10	8	5	5	3

3/10/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Main Street Corridor													
Short St. to Plum St.	12	7	9	9	6	11	7	5	7	5	1	0	1
Plum St. to Cherry St.	9	15	14	14	9	20	15	18	11	4	18	25	13
Cherry St. to Market St.	1	1	2	4	8	10	6	7	8	4	7	10	5
Market St. to Walnut St.	0	3	5	8	8	6	8	3	6	7	12	13	3
Walnut St. to Mulberry St.	5	10	7	19	26	14	15	11	15	19	28	26	18
Market Street Corridor													
Race St. to Canal St.	1	1	5	8	8	12	15	11	10	8	5	5	0
Canal St. to Franklin St.	4	7	5	6	10	15	12	16	10	5	2	4	6
Franklin St. to Main St.	4	7	9	14	12	12	10	4	11	13	17	21	7
Main St. to Water St.	8	4	6	10	16	11	9	12	12	10	15	11	6
Short Street Corridor													
Main St. to Water St.	19	18	17	15	10	19	17	14	14	4	3	8	2
Water Street Corridor													
Short St. to Cherry St.	13	12	12	12	10	14	13	9	8	2	2	6	2

3/9/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Main Street Corridor													
Short St. to Plum St.	0	6	8	7	6	11	10	7	0	9	1	3	6
Plum St. to Cherry St.	2	8	17	20	14	18	16	13	14	8	11	17	20
Cherry St. to Market St.	1	4	6	4	3	11	5	2	6	6	10	9	7
Market St. to Walnut St.	1	2	7	2	3	5	7	11	7	7	12	11	4
Walnut St. to Mulberry St.	9	16	17	15	19	18	11	11	15	26	22	20	8
Market Street Corridor													
Race St. to Canal St.	3	0	2	10	8	14	9	12	17	0	9	13	4
Canal St. to Franklin St.	5	1	7	10	13	3	7	7	4	8	9	9	4
Franklin St. to Main St.	2	4	6	5	10	12	4	12	5	4	23	21	16
Main St. to Water St.	3	4	9	6	13	15	12	2	9	12	16	15	12
Short Street Corridor													
Main St. to Water St.	8	19	18	15	7	14	15	19	9	6	6	10	6
Water Street Corridor													
Short St. to Cherry St.	12	13	13	13	11	14	14	12	9	3	5	4	2

3/8/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Main Street Corridor													
Short St. to Plum St.	6	7	7	11	6	10	10	10	6	3	5	10	0
Plum St. to Cherry St.	5	11	17	18	16	20	16	11	8	10	12	7	13
Cherry St. to Market St.	2	1	2	5	10	9	5	5	4	4	8	10	3
Market St. to Walnut St.	0	1	4	7	9	7	1	2	9	8	9	13	4
Walnut St. to Mulberry St.	10	9	11	13	19	23	18	9	18	22	25	23	11
Market Street Corridor													
Race St. to Canal St.	0	1	1	5	4	11	14	11	15	11	12	6	3
Canal St. to Franklin St.	1	1	9	22	9	12	11	11	10	1	3	0	2
Franklin St. to Main St.	5	4	4	5	17	8	12	8	6	15	24	23	8
Main St. to Water St.	5	4	4	10	14	14	8	8	12	12	11	16	13
Short Street Corridor													
Main St. to Water St.	17	14	15	13	12	18	16	8	11	4	10	16	4
Water Street Corridor													
Short St. to Cherry St.	12	13	11	9	7	12	11	7	8	4	7	8	6

3/7/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Main Street Corridor													
Short St. to Plum St.	2	11	11	8	10	8	10	9	4	N/A	5	4	0
Plum St. to Cherry St.	0	16	20	16	8	12	19	14	14	N/A	8	8	6
Cherry St. to Market St.	0	1	5	3	1	3	6	6	3	N/A	6	10	2
Market St. to Walnut St.	2	3	4	4	4	1	2	3	3	N/A	2	0	2
Walnut St. to Mulberry St.	8	21	12	13	11	13	9	11	12	N/A	16	7	7
Market Street Corridor													
Race St. to Canal St.	0	5	2	2	2	5	8	4	9	N/A	6	5	1
Canal St. to Franklin St.	1	2	17	22	14	16	17	7	8	N/A	7	19	2
Franklin St. to Main St.	2	6	7	9	11	13	18	7	6	N/A	16	12	3
Main St. to Water St.	5	4	5	5	14	7	5	5	9	N/A	13	11	3
Short Street Corridor													
Main St. to Water St.	9	15	19	16	10	19	18	17	8	N/A	19	19	0
Water Street Corridor													
Short St. to Cherry St.	11	12	14	10	11	11	1	10	8	N/A	2	4	2

3/18/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Cherry St. Lot	6	20	27	31	32	32	28	29	27	23	33	N/A	38
Cherry St North Lot	2	6	8	12	18	20	17	20	15	19	18	N/A	14
NW Pub. Sq. Lot	6	8	9	6	16	16	14	11	15	14	14	N/A	17
NE Pub. Sq. Lot	2	4	7	10	15	12	11	10	14	15	13	N/A	16
SE Pub. Sq. Lot	5	6	8	9	7	10	7	12	11	8	17	N/A	13
SW Pub. Sq. Lot	14	15	16	12	13	17	17	13	15	6	15	N/A	14
Troy Rec Lot	1	3	2	4	10	10	6	8	10	9	4	N/A	8
S. Mulberry Lot	2	2	2	1	1	2	1	1	1	1	3	N/A	3

3/17/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Cherry St. Lot	6	22	29	28	26	26	30	31	27	18	20	21	21
Cherry St North Lot	3	10	17	18	18	19	19	14	14	18	21	21	13
NW Pub. Sq. Lot	3	5	7	7	17	10	11	9	10	16	17	11	9
NE Pub. Sq. Lot	4	6	9	14	15	16	12	10	10	11	16	12	7
SE Pub. Sq. Lot	2	5	7	10	15	13	8	7	9	16	18	17	10
SW Pub. Sq. Lot	7	10	9	14	16	16	15	13	16	15	16	15	13
Troy Rec Lot	0	3	2	3	13	16	7	5	7	17	16	9	8
S. Mulberry Lot	2	2	2	1	1	3	1	1	2	1	4	5	2

3/16/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Cherry St. Lot	1	8	32	32	31	20	18	15	15	17	29	30	N/A
Cherry St North Lot	2	6	12	17	19	20	17	13	18	15	19	20	N/A
NW Pub. Sq. Lot	3	6	4	5	16	15	7	2	5	10	16	18	N/A
NE Pub. Sq. Lot	3	4	8	14	15	9	11	13	9	16	15	15	N/A
SE Pub. Sq. Lot	3	9	9	11	14	11	6	12	9	8	16	16	N/A
SW Pub. Sq. Lot	9	3	15	15	17	14	12	8	11	13	16	16	N/A
Troy Rec Lot	2	2	3	2	6	10	7	7	10	13	15	17	N/A
S. Mulberry Lot	2	2	2	2	1	0	0	0	0	0	1	0	N/A

3/15/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Cherry St. Lot	0	9	18	23	23	25	28	28	22	20	31	37	N/A
Cherry St North Lot	4	8	12	16	18	18	16	17	16	16	23	23	N/A
NW Pub. Sq. Lot	1	2	3	6	13	16	5	4	9	13	14	17	N/A
NE Pub. Sq. Lot	5	7	6	7	12	13	8	2	5	11	16	17	N/A
SE Pub. Sq. Lot	3	5	11	8	7	7	6	7	13	14	16	17	N/A
SW Pub. Sq. Lot	14	10	14	14	11	15	14	10	8	13	16	17	N/A
Troy Rec Lot	0	4	2	2	7	5	6	10	10	13	16	14	N/A
S. Mulberry Lot	2	2	2	2	0	1	2	1	2	2	1	4	N/A

3/14/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Cherry St. Lot	2	9	13	19	19	18	18	17	16	15	20	19	11
Cherry St North Lot	3	7	11	14	14	18	15	13	13	14	17	20	7
NW Pub. Sq. Lot	0	5	6	5	5	12	4	4	12	11	11	16	8
NE Pub. Sq. Lot	2	3	2	4	4	12	3	4	4	10	10	15	7
SE Pub. Sq. Lot	4	8	8	10	10	8	7	7	11	6	7	8	8
SW Pub. Sq. Lot	6	10	12	13	13	16	11	13	14	10	12	11	4
Troy Rec Lot	0	1	3	3	3	8	3	4	8	5	11	14	4
S. Mulberry Lot	2	2	2	2	2	1	1	1	1	2	1	1	0

3/11/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Cherry St. Lot	4	7	13		16	18	17	16	11	16	20	26	34
Cherry St North Lot	3	4	10	16	18	18	16	14	17	18	21	21	18
NW Pub. Sq. Lot	7	8	9	10	16	17	12	15	16	15	17	18	10
NE Pub. Sq. Lot	9	8	8	9	16	14	10	10	11	13	16	16	16
SE Pub. Sq. Lot	5	5	7	8	12	8	8	7	6	5	14	17	13
SW Pub. Sq. Lot	3	12	12	12	16	15	13	14	11	8	14	13	9
Troy Rec Lot	1	4	4	5	17	15	12	16	9	9	17	10	5
S. Mulberry Lot	3	2	2	2	1	1	1	1	1	1	10	7	3

3/10/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Cherry St. Lot	9	17	26	23	23	20	27	23	22	13	17	15	9
Cherry St North Lot	5	11	16	18	18	19	19	10	12	15	19	18	13
NW Pub. Sq. Lot	1	2	6	8	15	12	17		9	5	16	17	7
NE Pub. Sq. Lot	4	5	6	7	16	9	15	8	10	11	17	17	10
SE Pub. Sq. Lot	3	3	4	10	6	7	9	10	7	6	8	13	12
SW Pub. Sq. Lot	11	14	10	13	15	14	17	15	15	7	11	16	6
Troy Rec Lot	0	4	3	6	17	11	8	7	7	15	12	14	16
S. Mulberry Lot	2	3	3	2	1	1	0	0	1	0	1	2	1

3/9/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Cherry St. Lot	0	5	11	15	16	17	11	11	16	13	20	33	29
Cherry St North Lot	1	3	8	15	19	17	14	11	8	18	19	20	19
NW Pub. Sq. Lot	6	7	12	7	14	12	10	8	10	4	17	17	4
NE Pub. Sq. Lot	2	2	5	9	10	13	13	8	7	12	15	15	8
SE Pub. Sq. Lot	3	4	9	12	11	12	7	9	13	6	12	15	6
SW Pub. Sq. Lot	9	9	14	15	16	14	11	10	7	13	14	14	6
Troy Rec Lot	0	2	3	2	8	7	4	6	5	10	15	14	4
S. Mulberry Lot	2	2	2	1	2	3	2	2	1	1	2	2	0

3/8/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Cherry St. Lot	2	8	21	27	23	24	19	22	19	20	21	25	18
Cherry St North Lot	3	6	8	16	20	16	12	13	12	17	18	19	13
NW Pub. Sq. Lot	2	5	5	6	18	13	12	13	11	11	16	17	11
NE Pub. Sq. Lot	2	4	6	6	12	9	5	7	9	8	15	16	11
SE Pub. Sq. Lot	4	5	5	9	7	10	8	8	9	11	12	14	15
SW Pub. Sq. Lot	11	9	6	14	14	15	11	13	13	10	16	14	9
Troy Rec Lot	0	4	3	4	11	9	7	6	8	4	15	16	13
S. Mulberry Lot	2	2	2	2	2	1	1	0	1	1	2	2	2

3/7/2016													
Date/Time	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00
Location	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**	**# of Cars**
Cherry St. Lot	3	9	19	24	27	24	18	19	16	N/A	15	18	18
Cherry St North Lot	3	10	16	14	16	12	13	10	15	N/A	17	2	13
NW Pub. Sq. Lot	2	7	8	3	6	11	8	6	13	N/A	13	17	8
NE Pub. Sq. Lot	1	2	3	4	10	6	3	3	2	N/A	11	6	6
SE Pub. Sq. Lot	3	3	10	8	8	11	9	8	7	N/A	9	1	3
SW Pub. Sq. Lot	8	13	13	15	12	13	16	14	9	N/A	11	7	7
Troy Rec Lot	0	2	3	4	11	9	3	6	4	N/A	11	10	0
S. Mulberry Lot	2	2	2	2	1	1	1	2	2	N/A	2	1	0

APPENDIX B: LIST OF DOWNTOWN BUSINESSES

ADDRESS	BLOCK	ADDRESS2	NAME	PHONE	STREET NUMBER	DIRECTION	STREET NAME	NUMBER of EMPLOYEES	NUMBER OF EMPLOYEE PARKING SPACES NEEDED	NUMBER OF EMPLOYEE PARKING SPACES PROVIDED	TYPE OF ASSUMED LAND USE	NUMBER OF CUSTOMER PARKING SPACES NEEDED	NUMBER OF CUSTOMER PARKING SPACES PROVIDED	SQUARE FOOTAGE	ZONING	PRECLASS
201 W MAIN ST	1		MIAMI COUUNTY SAFETY BUILDING	937-418-8335	201	W	MAIN	200	200	150	Office	30	0	68,679	B-3 Central Business District	Church
206 W MAIN ST	5	SUITE 1	NOLAN GIERE & CO ACCOUNTANTS, FINANCIAL SERVICES	937-339-3118	206	W	MAIN	10	10	0	Office	5	0	4,725	B-3 Central Business District	Service
210 W MAIN ST	5		DUNGAN & LEFEVRE CO LPA ATTONEYS	937-339-0511	210	W	MAIN	21	10	10	Office	10	0	2,788	B-3 Central Business District	Available
214 W MAIN ST	5		SPACE AVAILABLE		214	W	MAIN	0	0	0	Future	0	0	1,628		Service
215 W MAIN ST	1		MIAMI COUNTY COURTHOUSE	937-440-6050	215	W	MAIN	50	50	50	Office	100	0	33,800	B-3 Central Business District	Service
220 W MAIN ST	5		ALLSTATE INSUURANCE- PATTY ROSE		220	W	MAIN	2	0	2	Office	4	0	2,093		
100 W MAIN ST	1		TROY-MIAMI COUNTY HISTORICAL LIBRARY	937-33-4082	100	W	MAIN	3	3	0	Library	5	0	7,332	B-3 Central Business District	Government
106 W MAIN ST	6		HITTLE'S JEWELERS & WATCHMAKERS	937-339-3210	106	W	MAIN	4	2	0	Retail	6	0	2,100	M-2 Light Industrial District	Non-Profit / Office
105 W MAIN ST	1		HOME COMFORT GALLERY & DESIGN CENTER	937-335-1849	107	W	MAIN	3	4	0	Retail	5	0	7,528	OR-1 Off.-Res.: 3,000 SqFt./DU	Service
107 W MAIN ST	1	SECOND FLOOR	TROY MASONIC TEMPLE LODGE	937-339-4946	107	W	MAIN				Office			8,673	OR-1 Off.-Res.: 3,000 SqFt./DU	Service
108 W MAIN ST	6		LEAF & VINE CAFE	937-332-0773	108	W	MAIN	3	2	0	Restaurant	20	0	2,097	OR-1 Off.-Res.: 3,000 SqFt./DU	Service
110 W MAIN ST	6		KEY II SECURITY INVESTIGATIONS	937-339-8530	110	W	MAIN	2	2	0	Office	1	0	2,856	OR-1 Off.-Res.: 3,000 SqFt./DU	Service
112 W MAIN ST	6		CASTLE BAIL BONDS	937-335-3572	112	W	MAIN	1	1	0	Office	2	0	1,682	OR-1 Off.-Res.: 3,000 SqFt./DU	Service
116 W MAIN ST	6		THE TARVERN DOWNTOWN		112	W	MAIN	7	3	4	Restaurant	20	0	9,120	OR-1 Off.-Res.: 3,000 SqFt./DU	Available
120 W MAIN ST	6		GUDORF LAW GROUP		122	W	MAIN	1	1	0	Office	2	0	7,167	OR-1 Off.-Res.: 3,000 SqFt./DU	Service
124 W MAIN ST	6		Klein, Tomb & Eberly, LLP	937-339-3939	122	W	MAIN	10	1	5	Office	5	3	4,207		Service
8 W MAIN ST	7		AROUND ABOUT BOOKS	937-339-1707	8	W	MAIN	3	1	0	Retail	6	0	1,720		Service
9 W MAIN ST	-		CENTERPOINT CHURCH		9	W	MAIN	1	1	0	Church	5	0	1,320	B-3 Central Business District	Service
11 W MAIN ST	2		MAYFLOWER THEATER	937-339-3456	11	W	MAIN	1	1	0	Retail	5	0	1,320	B-3 Central Business District	Service
12 W MAIN ST	7		TROY FAMILY BIKE SHOP	937-335-5800	12	W	MAIN	2	2	0	Retail	3	0	9,768		
10 W MAIN ST	7		WINANS FINE CHOCOLATES & COFFEE HOUSE	937-335-9119	10	W	MAIN	5	5	0	Restaurant	3	0	2,444		Service
2 W MAIN ST	7		FOR ALL SEASONS GIFT BOUTIQUE		2	W	MAIN	2	1	0	Retail	0	0	4,207	B-3 Central Business District	Service
4 W MAIN ST	7		TROY BULK BARN/DELI		4	W	MAIN	2	2	0	Restaurant	12	0	3,300	B-3 Central Business District	Restaurant
1 E MAIN ST	3		CAN DANCE STUDIO (Not yet open)		1	E	MAIN	0	0	0	Health and Fitness	0	0	1,884	B-3 Central Business District	Service
6 E MAIN ST	8		LION & LAMB YARN BOUTIQUE		6	E	MAIN	1	0	0	Retail	2	0	1,884	B-3 Central Business District	Retail
9 E MAIN ST	3		SWEENY TODD SALON		9	E	MAIN	9	6	0	Retail	30	0	1,804	B-3 Central Business District	Government
11 E MAIN ST	3		HER REALTORS		11	E	MAIN	16	1	0	Office	2	0	3,522	R-7 MF Res 3,000 SqFt./DU	Non-Profit / Office
11 E MAIN ST	4		TROJAN NUTRITION	937-875-2500	111	E	MAIN	2	1	0	Retail	2	0	3,477		
2 E MAIN ST	8		DAVID FAIR ON THE SQUARE	937-335-8383	2	E	MAIN	5	2	0	Retail	10	0	7,594		
5 E MAIN ST	3		THE 3 WEIRD SISTERS		5	E	MAIN	3	3	0	Retail	3	0	3,256	B-3 Central Business District	Restaurant
7 E MAIN ST	3		THE OLIVE OASIS		7	E	MAIN	3	2	0	Restaurant	5	0	4,620		
110 1/2 E MAIN ST	4		VACANT		110	E	MAIN	0	0	0	Future	0	0	240	B-3 Central Business District	Government
121 E MAIN ST	4		WE LOVE BIRTHDAY PARTIES		121	E	MAIN	1	1	0	Retail	2	0	3,530	B-3	Other
104 E MAIN ST	9		STAFFORD'S SPORTING GOODS		100	E	MAIN	1	0	0	Retail	2	0	14,145		Other
100 E MAIN ST	9		THE CABINET SHOP OF TROY	937-339-4264	100	E	MAIN	2	1	0	Retail	2	0	1,716	B-3 Central Business District	Other
108 E MAIN ST	9		BLUE BOW BOUTIQUE		100	E	MAIN	2	1	0	Retail	2	0	3,062	B-3 Central Business District	Service
103 E MAIN ST	4		YELLOW TREE YOGA		101	E	MAIN	1	1	0	Health and Fitness	10	0	3,062	B-3 Central Business District	Service
105 E MAIN ST	4		VACANT		101	E	MAIN	0	0	0	Future	0	0	5,313	OR-1 Off.-Res.: 3,000 SqFt./DU	Church
101 E MAIN ST	4		TOTAL TEAM SPORTS	937-335-7004	101	E	MAIN	1	1	1	Retail	1	0	2,990	B-3 Central Business District	Service
103 1/2 E MAIN ST	4		REDMANS LODGE ASSOCIATION	937-339-1076	101	E	MAIN	3	0	0	Office	0	0	2,990	B-3 Central Business District	Service
109 E MAIN ST	4	AND 107 E MAIN	MOJO'S BAR & GRILL		109	E	MAIN	10	8	0	Restaurant	30	0	2,990	B-3 Central Business District	Service
110 E MAIN ST	9		ODYSSEY SALON	937-339-9600	110	E	MAIN	4	4	0	Retail	8	0	1,235	OR-1 Off.-Res.: 3,000 SqFt./DU	Non-Profit / Office
112 E MAIN ST	9		SPACE AVAILABLE		112	E	MAIN	0	0	0	Future	0	0	2,301	B-3	Retail
113 E MAIN ST	4		PRIMM N PROPER (TEMPORARLY CLOSED)		113	E	MAIN	0	0	0	Future	0	0	1,320	B-3 Central Business District	Retail
117 E MAIN ST	4		K'S HAMBURGER SHOP	937-339-3902	117	E	MAIN	20	5	0	Restaurant	8	0	1,610		Retail
124 E MAIN ST	9		TROY POLICE DEPARTMENT	937-339-7525	120	E	MAIN	49	49	40	Office	5	0	1,200	B-3 Central Business District	Available
123 E MAIN ST	4		PANDORAS YARN		121	E	MAIN	1	1	0	Retail	2	0	12,206		Retail

ADDRESS	BLOCK	ADDRESS2	NAME	PHONE	STREET NUMBER	DIRECTION	STREET NAME	NUMBER of EMPLOYEES	NUMBER OF EMPLOYEE PARKING SPACES NEEDED	NUMBER OF EMPLOYEE PARKING SPACES PROVIDED	TYPE OF ASSUMED LAND USE	NUMBER OF CUSTOMER PARKING SPACES NEEDED	NUMBER OF CUSTOMER PARKING SPACES PROVIDED	SQUARE FOOTAGE	ZONING	PRECLASS
201 S MARKET ST	13		WES'S TROY MUFFLER AND AUTO SERVICE	937-339-0098	203	S	MARKET	2	2	2	Retail	7	7	2,470		Service
206 S MARKET ST	12		RELIBLE TENT RENTAL		206	S	MARKET	1	0	1	Retail	0	0	2,470		Service
210 S MARKET ST	12		SPACE AVAILABLE		210	S	MARKET	0	0	0	Future	0	0	10,151	B-3 Central Business District	Government
211 S AMRKET ST	13		ONE STOP DRIVE THRU	937-335-1115	211	S	MARKET	5	2	2	Retail	0	0	2,975	B-3 Central Business District	Service
235 S MARKET ST	13		WAGMORE PET SALON		235	S	MARKET	4	3	0	Retail	2	0	1,610		
233 S MARKET ST	13		UNITED WAY OF TROY OHIO INC	937-335-8410	217	S	MARKET	2	1	1	Office	0	0	2,975	B-3 Central Business District	Retail
223 S MARKET ST	13		GIACOMO'S SALON & DAY SPA	937-339-6748	217	S	MARKET	18	6	0	Retail	6	0	1,309		
229 S MARKET ST	13		MOFFATT INSURANCE AGENCY	937-335-2838	217	S	MARKET	2	2	0	Office	2	0	2,484	B-3 Central Business District	Service
224 S MARKET ST	12		TROY DAILY NEWS	937-339-7514	224	S	MARKET	20	15	3	Office	3	0	2,329	B-3 Central Business District	Service
311 S MARKET ST	13	SUITE A	SPACE AVAILABLE	937-339-3931	311	S	MARKET	0	0	0	Future	0	0	700		
311 S MARKET ST	13	SUITE B	SPACE AVAILABLE	937-339-3931	311	S	MARKET	0	0	0	Future	0	0	700	B-3 Central Business District	Service
311 S MARKET ST	13	SUITE C	SPACE AVAILABLE	937-339-3931	311	S	MARKET	0	0	0	Future	0	0	700		
311 S MARKET ST	13	SUITE D	SPACE AVAILABLE	937-339-3931	311	S	MARKET	0	0	0	Future	0	0	700	B-3 Central Business District	Service
103 S MARKET	11		VACANT		103	S	MARKET	0	0	0	Future	0	0	1,377		Restaurant
114 S MARKET ST	10		WINNER'S COMPUTER LLC		114	S	MARKET	2	1	1	Retail	1	0	1,190		Retail
116 S MARKET ST	10		PACHAMAMA MARKET		116	S	MARKET	1	1	0	Retail	5	0	1,904		Service
100 S MARKET ST	10		CITY HALL	937-335-1725	100	S	MARKET	41	41	48	Office	10	0	3,410	B-3 Central Business District	Service
105 S MARKET ST	11		VACANT		101	S	MARKET	0	0	0	Future	0	0	3,410	B-3 Central Business District	Service
101 S MARKET ST	11		ARK & ECHO		101	S	MARKET	7	3	2	Retail	4	0	3,410	B-3 Central Business District	Service
11 S MARKET ST	11		VACANT		11	S	MARKET	0	0	0	Future	0	0	17,192		Non-Profit / Office
115 S MARKET ST	11		CARR INSURANCE		115	S	MARKET	2	2	5	Office	2	3	17,192		Non-Profit / Office
117 SMARKET ST	11		VACANT		115	S	MARKET	0	0	0	Future	0	0	1,932		Service
12 S MARKET ST	10		UP AND RUNNING		12	S	MARKET	3	2	0	Retail	2	0	1,862		Available
12 1/2 S MARKET ST	10		SPACE AVAILABLE		12	S	MARKET	0	0	0	Future	0	0	1,862		Available
120 S MARKET ST	10		FIRST UNITED CHURCH OF CHRIST	937-339-5871	120	S	MARKET	4	0	5	Church	0	0	2,750		Restaurant
121 S MARKET ST	11		PRINCI & KING LAW OFFICES	937-339-2651	123	S	MARKET	5	3	3	Office	2	0	2,040		Retail
123 S MARKET ST	11		SAMOZREJME DIAPERS & GIFTS	937-308-1262	123	S	MARKET	3	2	1	Retail	2	0	1,225		Service
125 S MARKET ST	11		2 PM STYLE		125	S	MARKET	4	1	0	Retail	2	0	1,300	B-3 Central Business District	Retail
127 S MARKET ST	11		PICTURE IT FRAMED GALLERY	937-339-1823	125	S	MARKET	1	1	1	Retail	1	0	1,836		Restaurant
131 S MARKET ST	11		SPACE AVAILABLE	937-339-2222	131	S	MARKET	0	0	0	Future	0	0	1,980		Available
4 S MARKET ST	8		INSIGHTFUL EYEWEAR	937-339-2020	4	S	MARKET	4	4	0	Retail	4	0	3,780		Service
15 S MARKET ST	7		AMISH COUNTRY FURNITURE	937-335-4764	15	S	MARKET	1	1	1	Retail	3	0	1,980		Retail
16 S MARKET ST	8		BROWER STATIONERS OFFICE PRODUCTS	937-335-2117	16	S	MARKET	5	5	0	Retail	10	0	2,090		Service
5 S MARKET ST	7		THE CAROLINE RESTAURANT	937-552-7676	5	S	MARKET	45	20	0	Restaurant	100	0	2,356		Available
6 S MARKET ST	7		EXPRESSIONS FOR THE HOME GIFT SHOP	937-332-9227	6	S	MARKET	1	2	0	Retail	5	0	2,356		Retail
9 S MARKET ST	8		VILLIAGE SALON	937-335-9969	9	S	MARKET	0	0	0	Retail	0	0	3,260	B-3 Central Business District	Service
7 S MARKET ST	8		RAISE YOUR BRUSH		9	S	MARKET	2	2	0	Retail	10	0	1,914	B-3 Central Business District	Service
8 S MARKET ST	7		US BANK	937-339-2234		S	MARKET	3	3	0	Office	3	0	3,609	M-2 Light Industrial District	Available

ADDRESS	BLOCK	ADDRESS2	NAME	PHONE	STREET NUMBER	DIRECTION	STREET NAME	NUMBER of EMPLOYEES	NUMBER OF EMPLOYEE PARKING SPACES NEEDED	NUMBER OF EMPLOYEE PARKING SPACES PROVIDED	TYPE OF ASSUMED LAND USE	NUMBER OF CUSTOMER PARKING SPACES NEEDED	NUMBER OF CUSTOMER PARKING SPACES PROVIDED	SQUARE FOOTAGE	ZONING	PRECLASS
1 N MARKET ST	3		RUBY'S BEAUTY SALON	937-339-3104	1	N	MARKET	6	3	0	Retail	6	0	8,735	B-3 Central Business District	Retail
10 N MARKET ST	2	SUITE A	CLARK SCHAFFER HACKETT & CO ACCOUNTANTS	937-339-3099	10	N	MARKET	1	1	0	Office	2	0	8,735	B-3 Central Business District	Other
10 N MARKET ST	2	SUITE B	ROBERTS KELLY & BUCIO LLP ATTORNEYS	937-332-9300	10	N	MARKET	3	3	1	Office	5	0	1,321		Available
11 N MARKET ST	3		THE REC RECREATIONAL CENTER	937-339-1923	11	N	MARKET	15	6	0	Rec Center	40	0	2,720	B-3 Central Business District	Service
14 N MARKET ST	2		SUBMARINE HOUSE BAR & GRILL	937-335-6479	14	N	MARKET	30	8	0	Restaurant	10	0	6,593	B-3 Central Business District	Restaurant
16 N MARKET ST	2		LIMELIGHT SALON		16	N	MARKET	9	9	0	Retail	20	0	4,033		Retail
18 N MARKET ST	2		BASIL'S ON MARKET		18	N	MARKET	25	30	0	Restaurant	50	20	1,218		Retail
2 1/2 N MARKET ST	2		Primal Forces Massage Therapy	937-671-5036	3	N	MARKET	1	0	0	Retail	0	0	1,768	0	
2 N MARKET ST	2		LA PIAZZA ITALIAN RESTAURANT	937-339-5553	2	N	MARKET	50	10	0	Restaurant	100	0	8,674		
20 1/2 N MARKET ST	2		SPACE AVAILABLE	937-875-0545	20	N	MARKET	0	0	0	Future	0	0	993	B-3 Central Business District	Government
22 N MARKET ST	2		NORTH MARKET BARBER SHOP	937-335-2895	22	N	MARKET	1	1	0	Retail	2	0	1,148		Service
24 N MARKET ST	2		COMFORT KEEPERS	937552932 2	24	N	MARKET	6	8	4	Retail	2	0	1,148		Service
24 N MARKET ST	2		CHRIS WESNER LAW		24	N	MARKET	1	1	0	Office	2	0	2,893	B-3 Central Business District	Government
3 N MARKET ST	3		TOKYO PEKING CHINESE RESTAURANT	937-339-7118	3	N	MARKET	4	2	0	Restaurant	10	0	2,800	B-3 Central Business District	Service
8 N MARKET ST	2		WILLOUGHBY'S HOLLOW		8	N	MARKET	1	1	0	Retail	3	0	1,575		Service
9 N MARKET ST	3		DEL CID SATELLITES, INC.		9	N	MARKET	10	8	0	Office	3	0	1,575		Service
12 S CHERRY ST	7		FAUST HARRELSON FULKER MCCARTHY & SCHLEMMER	937-335-8324	10	S	CHERRY	19	19	0	Office	5	0	4,852	B-2 General Business District	Service
15 S CHERRY ST	6		THE FRANCIS AGENCY INC. INSURANCE	937-339-1525	15	S	CHERRY	3	2	0	Office	4	0	4,852	B-2 General Business District	Retail
16 S CHERRY ST	7	C	SPACE AVAILABLE	937-339-2836	16	S	CHERRY	0	0	0	Future	0	0	1,300		Service
16 S CHERRY ST	7	A	DAVID TREADWAY	937-335-5252	16	S	CHERRY	1	1	0	Office	2	0	3,120		Restaurant
16 S CHERRY ST	7	B	JOHN R BOSSE & CO., INC.	937-339-9500	16	S	CHERRY	1	1	0	Office	2	0	1,040		Restaurant
16 S CHERRY ST	7	D	BACK TO BASICS HEALTH SHOPPE	937-332-8499	16	S	CHERRY	1	1	0	Retail	2	0	2,754		Service
101 PUBLIC SQUARE NW	2		EDWARD JONES INVESTMENTS -SCOTT ODA	937-335-3663	101	NW	PUBLIC	2	2	0	Office	2	0	4,852	B-2 General Business District	Available
121 PUBLIC SQUARE NE	3	SUITE 10	LORI MIDDLETON INTERIORS	937-335-7583	121	NE	PUBLIC	1	1	0	Retail	2	0	16,310	B-2 General Business District	Non-Profit / Office
117 PUBLIC SQUARE NE	3		RAY'S SHOE REPAIR	937-335-4174	117	NE	UBLIC SQUAI	2	0	0	Retail	2	0	3,286	B-2 General Business District	Service
									1							
305 PUBLIC SQUARE SE	8	SUITE 4	TOWNE TITLE & ESCROW	937-339-0110	305	SE	PUBLIC	2	2	0	Office	6	0	6,823		Service
217 PUBLIC SQUARE SE	8		WILLIAM AND BOSS JEWELERS	937-335-6755	217	SE	PUBLIC	3	0	0	Retail	2	0	6,823		Retail
221 PUBLIC SQUARE SE	8		DAVID FAIR ON THE SQUARE ANNEX	937-440-8232	221	SE	PUBLIC	3	0	0	Retail	2	0	3,180	OR-1 Off.-Res.: 3,000 SqFt./DU	Available

ADDRESS	Block	ADDRESS2	NAME	PHONE	STREET NUMBER	DIRECTION	STREET NAME	NUMBER of EMPLOYEES	NUMBER OF EMPLOYEE PARKING SPACES NEEDED	NUMBER OF EMPLOYEE PARKING SPACES PROVIDED	TYPE OF ASSUMED LAND USE	NUMBER OF CUSTOMER PARKING SPACES NEEDED	NUMBER OF CUSTOMER PARKING SPACES PROVIDED	SQUARE FOOTAGE	ZONING	PRECLASS
315 PUBLIC SQUARE SW	7	BASEMENT	VACANT		315	SW	PUBLIC	0	0	0	Future	0	0	3,180	OR-1 Off.-Res.: 3,000 SqFt./DU	Available
315 PUBLIC SQUARE SW	7	SUITE 203	BENTON COUNSELING		315	SW	PUBLIC	1	1	0	Office	2	0	2,635	OR-1 Off.-Res.: 3,000 SqFt./DU	Service
315 PUBLIC SQUARE SW	7	SUITE 218	NEST EGG REPAIRMAN/EDHEAD		315	SW	PUBLIC	1	1	0	Retail	0	0	2,658		Non-Profit / Office
315 PUBLIC SQUARE SW	7	SUITE 205	WHEELER DRIVING SCHOOL	937-332-9712	315	SW	PUBLIC	0	0	0	Retail	0	0	6,820		Service
315 PUBLIC SQUARE SW	7	SUITE 209	TROY PSYCHOLOGICAL CENTER		315	SW	PUBLIC	1	1	0	Office	2	0	4,240		Service
405 PUBLIC SQUARE SW	7	SUITE 343	SMALL BUSINESS RESOURCE CENTER		405	SW	PUBLIC	1	1	0	Office	1	0	1,800	M-2 Light Industrial District	Church
405 PUBLIC SQUARE SW	7	SUITE 373	CRSI		405	SW	PUBLIC	16	16	0	Office	20	0	810		Service
315 PUBLIC SQUARE SW	7	SUITE 220	LAUREN HART PHOTOGRAPHY		319	SW	PUBLIC	1	1	0	Retail	2	0	990		Retail
315 PUBLIC SQUARE SW	7	SUITE 215	HEARTSONG		319	SW	PUBLIC	1	1	0	Office	1	0	1,210	B-3 Central Business District	Retail
315 PUBLIC SQUARE SW	7	SUITE 216, 210,211	TROY COMMUNITY RADIO	937-339-9876	319	SW	PUBLIC	3	5	0	Office	2	0	1,280		Retail
315 PUBLIC SQUARE SW	7	SUITE 204	PAUL SHANEYFELT AND ASSOCIATES		319	SW	PUBLIC	1	2	0	Office	1	0	1,152		Service
317 PUBLIC SQUARE SW	7		BAKEHOUSE BREAD COMPANY	937-339-8100	319	SW	PUBLIC	12	8	0	Restaurant	10	0	6,320		Service
405 PUBLIC SQUARE SW	7	SUITE 231	TROY MAIN STREET	937-339-5455	401	SW	PUBLIC	2	2	0	Office	1	0	450		Service
405 PUBLIC SQUARE SW	7	SUITE 330	TROY AREA CHAMBER OF COMMERCE	937-339-8769	401	SW	PUBLIC	6	0	6	Office	0	0	1,190		Service
405 PUBLIC SQUARE SW	7	SUITE 234	CAPABILITIES INC CONFERENCE ROOM	937-332-7330	401	SW	PUBLIC	1	1	0	Office	2	0	200		Service
405 PUBLIC SQUARE SW	7	SUITE 235	ALLEN FINANCIAL GROUP		401	SW	PUBLIC	1	1	0	Office	2	0	200		
401 PUBLIC SQUARE SW	7		TROY SPORTS CENTER	937-339-1618	401	SW	PUBLIC	3	3	0	Retail	5	0	970	B-3 Central Business District	Available
405 PUBLIC SQUARE SW	7	SUITE 237	RSM		401	SW	PUBLIC	1	1	0	Office	2	0	970	B-3 Central Business District	Service
405 PUBLIC SQUARE SW	7	SUITE 253	SPACE AVAILABLE		405	SW	PUBLIC	0	0	0	Future	0	0	970	B-3 Central Business District	Service
405 PUBLIC SQUARE SW	7	SUITE 254	LYNN BARNES		405	SW	PUBLIC	1	1	0	Retail	2	0	970	B-3 Central Business District	Restaurant
405 PUBLIC SQUARE SW	7	SUITE 255	SPACE AVAILABLE		405	SW	PUBLIC	0	0	0	Future	0	0	970	B-3 Central Business District	Other
405 PUBLIC SQUARE SW	7	SUITE 256	SPACE AVAILABLE		405	SW	PUBLIC	0	0	0	Future	0	0	970	B-3 Central Business District	Other
405 PUBLIC SQUARE SW	7	SUITE 253	JACK L CARTER ATTORNEY		405	SW	PUBLIC	1	1	0	Office	3	0	409		Non-Profit / Office
405 PUBLIC SQUARE SW	7	SUITE 272	MIAMI COUNTY VISITORS & CONVENTION BUREAU	800-348-8993	405	SW	PUBLIC	4	4	0	Office	2	0	409		Non-Profit / Office
405 PUBLIC SQUARE SW	7	SUITE 366	CASA/GAL OF MIAMI COUNTY	937-335-0209	405	SW	PUBLIC	3	3	0	Office	2	0	409		Non-Profit / Office
405 PUBLIC SQUARE SW	7	SUITE 241	HOSPICE OF MIAMI COUNTY	937-552-7058	405	SW	PUBLIC	1	1	0	Office	2	0	409		Service
405 PUBLIC SQUARE SW	7	SUITE 242	LEGAL AID OF WESTERN OHIO		405	SW	PUBLIC	1	1	0	Office	1	0	409		Retail
405 PUBLIC SQUARE SW	7	SUITE 243	DAVID CALDWELL	937-335-9490	405	SW	PUBLIC	1	1	0	Office	2	0	409		Retail
405 PUBLIC SQUARE SW	7	SUITE 252	WHIOTV NORTHERN BUREAU		405	SW	PUBLIC	1	1	0	Office	0	0	409		Other
405 PUBLIC SQUARE SW	7	SUITE 257	SPACE AVAILABLE		405	SW	PUBLIC	0	0	0	Future	0	0	1,320	B-3 Central Business District	Available
405 PUBLIC SQUARE SW	7	SUITE 362	ARC OF OHIO (TROY OFFICE)	937-573-6064	405	SW	PUBLIC	1	1	0	Office	2	2	1,200	B-3 Central Business District	Available
405 PUBLIC SQUARE SW	7	SUITE 364	TRACY TURNER		405	SW	PUBLIC	1	1	0	Retail	2	0	1,320	B-3 Central Business District	Available

APPENDIX C: ONLINE DOWNTOWN PARKING SURVEY RESPONSES

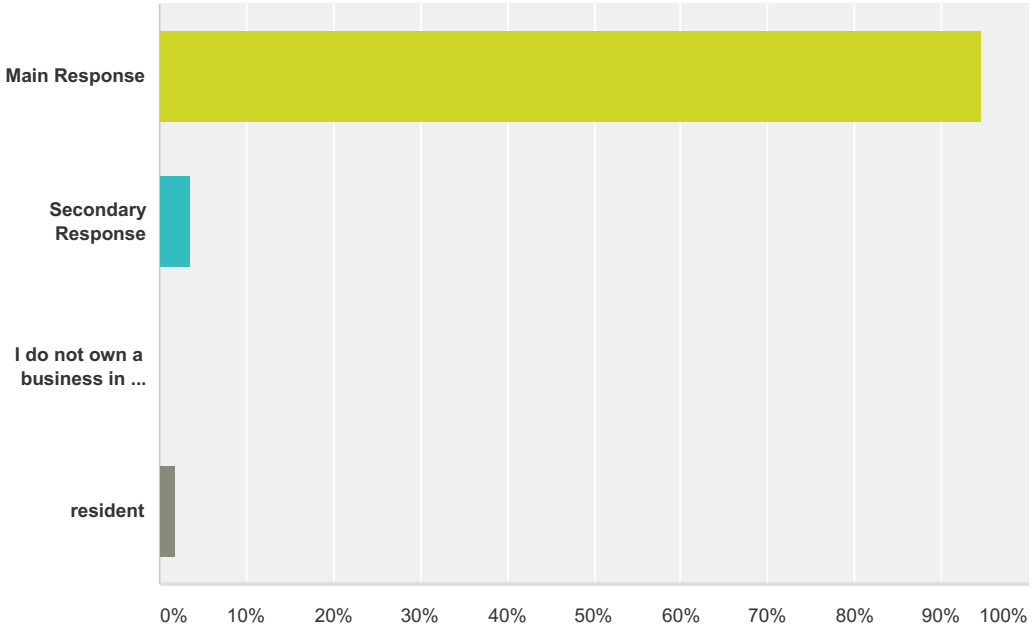
Q1 Business Information

Answered: 55 Skipped: 0

Answer Choices	Responses	
Owner	**100.00%**	55
Name of Business	**100.00%**	55
Type of Business	**100.00%**	55
Address	**100.00%**	55
City/Town	**0.00%**	0
State/Province	**0.00%**	0
ZIP/Postal Code	**0.00%**	0
Country	**0.00%**	0
Email Address	**100.00%**	55
Phone Number	**100.00%**	55

Q2 Please indicate your affiliation with the business

Answered: 55 Skipped: 0



Answer Choices	Responses	
Main Response	**94.55%**	52
Secondary Response	**3.64%**	2
I do not own a business in the study area	**0.00%**	0
resident	**1.82%**	1
Total		**55**

Q3 Address

Answered: 37 Skipped: 18

Answer Choices	Responses	
Name	**91.89%**	34
Company	**89.19%**	33
Address	**89.19%**	33
Address 2	**13.51%**	5
City/Town	**94.59%**	35
State/Province	**94.59%**	35
ZIP/Postal Code	**94.59%**	35
Country	**89.19%**	33
Email Address	**89.19%**	33
Phone Number	**91.89%**	34

Q4 How many employees do you have at your location?

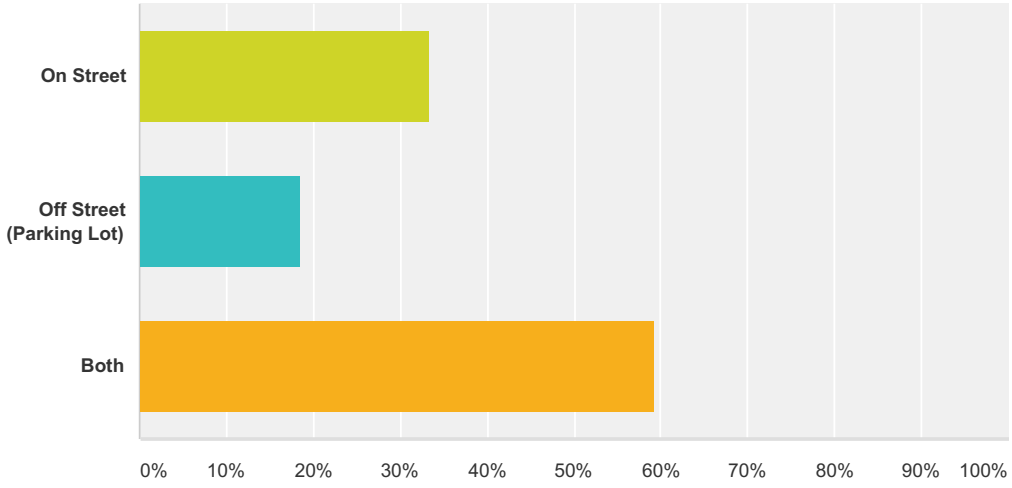
Answered: 54 Skipped: 1

#	Responses	Date
1	5 Employees and 4 tenants	7/6/2016 8:41 AM
2	4	6/30/2016 12:50 PM
3	4	6/30/2016 8:50 AM
4	16	6/29/2016 12:50 PM
5	16	6/29/2016 10:37 AM
6	2	6/28/2016 10:03 AM
7	4	6/23/2016 5:10 PM
8	30	6/23/2016 2:56 PM
9	15	6/23/2016 2:11 PM
10	1	6/22/2016 7:46 PM
11	2	6/22/2016 5:51 PM
12	2	6/22/2016 12:22 PM
13	2	6/22/2016 9:19 AM
14	14	6/21/2016 5:08 PM
15	9	6/21/2016 4:11 PM
16	5	6/21/2016 1:13 PM
17	2	6/21/2016 11:40 AM
18	2	6/21/2016 11:22 AM
19	19	6/21/2016 9:49 AM
20	1	6/21/2016 8:13 AM
21	5	6/21/2016 8:02 AM
22	8	6/21/2016 6:15 AM
23	8	6/20/2016 8:32 PM
24	4	6/20/2016 7:48 PM
25	3	6/20/2016 12:55 PM
26	3	6/20/2016 11:59 AM
27	8	6/20/2016 11:26 AM
28	19	6/20/2016 9:39 AM
29	5	6/20/2016 9:27 AM
30	20 full and part time	6/18/2016 10:59 PM
31	3	6/18/2016 2:03 PM
32	11	6/18/2016 7:40 AM
33	4	6/17/2016 5:39 PM
34	3	6/17/2016 2:33 PM

35	10	6/17/2016 1:30 PM
36	21	6/17/2016 1:21 PM
37	15	6/17/2016 1:03 PM
38	1	6/17/2016 12:20 PM
39	3	6/17/2016 11:23 AM
40	one	6/17/2016 10:52 AM
41	1	6/17/2016 10:19 AM
42	4	6/17/2016 10:15 AM
43	1 - Just me	6/17/2016 9:44 AM
44	6	6/17/2016 8:12 AM
45	40	6/16/2016 8:05 PM
46	2	6/16/2016 6:15 PM
47	3	6/16/2016 5:54 PM
48	6	6/16/2016 5:33 PM
49	12	6/16/2016 4:42 PM
50	2	6/16/2016 4:19 PM
51	1	6/16/2016 3:45 PM
52	10	6/16/2016 2:33 PM
53	1.5	6/16/2016 1:13 PM
54	17	6/16/2016 10:59 AM

Q5 Where do your employees park?

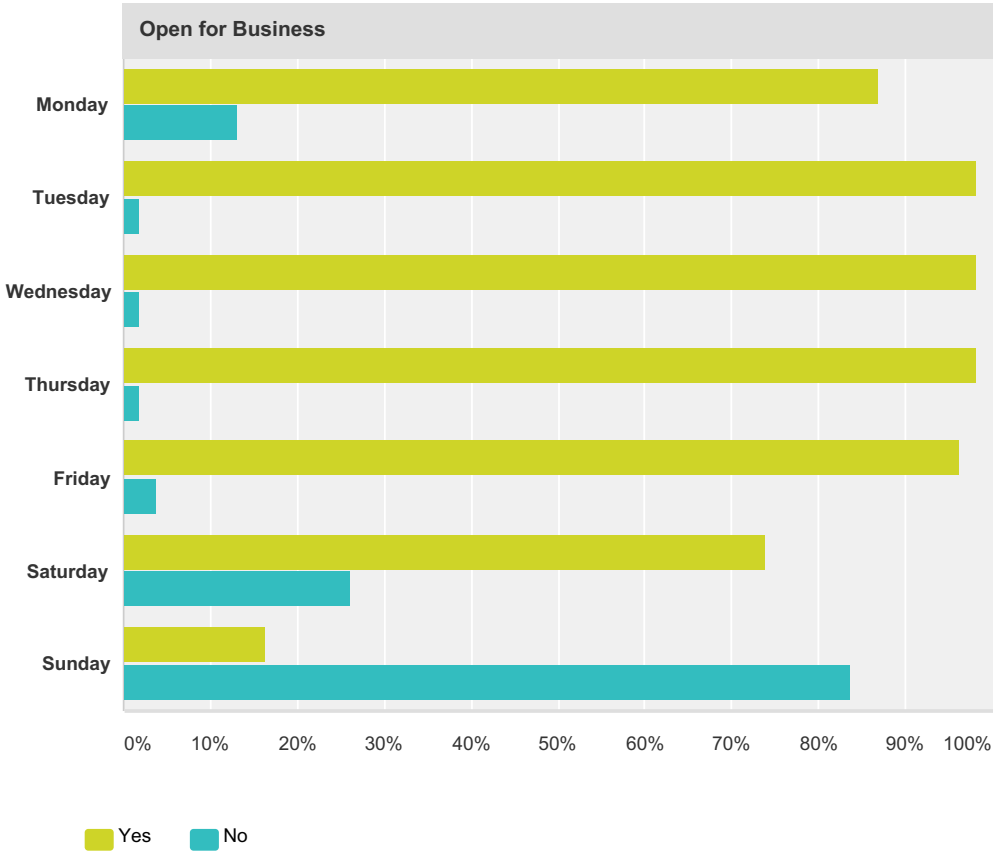
Answered: 54 Skipped: 1

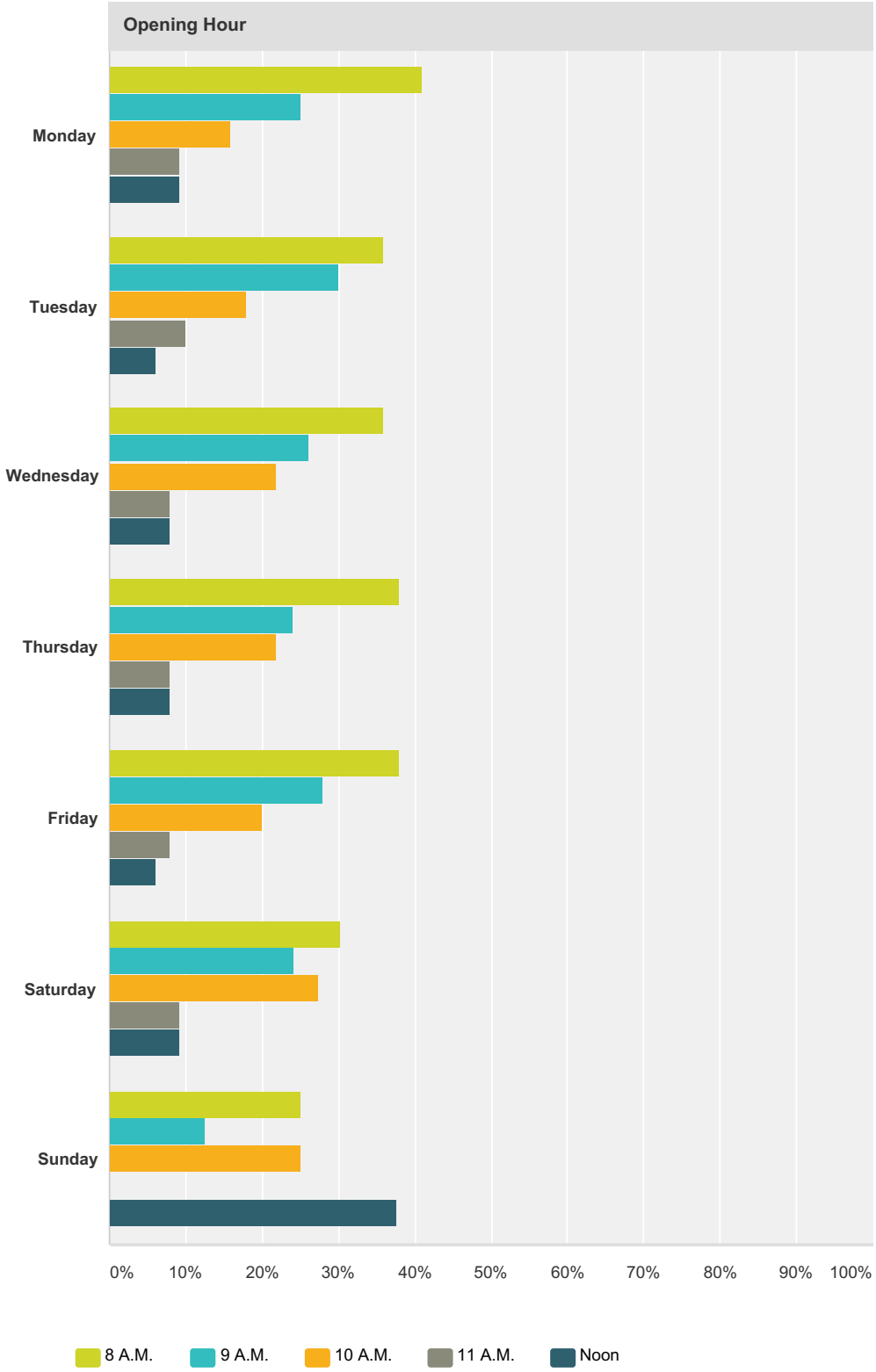


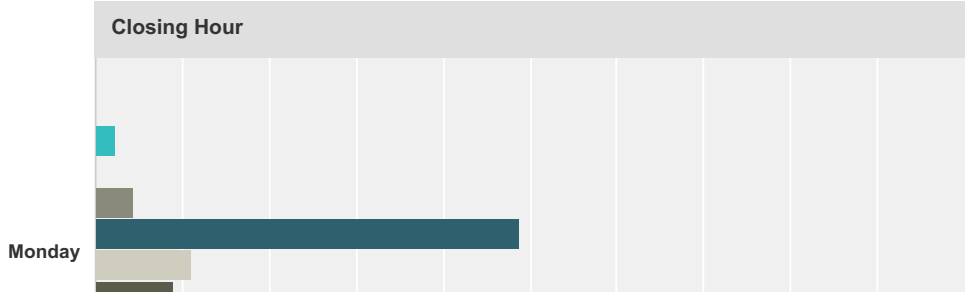
Answer Choices	Responses	
On Street	**33.33%**	18
Off Street (Parking Lot)	**18.52%**	10
Both	**59.26%**	32
Total Respondents: 54		

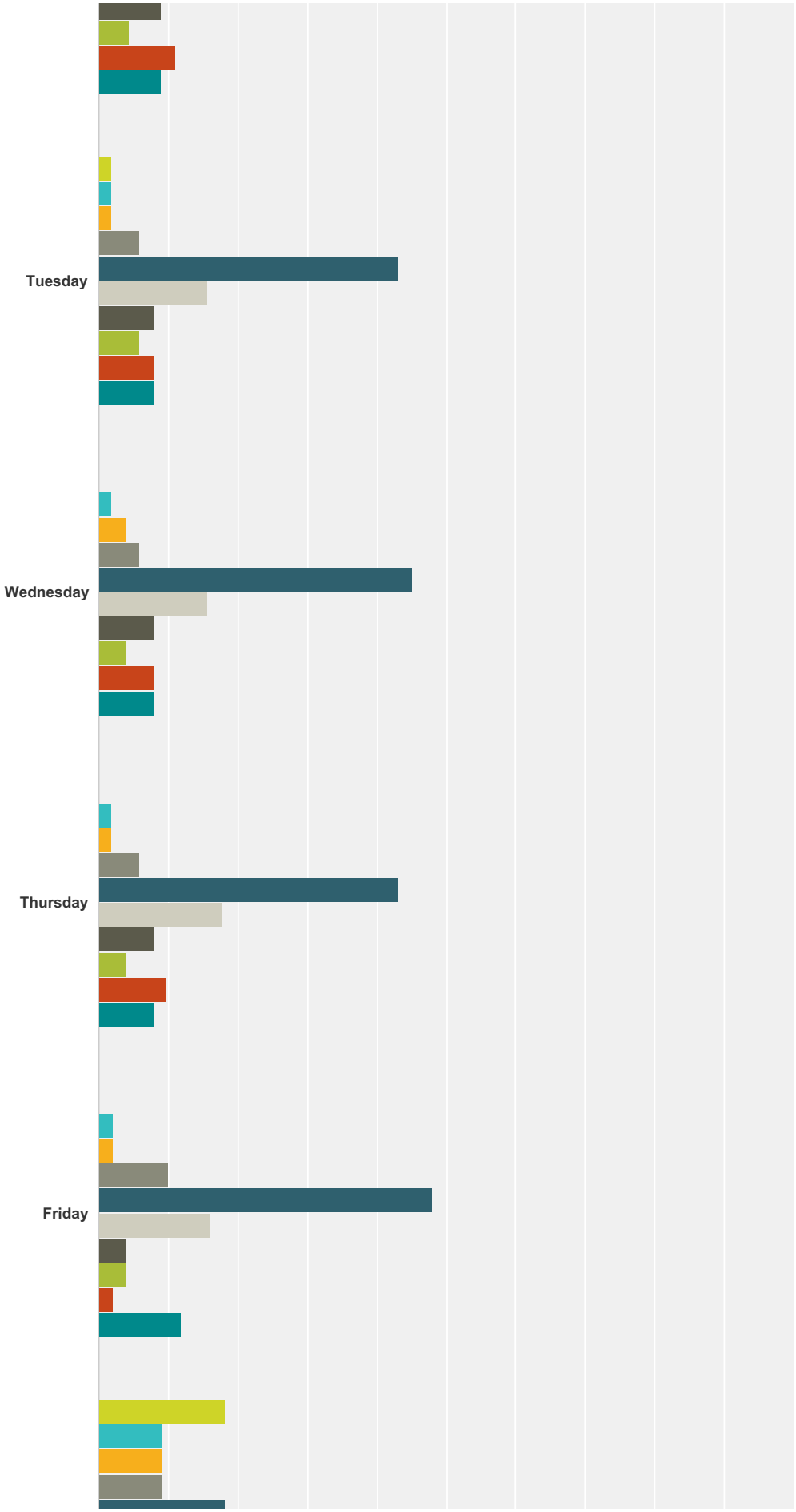
Q6 What are your days and hours of operation?

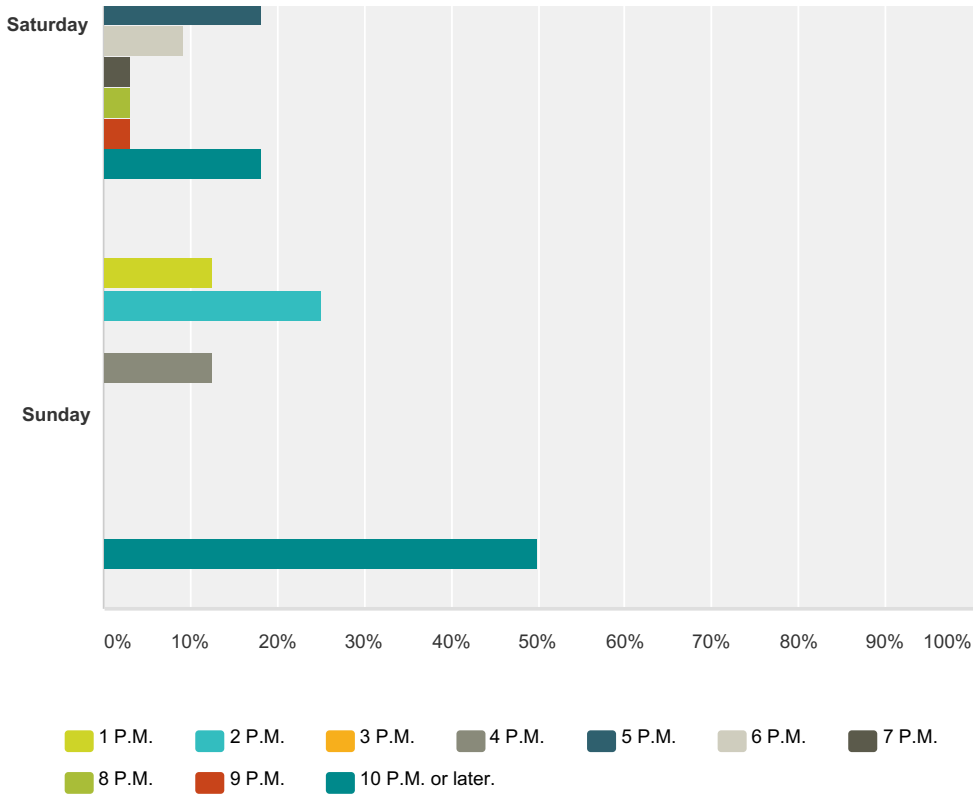
Answered: 53 Skipped: 2




Opening Hour
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
8 A.M.
9 A.M.
10 A.M.
11 A.M.
Noon


Closing Hour
Monday


Tuesday
Wednesday
Thursday
Friday



Open for Business			
	Yes	No	Total
Monday	**86.79%** 46	**13.21%** 7	53
Tuesday	**98.11%** 52	**1.89%** 1	53
Wednesday	**98.04%** 50	**1.96%** 1	51
Thursday	**98.11%** 52	**1.89%** 1	53
Friday	**96.23%** 51	**3.77%** 2	53
Saturday	**73.91%** 34	**26.09%** 12	46
Sunday	**16.28%** 7	**83.72%** 36	43

Opening Hour						
	8 A.M.	9 A.M.	10 A.M.	11 A.M.	Noon	Total
Monday	**40.91%** 18	**25.00%** 11	**15.91%** 7	**9.09%** 4	**9.09%** 4	44
Tuesday	**36.00%** 18	**30.00%** 15	**18.00%** 9	**10.00%** 5	**6.00%** 3	50
Wednesday	**36.00%** 18	**26.00%** 13	**22.00%** 11	**8.00%** 4	**8.00%** 4	50
Thursday	**38.00%** 19	**24.00%** 12	**22.00%** 11	**8.00%** 4	**8.00%** 4	50

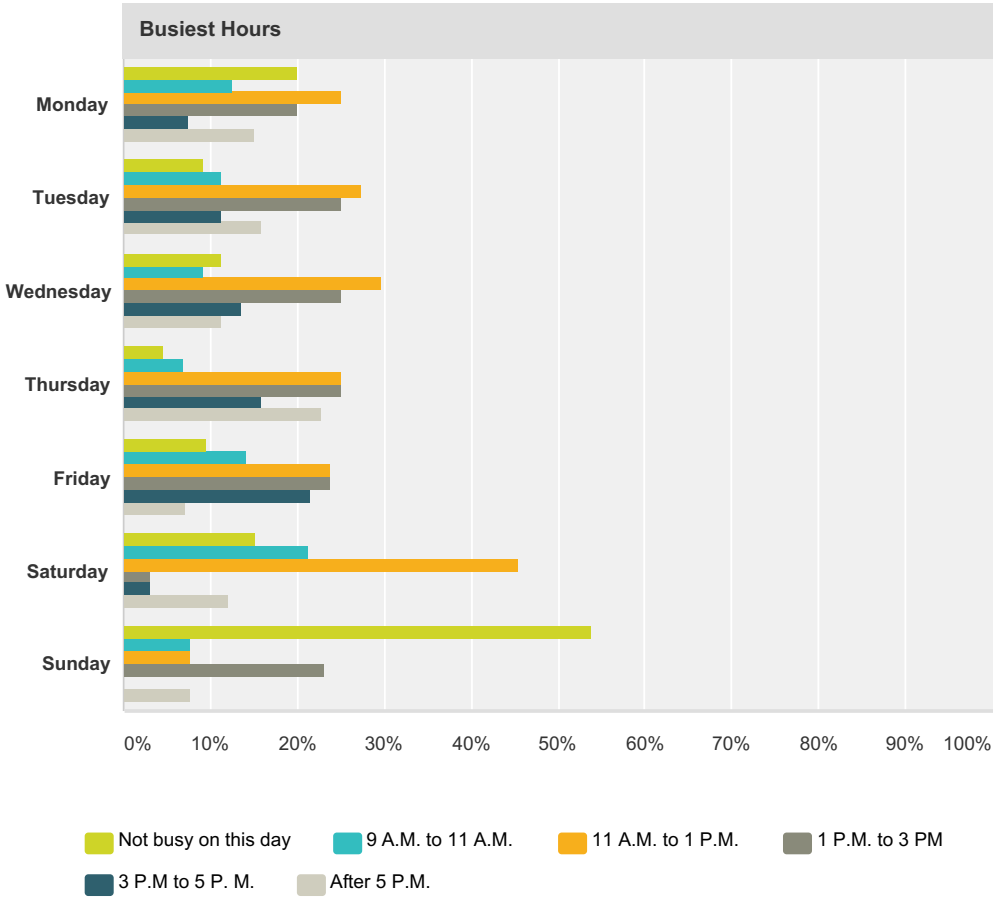
Friday	**38.00%** 19	**28.00%** 14	**20.00%** 10	**8.00%** 4	**6.00%** 3	50
Saturday	**30.30%** 10	**24.24%** 8	**27.27%** 9	**9.09%** 3	**9.09%** 3	33
Sunday	**25.00%** 2	**12.50%** 1	**25.00%** 2	**0.00%** 0	**37.50%** 3	8

Closing Hour

	1 P.M.	2 P.M.	3 P.M.	4 P.M.	5 P.M.	6 P.M.	7 P.M.	8 P.M.	9 P.M.	10 P.M. or later.	Total
Monday	**0.00%** 0	**2.22%** 1	**0.00%** 0	**4.44%** 2	**48.89%** 22	**11.11%** 5	**8.89%** 4	**4.44%** 2	**11.11%** 5	**8.89%** 4	45
Tuesday	**1.96%** 1	**1.96%** 1	**1.96%** 1	**5.88%** 3	**43.14%** 22	**15.69%** 8	**7.84%** 4	**5.88%** 3	**7.84%** 4	**7.84%** 4	51
Wednesday	**0.00%** 0	**1.96%** 1	**3.92%** 2	**5.88%** 3	**45.10%** 23	**15.69%** 8	**7.84%** 4	**3.92%** 2	**7.84%** 4	**7.84%** 4	51
Thursday	**0.00%** 0	**1.96%** 1	**1.96%** 1	**5.88%** 3	**43.14%** 22	**17.65%** 9	**7.84%** 4	**3.92%** 2	**9.80%** 5	**7.84%** 4	51
Friday	**0.00%** 0	**2.00%** 1	**2.00%** 1	**10.00%** 5	**48.00%** 24	**16.00%** 8	**4.00%** 2	**4.00%** 2	**2.00%** 1	**12.00%** 6	50
Saturday	**18.18%** 6	**9.09%** 3	**9.09%** 3	**9.09%** 3	**18.18%** 6	**9.09%** 3	**3.03%** 1	**3.03%** 1	**3.03%** 1	**18.18%** 6	33
Sunday	**12.50%** 1	**25.00%** 2	**0.00%** 0	**12.50%** 1	**0.00%** 0	**0.00%** 0	**0.00%** 0	**0.00%** 0	**0.00%** 0	**50.00%** 4	8

Q7 What are your busiest days and hours of the week?

Answered: 46 Skipped: 9



Busiest Hours							
	Not busy on this day	9 A.M. to 11 A.M.	11 A.M. to 1 P.M.	1 P.M. to 3 PM	3 P.M to 5 P. M.	After 5 P.M.	Total
Monday	**20.00%** 8	**12.50%** 5	**25.00%** 10	**20.00%** 8	**7.50%** 3	**15.00%** 6	40
Tuesday	**9.09%** 4	**11.36%** 5	**27.27%** 12	**25.00%** 11	**11.36%** 5	**15.91%** 7	44
Wednesday	**11.36%** 5	**9.09%** 4	**29.55%** 13	**25.00%** 11	**13.64%** 6	**11.36%** 5	44
Thursday	**4.55%** 2	**6.82%** 3	**25.00%** 11	**25.00%** 11	**15.91%** 7	**22.73%** 10	44
Friday	**9.52%** 4	**14.29%** 6	**23.81%** 10	**23.81%** 10	**21.43%** 9	**7.14%** 3	42
Saturday	**15.15%** 5	**21.21%** 7	**45.45%** 15	**3.03%** 1	**3.03%** 1	**12.12%** 4	33
Sunday	**53.85%** 7	**7.69%** 1	**7.69%** 1	**23.08%** 3	**0.00%** 0	**7.69%** 1	13

Q8 On average, during these busiest times, how many customers do you estimate frequent your business?

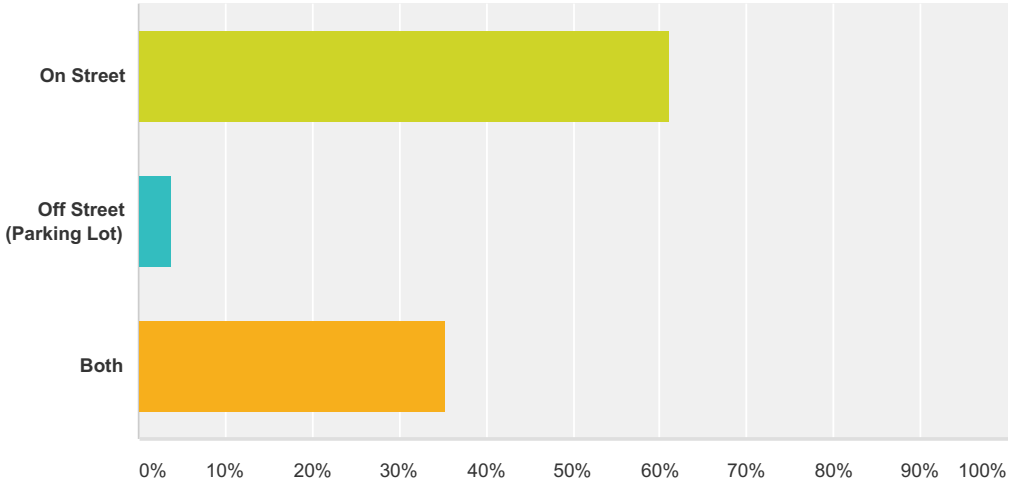
Answered: 49 Skipped: 6

#	Responses	Date
1	30	7/6/2016 8:41 AM
2	15	6/30/2016 12:50 PM
3	20	6/30/2016 8:50 AM
4	we are typically appointment only, appointments could be up to 8 people for closings	6/29/2016 12:50 PM
5	3	6/28/2016 10:03 AM
6	100	6/23/2016 5:10 PM
7	100-225 we do not open until 4--	6/23/2016 2:56 PM
8	10	6/23/2016 2:11 PM
9	2	6/22/2016 7:46 PM
10	3-5	6/22/2016 5:51 PM
11	4	6/22/2016 9:19 AM
12	10	6/21/2016 5:08 PM
13	35	6/21/2016 4:11 PM
14	3-4	6/21/2016 1:13 PM
15	5-7	6/21/2016 11:22 AM
16	5-8	6/21/2016 9:49 AM
17	20-100	6/21/2016 8:13 AM
18	60	6/21/2016 8:02 AM
19	5-10	6/21/2016 6:15 AM
20	10	6/20/2016 8:32 PM
21	17-20	6/20/2016 7:48 PM
22	1 or 2	6/20/2016 12:55 PM
23	37 regulars plus 45 irregulars	6/20/2016 11:59 AM
24	2-4	6/20/2016 11:26 AM
25	7 per day	6/20/2016 9:39 AM
26	100+ We open at 7am Mon thru Sat	6/18/2016 10:59 PM
27	25-30	6/18/2016 7:40 AM
28	depends	6/17/2016 5:39 PM
29	12	6/17/2016 2:33 PM
30	25	6/17/2016 1:30 PM
31	10+	6/17/2016 1:21 PM
32	30	6/17/2016 1:03 PM
33	10-12	6/17/2016 12:20 PM

34	15	6/17/2016 11:23 AM
35	25	6/17/2016 10:52 AM
36	5+	6/17/2016 10:19 AM
37	n/a most business done by phone or email	6/17/2016 10:15 AM
38	0	6/17/2016 9:44 AM
39	10-25	6/17/2016 8:12 AM
40	80-100	6/16/2016 8:05 PM
41	After 12:00	6/16/2016 6:15 PM
42	10-30 customers	6/16/2016 5:54 PM
43	35	6/16/2016 5:33 PM
44	5	6/16/2016 4:42 PM
45	1-3	6/16/2016 4:19 PM
46	Two	6/16/2016 3:45 PM
47	3-4	6/16/2016 2:33 PM
48	one	6/16/2016 1:13 PM
49	20	6/16/2016 10:59 AM

Q9 Where do you believe your customers park?

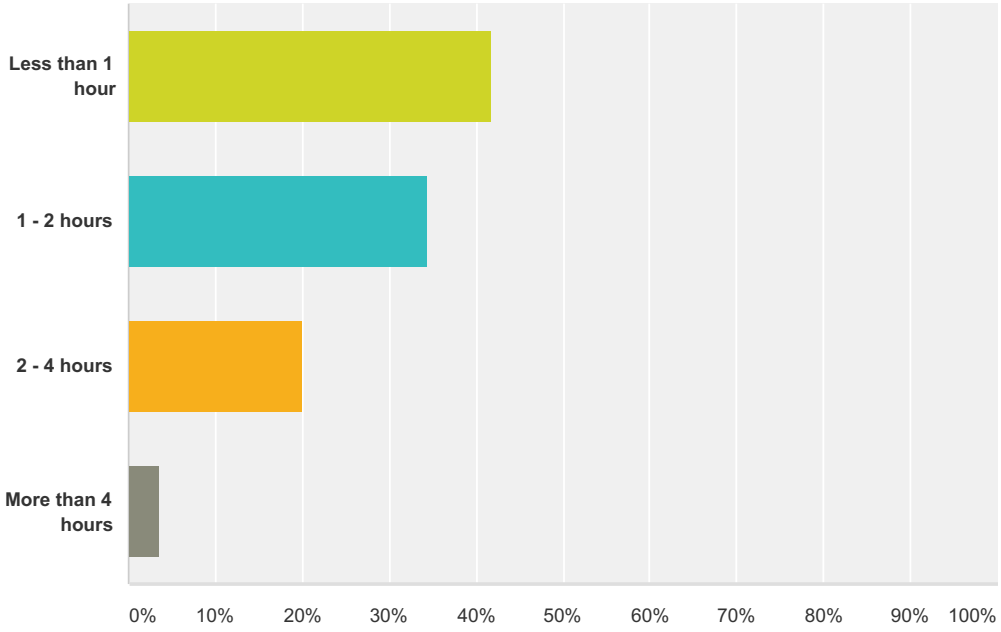
Answered: 54 Skipped: 1



Answer Choices	Responses	
On Street	**61.11%**	33
Off Street (Parking Lot)	**3.70%**	2
Both	**35.19%**	19
Total Respondents: 54		

Q10 What is the estimated duration your customers spend at your establishment?

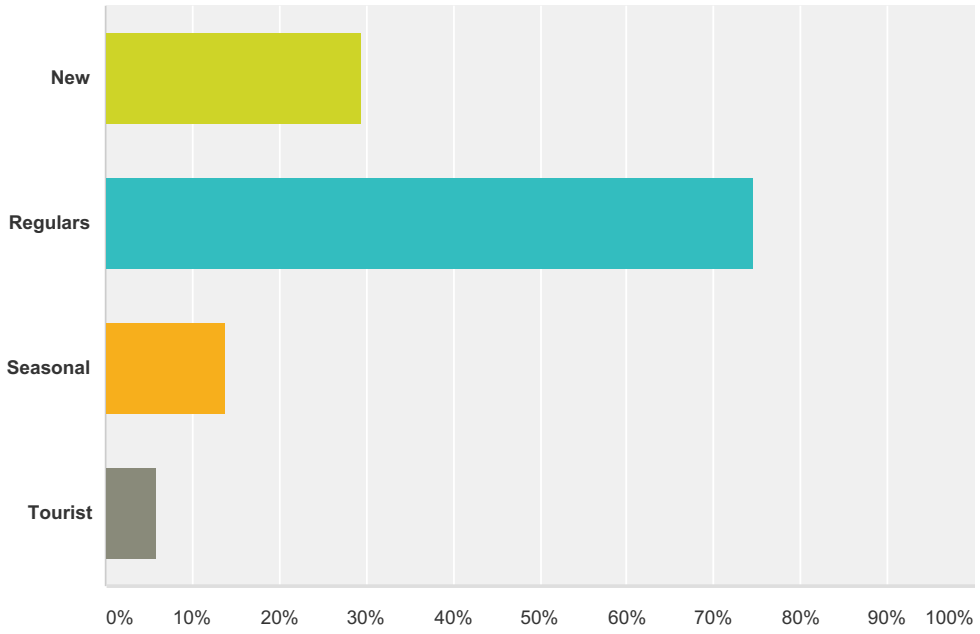
Answered: 55 Skipped: 0



Answer Choices	Responses	
Less than 1 hour	**41.82%**	23
1 - 2 hours	**34.55%**	19
2 - 4 hours	**20.00%**	11
More than 4 hours	**3.64%**	2
Total		**55**

Q11 Are the majority of your customers:

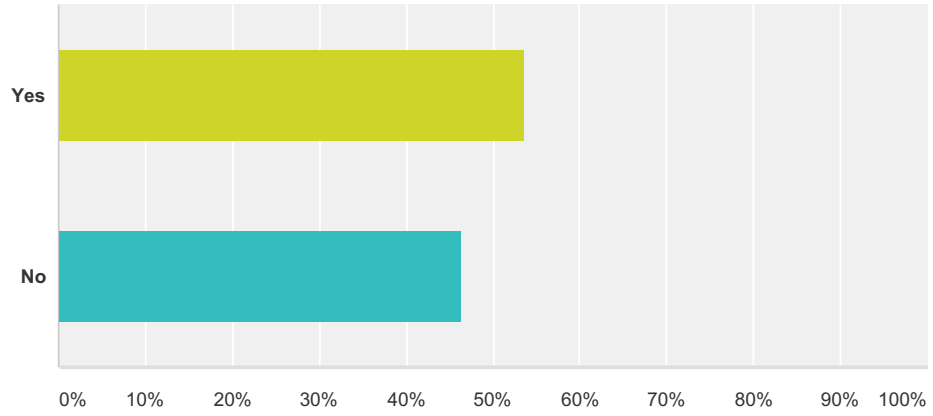
Answered: 51 Skipped: 4



Answer Choices	Responses	
New	**29.41%**	15
Regulars	**74.51%**	38
Seasonal	**13.73%**	7
Tourist	**5.88%**	3
Total Respondents: 51		

Q12 Do you foresee the need for additional parking in the future due to the growth or expansion of your business?

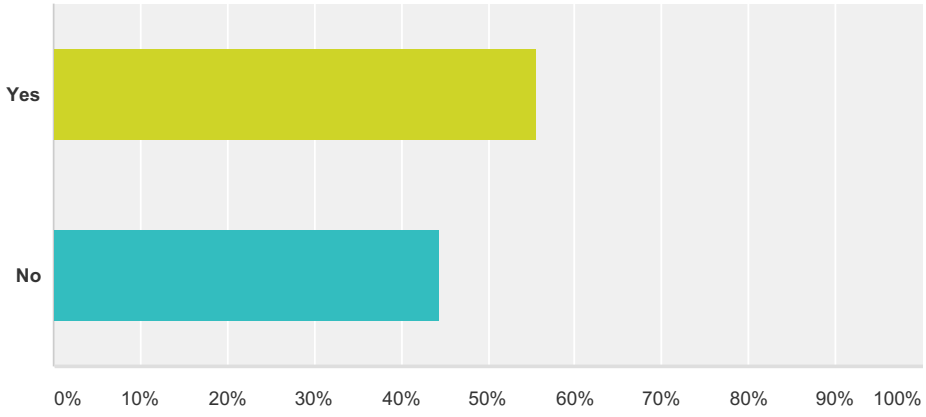
Answered: 54 Skipped: 1



Answer Choices	Responses	
Yes	**53.70%**	29
No	**46.30%**	25
Total		**54**

Q13 Do you occasionally sponsor events that draw more customers than usual?

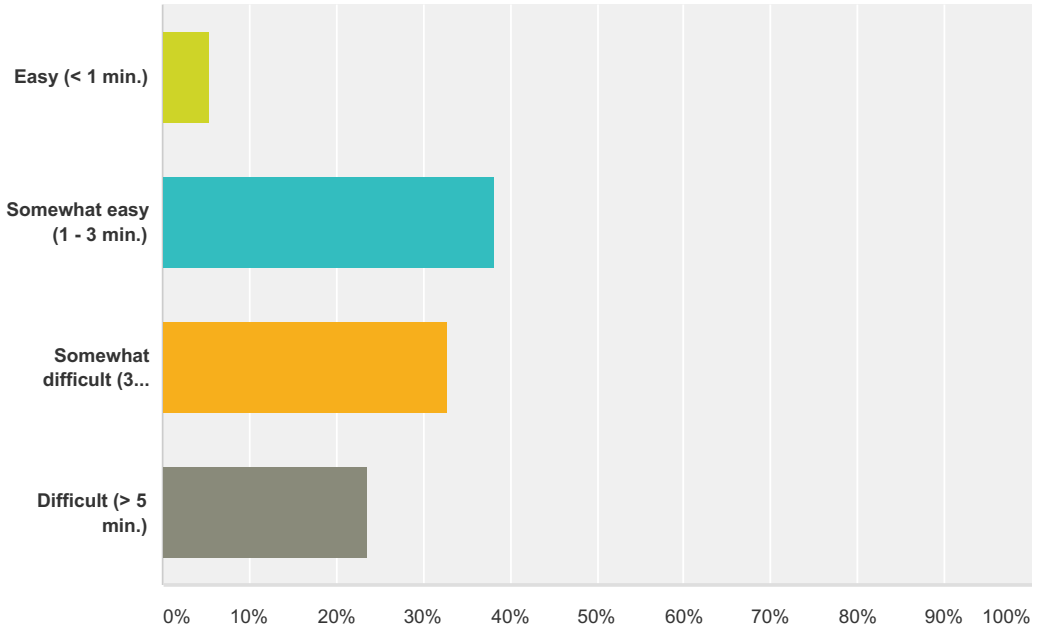
Answered: 54 Skipped: 1



Answer Choices	Responses	
Yes	**55.56%**	30
No	**44.44%**	24
Total		**54**

Q14 How would you characterize the ability of your customers to find a parking space downtown on a typical weekday?

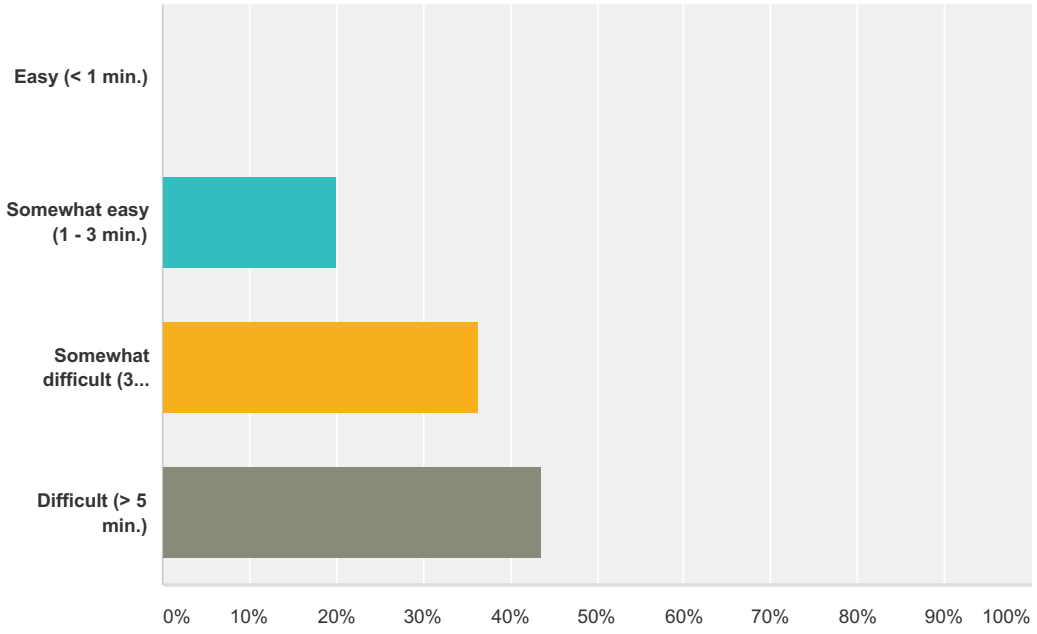
Answered: 55 Skipped: 0



Answer Choices	Responses	
Easy (< 1 min.)	**5.45%**	3
Somewhat easy (1 - 3 min.)	**38.18%**	21
Somewhat difficult (3 - 5 min.)	**32.73%**	18
Difficult (> 5 min.)	**23.64%**	13
Total		**55**

Q15 How would you characterize your ability to find a parking space downtown on a typical weekday lunchtime?

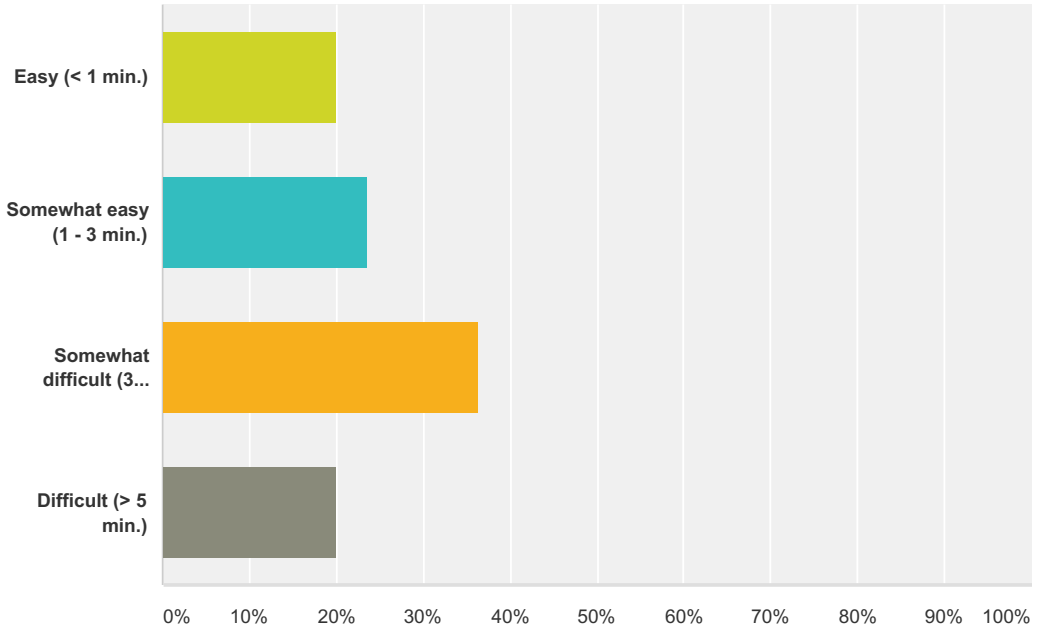
Answered: 55 Skipped: 0



Answer Choices	Responses	
Easy (< 1 min.)	**0.00%**	0
Somewhat easy (1 - 3 min.)	**20.00%**	11
Somewhat difficult (3 - 5 min.)	**36.36%**	20
Difficult (> 5 min.)	**43.64%**	24
Total		**55**

Q16 How would you characterize your ability to find a parking space downtown on a typical evening or weekend?

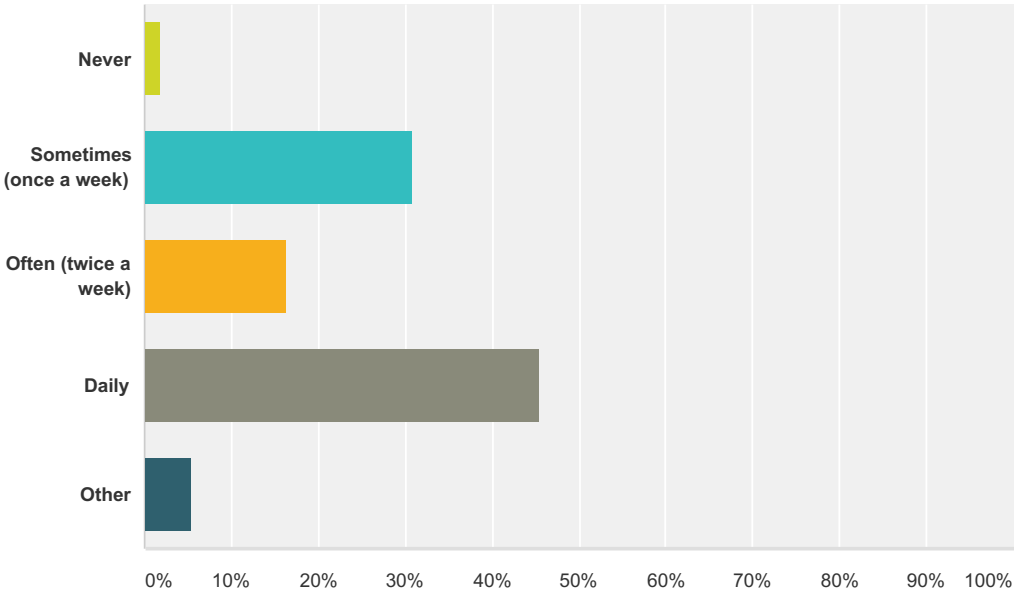
Answered: 55 Skipped: 0



Answer Choices	Responses	
Easy (< 1 min.)	**20.00%**	11
Somewhat easy (1 - 3 min.)	**23.64%**	13
Somewhat difficult (3 - 5 min.)	**36.36%**	20
Difficult (> 5 min.)	**20.00%**	11
Total		**55**

Q17 Have you noticed other employees from surrounding businesses parking in front of your business?

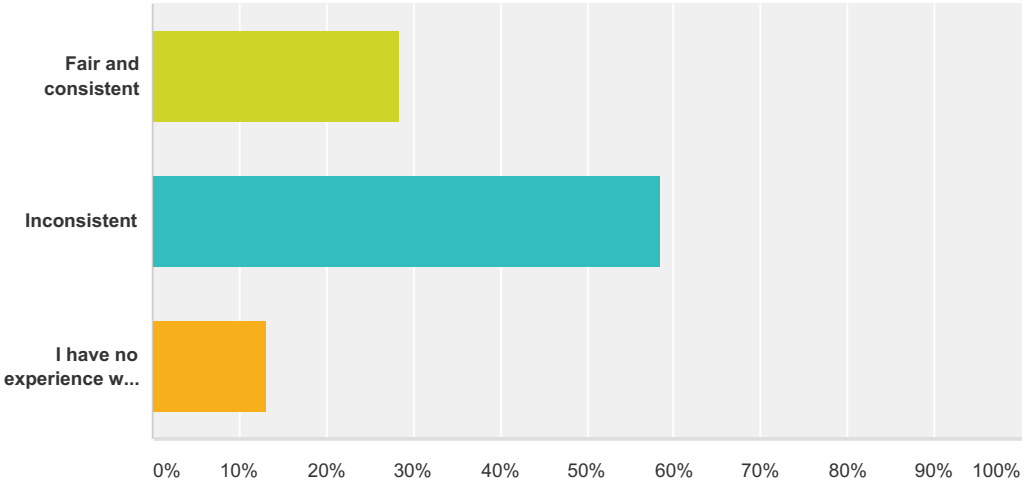
Answered: 55 Skipped: 0



Answer Choices	Responses	
Never	**1.82%**	1
Sometimes (once a week)	**30.91%**	17
Often (twice a week)	**16.36%**	9
Daily	**45.45%**	25
Other	**5.45%**	3
Total		**55**

Q18 How would you describe enforcement of on-street parking regulations?

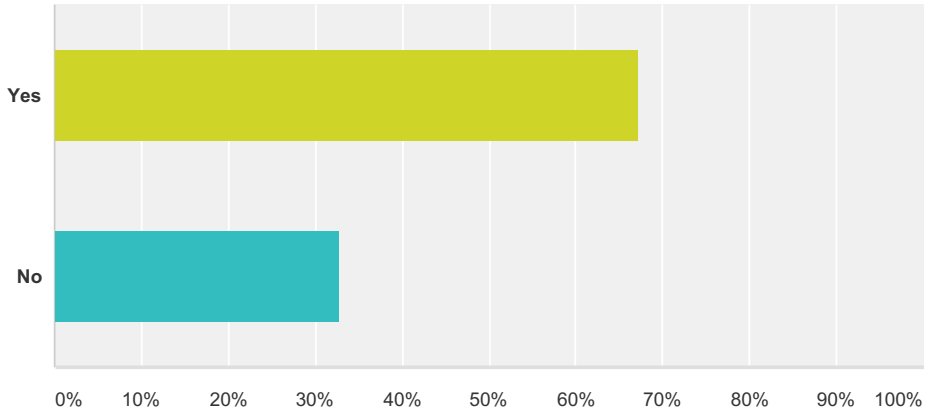
Answered: 53 Skipped: 2



Answer Choices	Responses	
Fair and consistent	**28.30%**	15
Inconsistent	**58.49%**	31
I have no experience with parking enforcement	**13.21%**	7
Total		**53**

Q19 Do you feel the current parking situation deters customers from your business?

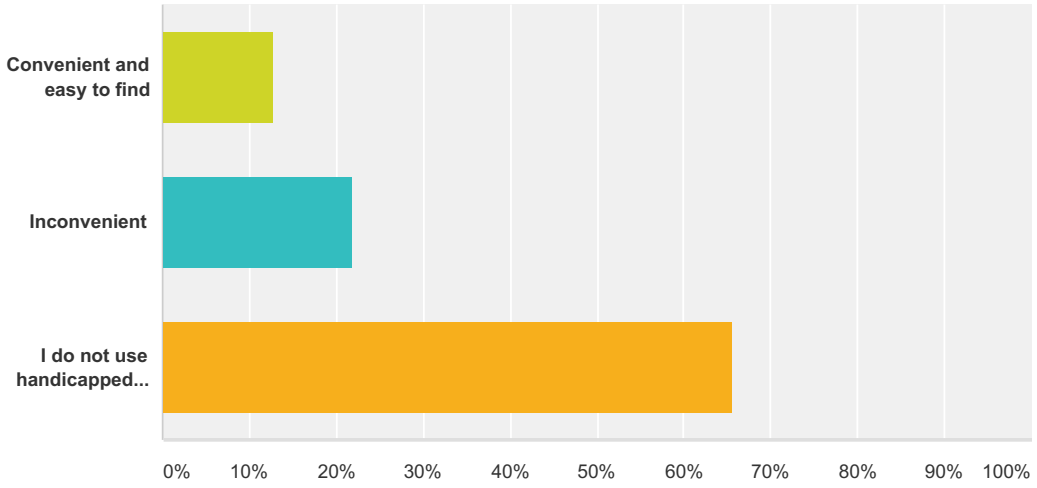
Answered: 55 Skipped: 0



Answer Choices	Responses	
Yes	**67.27%**	37
No	**32.73%**	18
Total		**55**

Q20 How would you describe the availability and use of downtown handicapped parking?

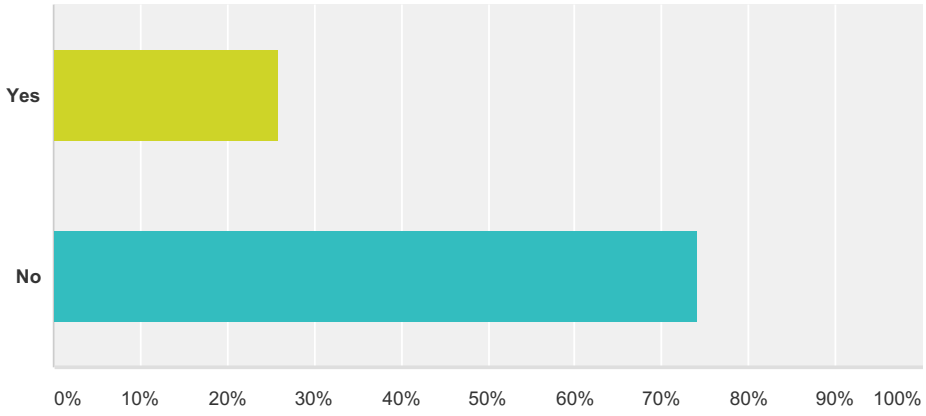
Answered: 55 Skipped: 0



Answer Choices	Responses	
Convenient and easy to find	**12.73%**	7
Inconvenient	**21.82%**	12
I do not use handicapped parking	**65.45%**	36
Total		**55**

Q21 Would your business financially participate in the improvements to off-street parking?

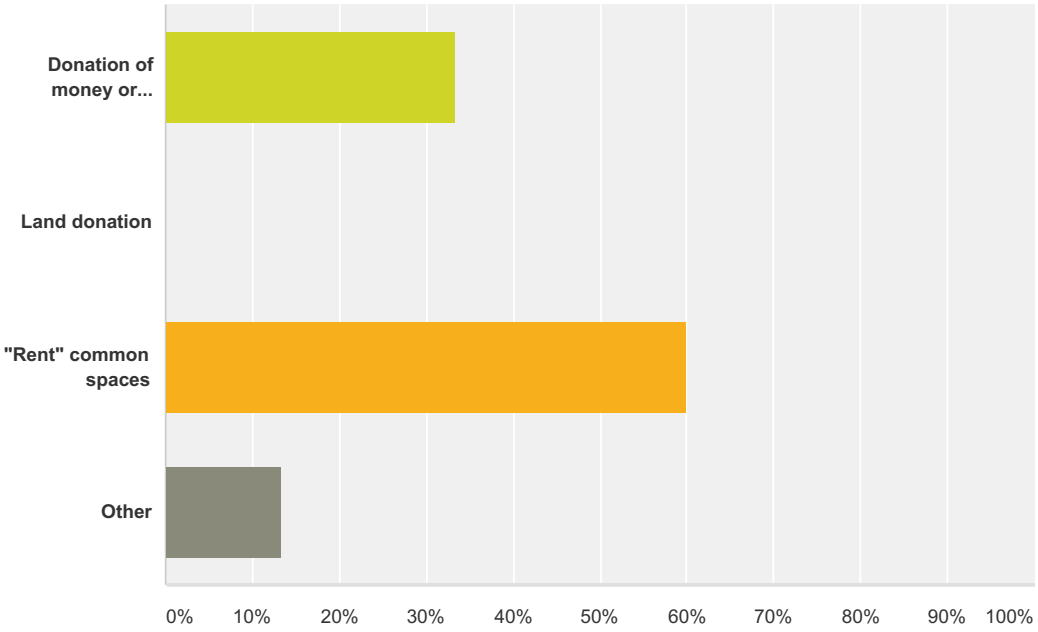
Answered: 54 Skipped: 1



Answer Choices	Responses	
Yes	**25.93%**	14
No	**74.07%**	40
Total		**54**

Q22 If you answered "Yes" to Question 21, how would your business financially participate in the improvements to off-street parking?

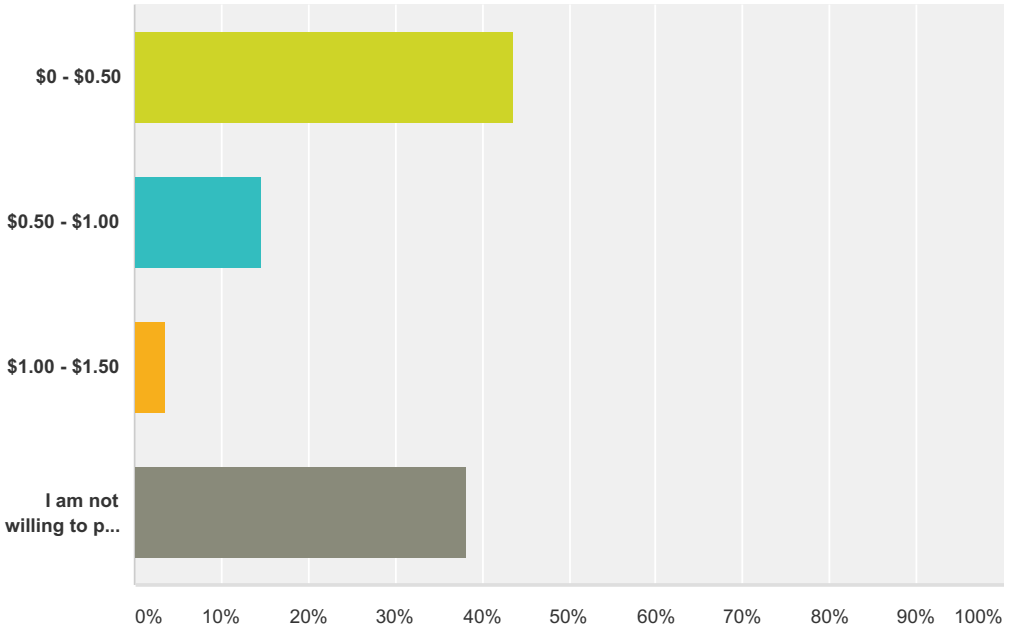
Answered: 15 Skipped: 40



Answer Choices	Responses	
Donation of money or in-kind service	**33.33%**	5
Land donation	**0.00%**	0
"Rent" common spaces	**60.00%**	9
Other	**13.33%**	2
Total Respondents: 15		

Q23 What do you consider to be a reasonable hourly fee for parking on and off-street?

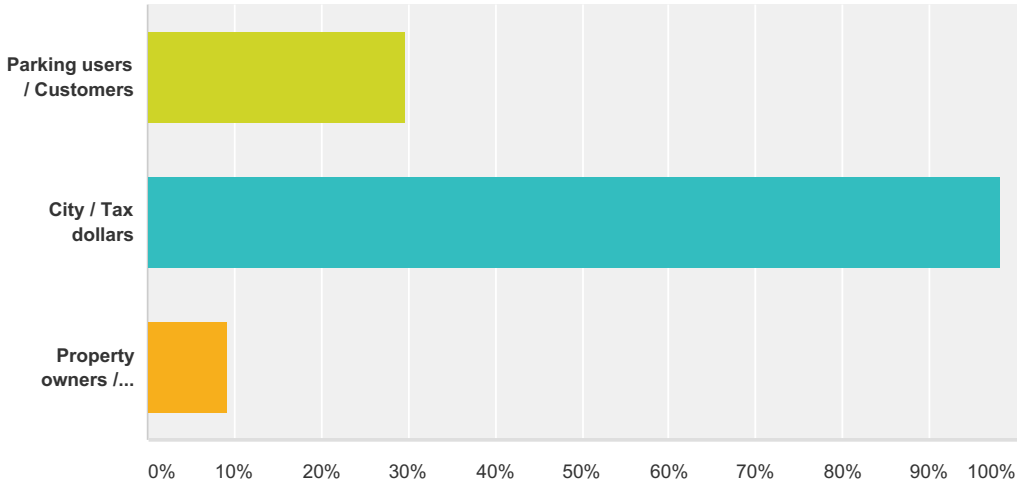
Answered: 55 Skipped: 0



Answer Choices	Responses	
$0 - $0.50	**43.64%**	24
$0.50 - $1.00	**14.55%**	8
$1.00 - $1.50	**3.64%**	2
I am not willing to pay for parking	**38.18%**	21
Total		**55**

Q24 In your opinion, who should pay the cost of building and maintaining public parking facilities? (Check all that apply)

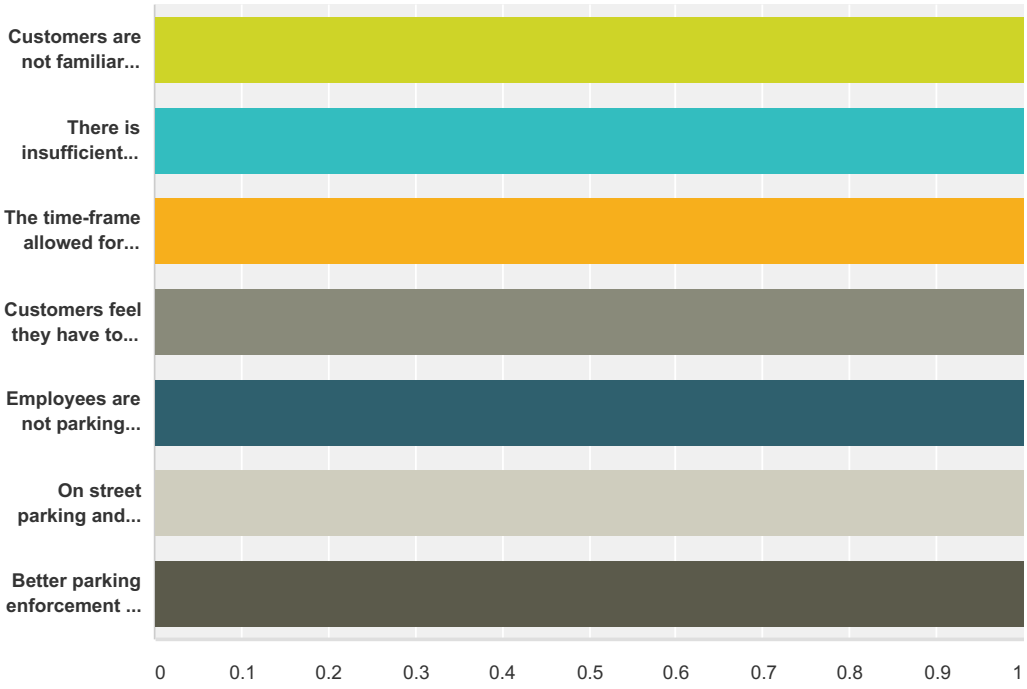
Answered: 54 Skipped: 1



Answer Choices	Responses	
Parking users / Customers	**29.63%**	16
City / Tax dollars	**98.15%**	53
Property owners / Business owners	**9.26%**	5
Total Respondents: 54		

Q25 Please rate the following in terms of their relevance to your patrons' experiences with parking in downtown Troy:

Answered: 53 Skipped: 2



	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Total	Weighted Average
Customers are not familiar with all parking options available to them.	**25.00%** 13	**48.08%** 25	**13.46%** 7	**11.54%** 6	**1.92%** 1	52	1.00
There is insufficient parking in the Downtown area.	**47.17%** 25	**41.51%** 22	**1.89%** 1	**7.55%** 4	**1.89%** 1	53	1.00
The time-frame allowed for parking at one location is not long enough for customer's needs.	**43.40%** 23	**32.08%** 17	**18.87%** 10	**5.66%** 3	**0.00%** 0	53	1.00
Customers feel they have to park too far away from their destination.	**22.64%** 12	**37.74%** 20	**30.19%** 16	**7.55%** 4	**1.89%** 1	53	1.00
Employees are not parking where they are supposed to park making it more difficult for customers to find parking.	**24.53%** 13	**30.19%** 16	**26.42%** 14	**15.09%** 8	**3.77%** 2	53	1.00
On street parking and parking lot signage is poor/confusing.	**24.53%** 13	**26.42%** 14	**33.96%** 18	**15.09%** 8	**0.00%** 0	53	1.00
Better parking enforcement / increased fines for parking violations are needed.	**3.77%** 2	**3.77%** 2	**28.30%** 15	**33.96%** 18	**30.19%** 16	53	1.00

Q26 Please provide any additional thoughts, comments, and/or recommendations you may have regarding the parking accommodations in Downtown Troy:

Answered: 32 Skipped: 23

#	Responses	Date
1	If frequenting several businesses in the downtown, I may need more than the current 2-hour limit. #23 - depending on how long I need to be there, or how many days I may need to come into the downtown area for business. This cost racks up pretty quick.	7/6/2016 7:03 PM
2	My shop is a destination business. Half of our customers are from 30 minutes away in Dayton/surrounding suburbs. Many are from Troy, but we also attract people from Indianapolis to Columbus, Toledo to KY. When families drive that distance, they spend the day in Troy. Families with small children in carseats do NOT want to buckle everyone in just to move their cars every two hours. People sometimes leave me their keys. By the time we talk cloth diapers and fit them for baby carriers and they feed baby and change diapers (maybe more than once), it's easy for them to spend 2-3 hours in my shop alone. Then I send them downtown to eat and shop with map and guides in hand. We need those people to be able to spend their time and money in Troy without worry. In the past, the parking enforcement officer who drove the golf-cart-type car used to basically accost customers who were BUCKLING THEIR CHILDREN in to move at the 2-hour mark. He'd pull up behind people who were BACKING OUT at the 2-hour mark, almost causing accidents. He would spend 15 minutes lecturing my customers about parking times. I do NOT want to see anything like that happening again. I do think that parking ON the square and within the first block surrounding the square should absolutely be enforced in some way. Those spots need to be for customers only. I don't feel my block needs to be as strictly monitored. My business is growing, but if employees don't park in my spaces, I am blessed by my location to have enough. When I don't have enough is during the winter because the streets are not plowed well enough to encourage people to shop. Families juggling children cannot step over the snow wall created at the edge of the sidewalk by city snow plows (IF the parking spaces get plowed at all). Thank you for doing this.	6/30/2016 8:50 AM
3	I will say this. Some of the complaints that I have heard that stem from parking I don't think is the biggest issue. I think what our retail businesses really struggle the most with as far as buyer traffic is that they are retail establishments open during business hours which limits the buyer availability. You are targeting then people who don't have jobs, stay at home parents who really aren't going to bring their kiddos to your store, retirees (which may shop) or those willing to take off of work to shop your store which is unrealistic. In the evenings we have a vibrant downtown. I think the biggest issues though that plagues these businesses are their inconvenient hours of operation for the general public realistically more than a lack of parking. I understand the city does not establish this nor regulate this (as they shouldn't) but the employees and general public shouldn't have to be penalized financially for this concern either.	6/29/2016 12:50 PM
4	We are a church. Most of these questions do not apply. However our elderly congregation finds it difficult to access the Canal street/handicapped entrance because city workers park there every day but the weekend.	6/23/2016 5:10 PM
5	we can have successful events downtown w/o closing main quandrants and losing all the parking spots	6/23/2016 2:56 PM

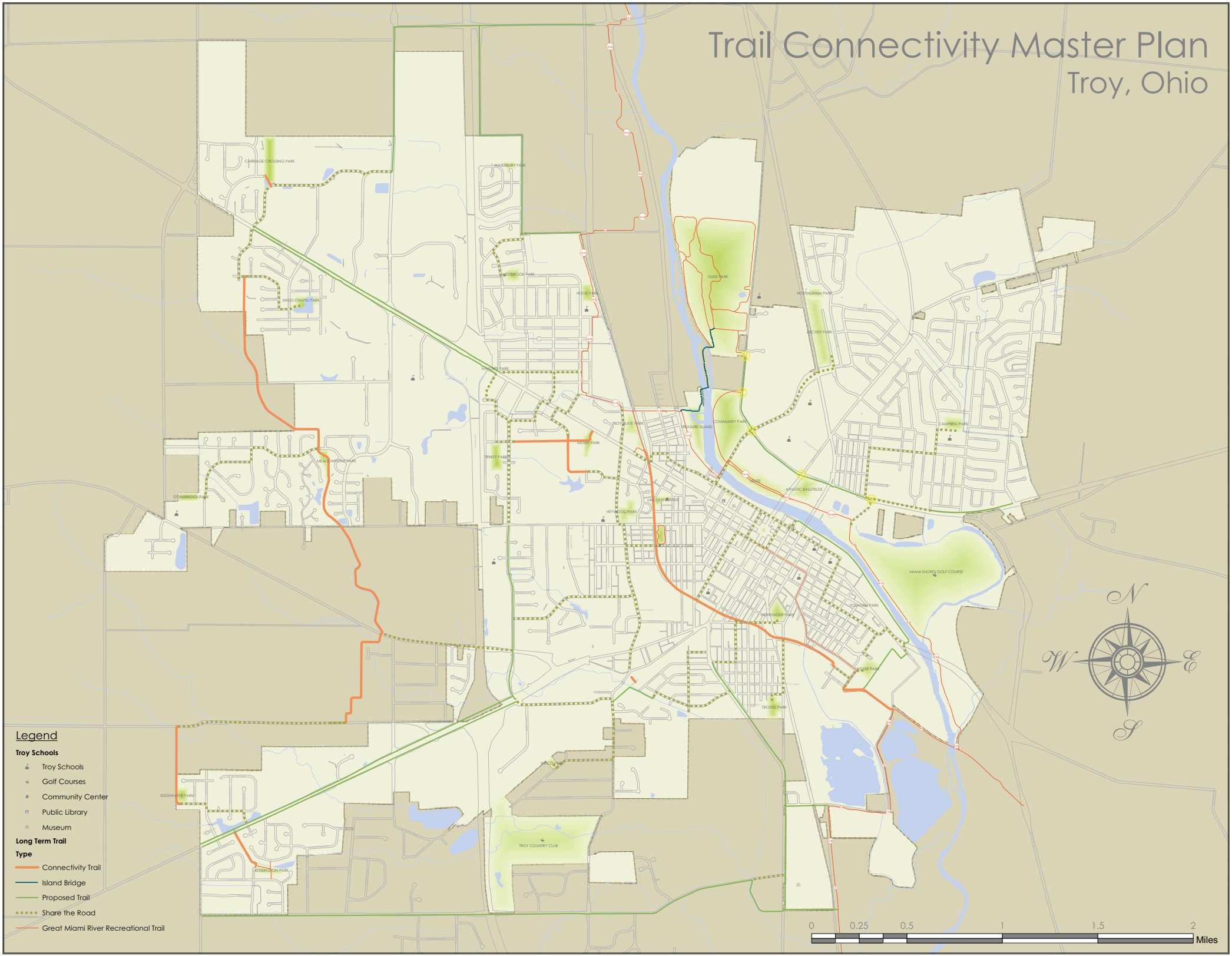
6	If I get downtown before 11a I try for a meter, so I'm not running out to move my car between massage sessions. The nature of my business commands peace and fluidity, not allowing my clients to watch my concern to run to my car. If I need to move to a new "spot" between 12-2p it is simply too difficult to do easily. If I arrive at work after 11:30a, I modify by riding my bicycle or getting a ride, so as to not juggle continuous interruptions by having to move the car. Finding a metered spot is virtually impossible after 12:00, unless you have good timing :) I hope you find this input helpful. Thank you for you time and efforts! Michele Cremeans, LMT	6/22/2016 7:46 PM
7	Make sure to take into consideration the thoughts and opinions of other downtown businesses and points of interest. We are located just outside of your study, but our parking situations are the same (if not worse than downtown).	6/22/2016 5:51 PM
8	Thanks for coordinating this effort	6/21/2016 5:08 PM
9	The front of my store is used for Court House patrons and my clients have difficulty finding a place to park especially on Court days. My employees don't feel they have a place to park and they could be with a client and have to leave to move their vehicle.	6/21/2016 1:13 PM
10	The newly installed kiosk in the parking lot nearest is confusing our clients daily and doesn't work a lot of the time. The old meters were MUCH less confusing!	6/21/2016 9:49 AM
11	In addition to what is currently available, I believe the downtown is in need of a multi-level parking garage within easy walking distance to the Square. Many retail locations, including The Greene in Beavercreek, offer on-street metered parking and garage parking at no cost to the patron. Merchants should not have to bear the cost of parking in any form. As an entertainment facility, offering concerts, movies, performances and other events, the Mayflower Arts Center is growing in its potential to bring more patrons downtown on weekends (Fri, Sat). Currently our theater seats 137 and we average 30-40% capacity and our patrons complain about parking. As we continue to grow and become more known in the community, we will have an increased need for parking that already competes with the downtown restaurants and bars. It has been our long-term vision to renovate the original theater which could accommodate 500+ patrons. One key to success would be adequate parking. At this time, a 500+ seat venue cannot be supported downtown.	6/21/2016 8:13 AM
12	Build a muti-level parking garage to eliminate the perception it is to hard to park downtown. Also reduce fines to $10 and increase parking time to 4 hours.	6/21/2016 8:02 AM
13	Get the County employees a garage to park in and 90% of business hours parking congestion goes away.	6/21/2016 6:15 AM
14	we have more difficulty because of the bank next door.....people park there for the ATM machine.....also the on sttreet parking is hard to back out of, vision is difficult	6/20/2016 8:32 PM
15	The main issue I have is that with the type of business I have my clients do fast drop off and pick up of their pets and often have to circle the block waiting for a space to open up. If we had one space that was a 15 min spot in front of our shop that would change. With the hair salon and other business next to us the spaces in front of our salon are typically full from 9:00 until the end of business.	6/20/2016 7:48 PM
16	People who work downtown are parking in the two hour free spaces and then moving their vehicles every two hours, which takes away the store front parking from potential customers. The paid parking lots need to be opened back up to downtown workers to park at with a free parking permit.	6/20/2016 12:55 PM
17	1. Our customers are residents who live downtown 24/7. 2. We have 18 residents with cars (of which 4 are disabled), who park downtown night & day (all hours). 3. It would be nice if we could rent two spaces from First Place for parking of our seriously disabled residents. 4. For the able body elderly we rent space from the Presbyterian Church.	6/20/2016 11:59 AM
18	The parking/availability is ridiculous. there are not any extra places to park and/or available. we have on orientation class we pay for them to park. We could have up to 6 in a class and for 7 hours per day. our employees do not have a place to park unless they pay. how fair is it to employees to have to pay to go to their own employers office?	6/20/2016 11:26 AM
19	Our major complaint is the residents in the area who either take up to much parking space to limit the amount of cars that can utilize the spots or the threatening manner we receive because we have to park in front of their residences.	6/20/2016 9:39 AM
20	In response to the last question, ONLY the people working in the downtown areas should get increased fines for parking in front of the downtown shops. My employees never park in front of the shops, they know that parking is only for our customers.	6/20/2016 9:27 AM
21	Cherry St parking lot metering system is cumbersome, with two many key prompts. Lot is underused, the hourly rate should be reduced to .50. To increase use. Handicap slots are furtherest the from pay-station, not handicapped friendly.	6/18/2016 10:59 PM
22	I feel some of these questions are not necessary at all or don't apply. I also feel depending on the time of day affects everyone. Being handicap myself parking is really bad for me.I hope there are answers with all questions about parking for downtown.Good luck with this.	6/18/2016 2:03 PM

23	There is a need for a downtown parking lot or garage. More people would frequent the downtown if more parking was available.	6/18/2016 7:40 AM
24	Employees of downtown businesses SHOULD NOT park in other businesses customers parking spots.	6/17/2016 2:33 PM
25	We need a centrally located parking garage! That would alleviate so many problems with downtown parking. Also, the 2 hour limit does not allow for anyone to stay downtown for very long. If they want to eat and then shop or participate in an activity, they have to move their car or chance getting a ticket. I would also be in favor of a parking "pass" that could be purchased for employees and downtown residents. It gets expensive paying for parking every day. And then the off days when I forget to put enough money in the meter, I get a ticket. We are a rental venue as well, and it is really difficult for our guests to find parking close by.	6/17/2016 1:03 PM
26	While I am a bit further from the square and most of my customers don't have parking issues, the 2 hour limit keeps customers from walking about downtown, eating lunch or dinner, visiting other stores, etc. Customers feel like they have to rush through my store or skip visiting other businesses.	6/17/2016 12:20 PM
27	post amount of fine on parking lot signage.	6/17/2016 11:23 AM
28	My customers had no issues parking until parking enforcement ended. Now i daily have employees and business owners park in 2 hr spots for 4-6 or more hours. Parking enforcement is greatly needed.	6/17/2016 10:19 AM
29	I believe that $1.75 or $2.00 per day to park in Cherry St. lot is too much for many employees including a couple of my employees. However, I use that lot everyday but my income is greater than some.	6/17/2016 10:15 AM
30	I would appreciate paying a monthly fee to park in the Cherry St lot and have an assigned spot nearest Cherry St. at the rear of the "gym" building. I come and go from my work location at all hours of the day and night.	6/17/2016 9:44 AM
31	It would be nice to have a "pass" to somehow give out of town visitors a polite thank you for your business and here is a one time warning instead of a ticket. Or the business owners get a certain amount "golden tickets" to waive the cost of tickets for unhappy out of town customers who would otherwise leave with a negative experience in Troy. If customers get tickets they do not tend to come back, it would be nice to somehow ticket the locals (who know about the limits when they park there) and be a little more forgiving of out of town plates. We get a lot of groups meeting for lunch and there is no time to shop if they are worried about getting tickets. I am not sure about paying for parking (question #23. It depends on what parking is offered)	6/16/2016 5:33 PM
32	Change the parking times for downtown from 2 hour to 3 hour parking...build a parking garage. Bus city and county employees from the fairgrounds. They all come in at the same time and they leave at the same time.	6/16/2016 10:59 AM

APPENDIX D: CITY OF TROY TRAIL CONNECTIVITY MASTER PLAN

Trail Connectivity Master Plan

Troy, Ohio



APPENDIX E: MORPC PARKING MANAGEMENT CASE STUDY

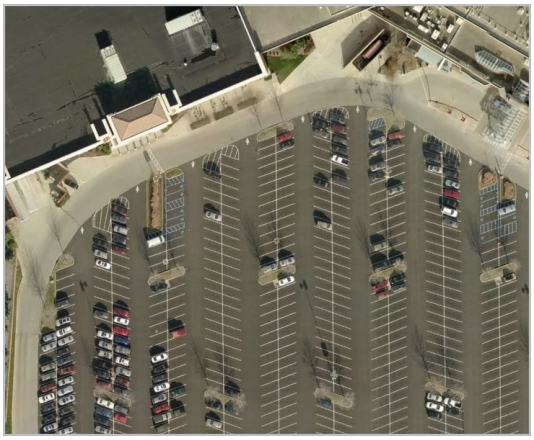
10. PARKING MANAGEMENT

10.1 Introduction

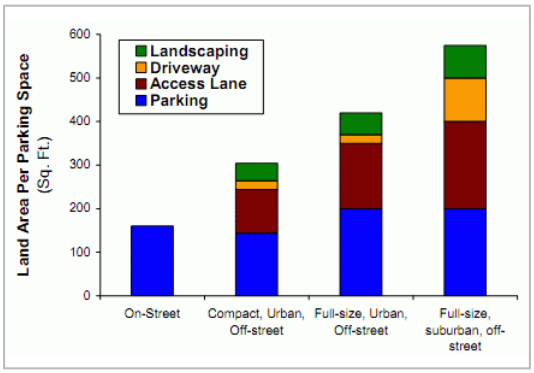
In the United States, parking is often considered a key amenity for commuters, residents, and visitors. When designing neighborhoods and cities with Complete Streets in mind, there are several things that should be considered related to parking.

On-street parking can contribute to the quality of a complete street. It can offer an amenity for drivers while serving as a buffer between traffic lanes and sidewalks. However, in many contexts, parking is provided outside the street right-of-way. Even these surface parking lots deserve attention, as they can serve as a barrier between the street and the building entrance. Effectively mitigating the impact of the gap between the street and the building entrance can improve accessibility for all modes of transportation.

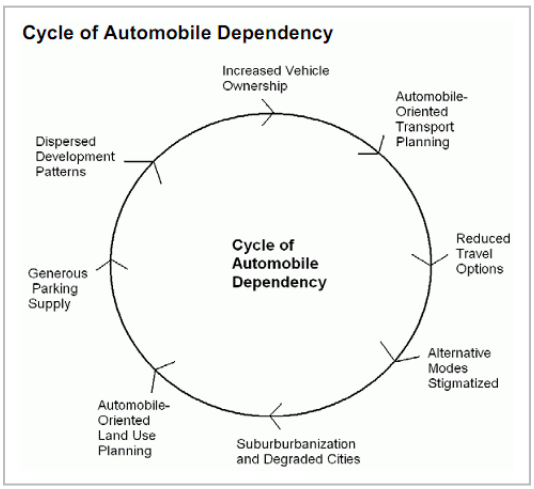
In the United States, 99 percent of all automobile trips include free parking (Shoup, 1999). When something is offered free of charge, its perceived demand can seem almost infinite. Accommodating parking in a context-sensitive matter may require one or more of the approaches below depending on the scale (site, corridor, district and municipal) and local conditions (capacity for implementation, monitoring, and enforcement).



This retail parking lot remains unused throughout much of the year. Source: MORPC.



Land area required for typical parking facilities. Source: VTPI, 2010.



Generous levels of parking contribute to automobile dependency. Source: VTPI, 2010.

10.2 Parking Supply

If the environment indicates that more parking spaces are necessary to accommodate residents and visitors, it is important to clearly define parking demand as well as strategies that could reduce the demand. Parking requirements are a standard part of most zoning codes, but research shows that many codes actually require too much parking (Shoup, 1999; Shoup, 2006). The standards referenced in such codes are often based on studies from suburban locations at peak periods.

These same parking requirements often only allow parking that is "on-site" (see definition below) to count against this parking demand. Solutions that capture some or all of this demand off-site may be overlooked.

The urban form that results from this approach is characterized by buildings surrounded by parking. These buildings are isolated from the street and from each other, defeating the accessibility gains of streets that are otherwise complete. Accurately measuring and mitigating parking demand can help to mitigate this problem. Shoup (2005) has compiled a lengthy reference on parking and zoning that fully describes this phenomenon as *The High Cost of Free Parking*.

10.2.1 On-site Parking

On-site parking refers to the parking available on the same piece of property as the building or use. Excessive on-site parking requirements tend to result in buildings being separated by large parking lots, thus increasing automobile dependence that induces further demand (VTPI, 2010 and Shoup, 2005). It is therefore recommended to apply other strategies to break this cycle. Litman (2006) details these strategies, and a summary of the strategies is available through the Victoria Transport Policy Institute (VTPI, 2010).

Structured parking refers to multi-level above or below ground structures that allow more vehicle parking on-site than would be possible at the surface. The structures may or may not be incorporated into a building.

While such structures are often cost-prohibitive, they allow for the integration of parking into a more compact land use pattern that supports a mix of residential and business units.

In locations with high land acquisition cost and higher density (existing or under construction), it is possible to support the construction, operation, and maintenance of a parking structure.

Of the different structured parking types available, underground structures are more expensive due to the ventilation and structural requirements (Balboni, 2007; VTPI, 2009).

This structured parking lot blends in with the historic district and offers street-level interest by including retail space. Source: Andy Taylor. Lincoln, NE.

10.2.2 Peripheral/Remote Parking

Peripheral or remote parking refers to parking lots outside the business area. Remote lots can serve employees or fulfill other long-term parking needs. Access to the destination can be provided by shuttle or transit service. Such lots can offset the need to design parking lots to meet high peak-period demand, which allows for smaller surface parking lots and a more compact land use pattern. This strategy is described in more detail by Litman (2006) and the Congress for the New Urbanism (2001).

Remote parking is a good strategy where compact, mixed-use land patterns are desired, but the high capital cost of building structured parking is not feasible. However, ongoing operation of a shuttle service should be weighed against the cost of adding more parking. This strategy also works well for special events in historic town centers, which were not designed around the car.

The sidewalk (top) allows pedestrians to avoid walking through access aisles. Striping is another method to highlight pedestrian travel through parking lots (bottom). Sources: NNECAPA. Lexington, MA (top); MORPC. Columbus, OH (bottom).

10.2.3 Parking Lot Design

Taking driveway entries, aisle access, landscaping, and the parking space itself, each space in a parking lot requires 300-400 square feet. Small parking lots tend to be less efficient in terms of square feet per space because fewer spaces share set entry and access square footage.

Municipalities can suggest landscaping and stormwater facilities that require less space for the same effect, depending on the context. Landscaping can also be combined with pedestrian and bike access in and through parking lots, which is especially important for lots with high turnover rates.

Depending on the dimensions of the land available for parking and the access points, angled parking can be more efficient space than perpendicular parking because access aisles only allow one-way traffic. However, perpendicular parking with two-way access aisles is easier to navigate, especially for visitors.

Some city codes specify one set of dimensions for all parking spaces. However, a more flexible coding system is preferred, as different users require different levels of service. For example, a 9' wide space may consume too much of the limited land available for parking. High-turnover spaces, as can be found in a retail parking lot, should only require 8'6" wide spaces. Spaces 8' wide should suffice for low-turnover spaces, such as those used once a day by office employees.

More information on parking space dimensions can be found in the Planning and Urban Design Standards (APA, 2006) and The Dimensions of Parking (ULI, 2009).

10.2.4 On-Street Parking

On-street parking refers to the space for parked vehicles that is permitted as a part of the public right-of-way at curb. If a roadway has sufficient right-of-way on each side, angled curb parking can add to the parking supply by as much as 50 percent compared to parallel parking (Robertson, 2007). Back-in angled parking is another option which requires additional navigation for those parking, but removes the blind spot during departure, and thus reduces potential conflicts with bikes.

On-street parking near Ohio State University. Source: MORPC. Columbus, OH.

Parallel parking can be accommodated on roadways without space for angled parking. Careful tradeoffs must be made between traffic lanes, bike lanes (door zone issue), and on-street parking. Traffic speed must also be considered because the maneuver to park requires backing in. Striping parallel parking spots can make them more inviting to the short-term user, but will take away from the total supply (i.e., the typical car is 16'6" long, while a striped parallel space requires 22').

10.3 Parking Supply Management

Adding to the overall parking supply may be a worthy goal. However, as noted above, it is not without negative impacts to compact and walkable urban form. Additionally, it may not be practical for all sites, in terms of layout or cost.

In cases where adding to the overall parking supply is desired, but not possible or practical, strategies to better manage the existing parking supply should be used to meet goals of improved vehicle accessibility. It can also facilitate property reuse and infill by accommodating more users on a site that would otherwise require a parking variance.

10.3.1 Flexible Parking Requirements

Most zoning codes require a certain number of parking spots for a building based on size and use. However, other factors impact the amount of parking a destination should supply. For example, if a location is well served by transit, it should merit a reduction. The strategies discussed below may also merit a reduction (Litman, 2006; VTPI, 2010).

10.3.2 Shared Parking

Parking demand for different land uses peaks during different periods of the day. This can allow neighboring uses to pool their parking supply, requiring less than the sum of the others in isolation.

Smith (2005) provides a detailed process to determine the appropriate amount of shared parking. Others offer an abbreviated version of this process (APA, 2006; Center for Applied Transect Studies, 2009).

Shared lots have other efficiencies in terms of size and layout. Small lots for a single use or building may each require their own driveway access and landscaping that could otherwise be shared among more spaces in a larger lot.

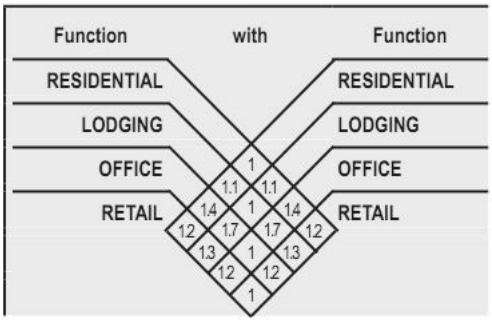
In contexts where parking supply is limited, shared parking might be most effective in the form of public, off-street parking lots (Robertson, 2007). Where parking is not immediately adjacent to the destination, clear signage is important to ease wayfinding. Maps and online information can also prepare area visitors for their parking options.

TABLE 11: Parking Calculations. The Shared Parking Factor for two Functions, when divided into the sum of the two amounts as listed on the Required Parking table below, produces the Effective Parking needed for each site involved in sharing. Conversely, if the Sharing Factor is used as a multiplier, it indicates the amount of building allowed on each site given the parking available.

REQUIRED PARKING (See Table 10)

	T2 T3	T4	T5 T6
RESIDENTIAL	2.0 / dwelling	1.5 / dwelling	1.0 / dwelling
LODGING	1.0 / bedroom	1.0 / bedroom	1.0 / bedroom
OFFICE	3.0 / 1000 sq. ft.	3.0 / 1000 sq. ft.	2.0 / 1000 sq. ft.
RETAIL	4.0 / 1000 sq. ft.	4.0 / 1000 sq. ft.	3.0 / 1000 sq. ft.
CIVIC	To be determined by Warrant		
OTHER	To be determined by Warrant		

SHARED PARKING FACTOR



Shared Parking Factor included in the Center for Applied Transect Studies' Smart Code. Source: Center for Applied Transect Studies, 2009.

10.3.3 Regulations/Restrictions

Time-based restrictions are common in many districts with limited parking supply, but official enforcement requires staff resources from public safety departments. Some business districts issue unofficial warnings to frequent offenders (Congress for the New Urbanism, 2001).

Permit parking is common in many districts with limited parking supply and a high proportion of residential properties. Permit parking lots privilege the needs of residents (and sometimes employees) over area visitors who are important for many businesses. Creating permit areas can artificially decrease the parking supply in mixed-use districts (Congress for the New Urbanism, 2001). Careful consideration should be given to the business mix (i.e., retail, restaurants, and office) and the expectations of the residents (i.e., rates of car ownership, availability of off-street parking). Metering can be a good alternative to keep turnover rates high.

Parking regulations are clearly marked by appropriate signs. Source: Andy Taylor. Grove City, OH.

10.3.4 Preferential Parking

Preferential parking refers to the spaces reserved nearest the associated destination for a specific set of users. Offering this type of prime parking to carpools or vanpools encourages efficient use of the parking supply by adding another incentive to share a ride - and a parking spot.

Preferential parking can be reserved for carpools and energy-efficient vehicles, among others. Source: Andy Taylor. Columbus, OH.

10.3.5 Parking for Other Users

Bicycle parking can be encouraged or required by local parking code. If on-street bicycle parking is used, several bicycles will fit in the space occupied by one automobile. If off-street bicycle parking is provided, care must be taken to ensure the parking area does not encroach on pedestrian access. A good resource to consult is the Bicycle Parking Guidelines, published by the Association of Pedestrian and Bicycle Professionals. It can be found online at: www.apbp.org/?page=Publications.

Motorized two-wheel vehicles, such as scooters and motorcycles, can also have dedicated parking spaces. Downtown Columbus has several such areas.

On-street scooter and motorcycle parking. Source: MORPC. Columbus, OH.

10.4 Parking Demand

Reducing demand for parking can have the same benefits as better managing the physical supply, such as retaining compact and walkable urban form or encouraging property reuse where parking supply may be physically restrained.

The goal of the following strategies is to reduce the demand for parking without reducing the number of users reaching their destination. This can be accomplished when, for example, vehicles bring more users or visit for shorter periods of time.

Modern parking meters accept credit cards. Source: MORPC. Columbus, OH

10.4.1 Metering

Metering on-street spaces encourages turnover in the most convenient and visible locations. It is easier to enforce than posted time-based restrictions.

The most effective way to reduce demand for parking is to charge users based on time parked. This can be a contentious issue for businesses and residents who may expect parking to be free. Robertson (2007) observes that users fail to understand that the cost of supplying parking is factored into their destination's overhead, similar to rent or utilities. When that destination is designed around the car and not hemmed in by other properties, this cost may be marginal. The cost is far from marginal when that destination is in a location where property is scarce or expensive.

"Parking benefit districts" can increase the acceptance of parking fees. In these districts, revenues collected from the meters pay for public improvements in the district, such as sidewalk repair. Common opponents of metered pricing, such as businesses and residents, can now see the direct local benefit of these fees (Shoup, 2006).

10.4.2 Cash Out Employer Paid Parking

Even in contexts where parking is priced, employers often subsidize the cost, making parking free or at least cheaper for their employees. A "cash out" program offers employees a portion of that subsidy as cash in lieu of free parking.

As an example, if a space costs an employer $75 per month, the employee is offered $50 per month. The employee who accepts the $50 no longer has free parking at the workplace. The employee who does not accept the $50 continues to have free parking. Under such a program, an employee has an incentive to find an alternate mode of travel and the employer saves a portion of what they would otherwise be spending on parking every month.

APPENDIX F: CITY OF TROY WAYFINDING SYSTEM

CITY OF TROY, OHIO
ICONOGRAPHY & WAYFINDING SYSTEM

The Olivine Design Studio

July 14, 2016

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INSIGHTS

Tuesday, April 12, 2016: Wayfinding Strategy Discussion & Review

- Review walking map
- Discuss suggested wayfinding strategy & existing conditions
- Review iconography concepts
- Review signage system concepts
- Review bike rack options

INNOVATE

Concept Review

- Review refined iconography concepts
- Review refined signage system concepts
- Review refined bike rack options

We Are Here.

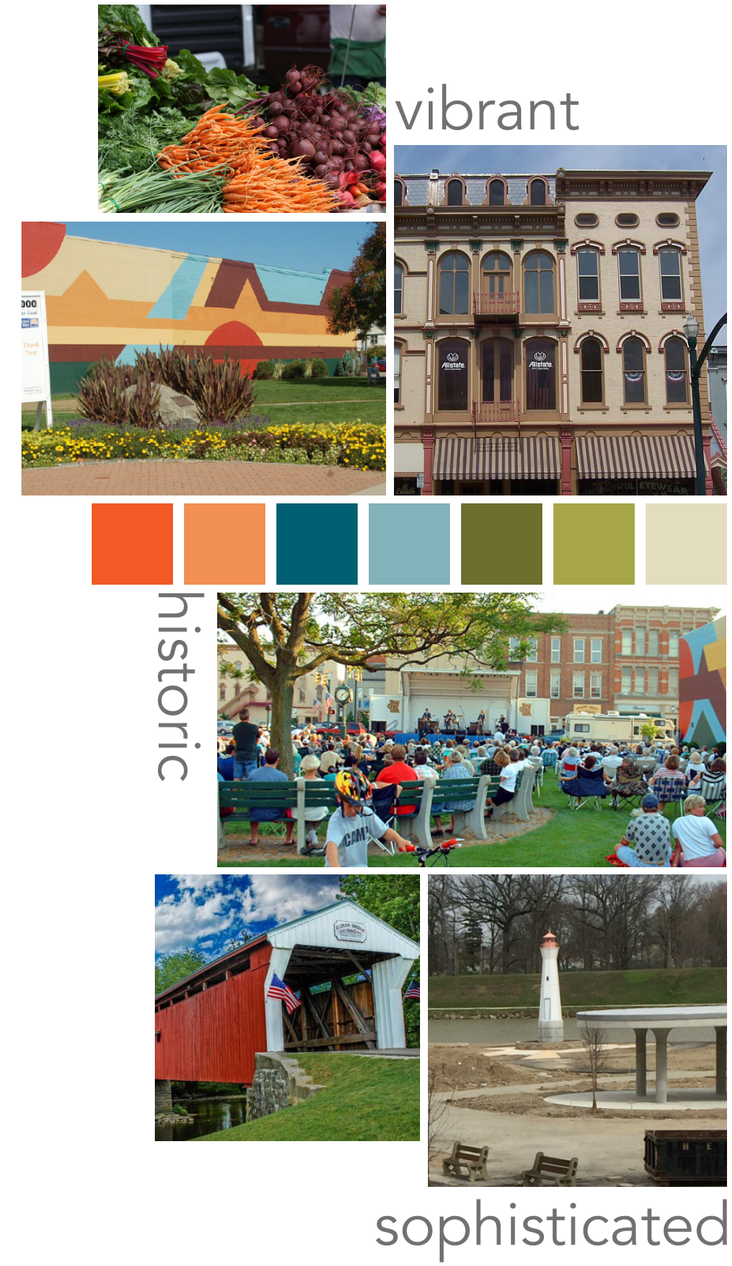
NEXT STEPS

Implementation

- Documentation and implementation
- Production art preparation
- Signage placement study

DOWNTOWN & TREASURE ISLAND PARK ICONOGRAPHY

Refreshed Troy, Ohio Logo



"A wayfinding system conveys not only locational information, but also a sense that the locations are all a part of a connected branded place."

1
City Entrance Sign

EXISTING: 6
PROPOSED: 6 refreshed, 0 new

2
Vehicular Directional Sign

EXISTING: 0
PROPOSED: 7

3
District Gateway Sign

EXISTING: 0
PROPOSED: 3

4
Parking Directional Sign

EXISTING: 0
PROPOSED: 9

5
Walk/Bike Directional Sign

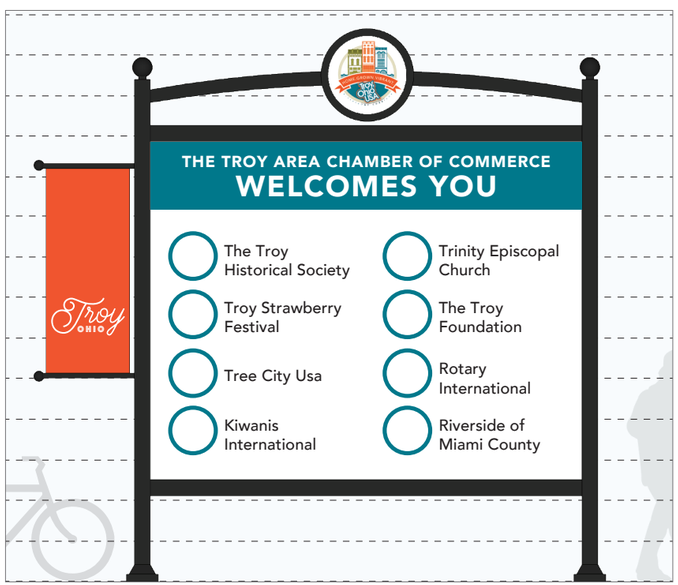
EXISTING: 0
PROPOSED: 12

PROPOSED SIGNAGE PLACEMENT

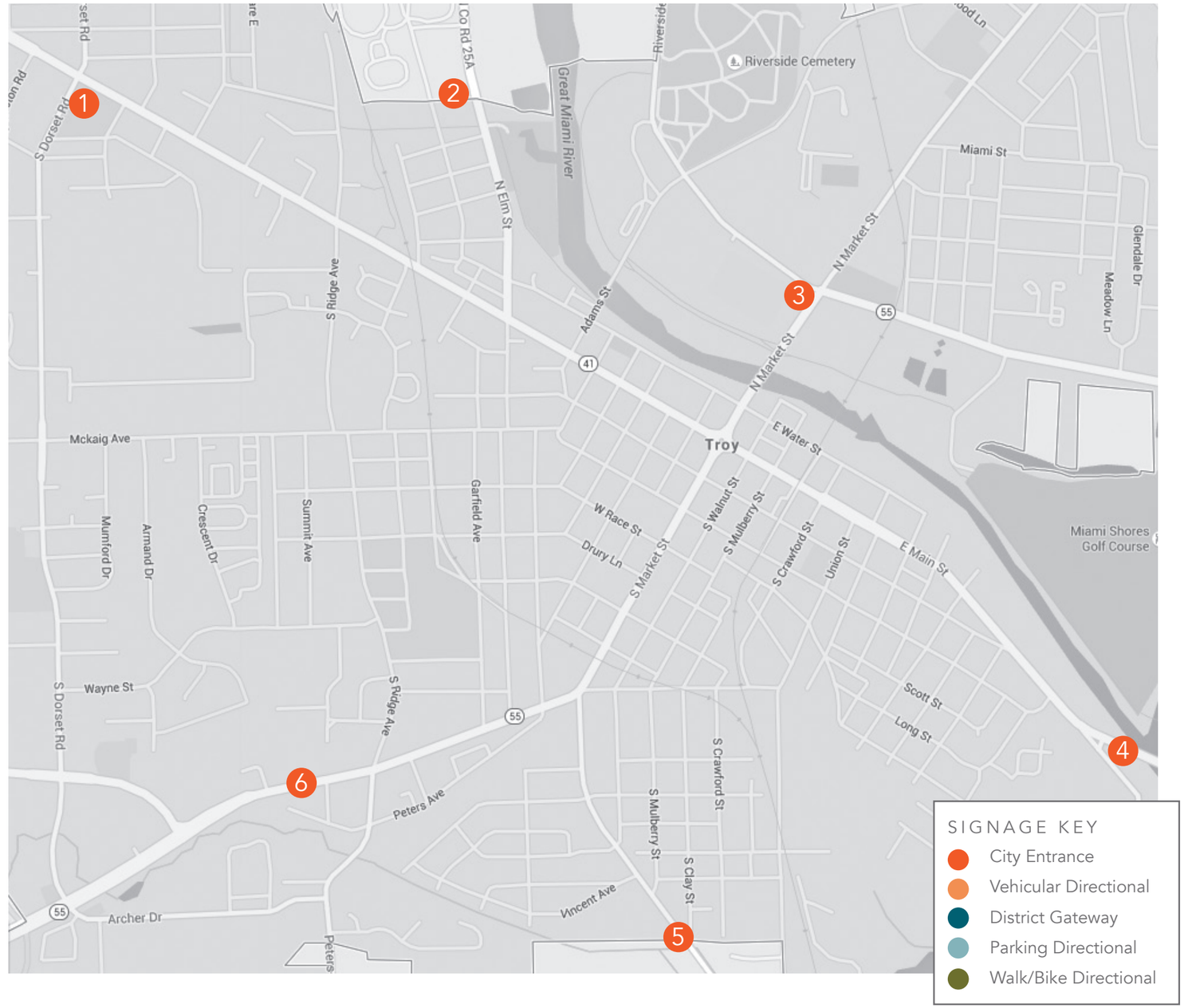
City Entrance Sign

EXISTING SIGNS: 6
1. S. Dorset & W. Main
2. N. Elm
3. N. Market & W. Staunton
4. State Route 41
5. S. Market & S. Clay
6. W. Market

PROPOSED: refresh all 6 existing signs
- paint existing signage structure black
- remove existing wood frame on street side
- remove decorative piece at bottom
- replace top disc with updated logo
- add banner arms + new banner
- add teal welcome signage



DIMENSIONS
- TBD based on field dimensions / existing conditions
- Dimensions provided are for conceptual reference only.
- NOT FOR CONSTRUCTION

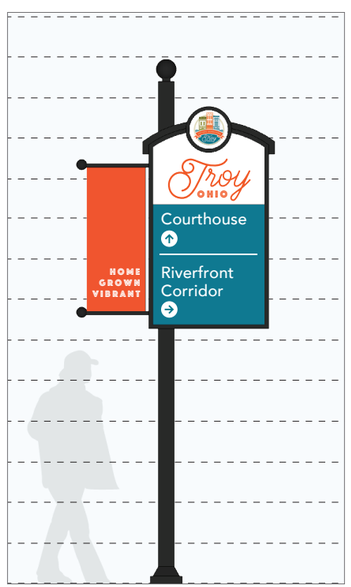


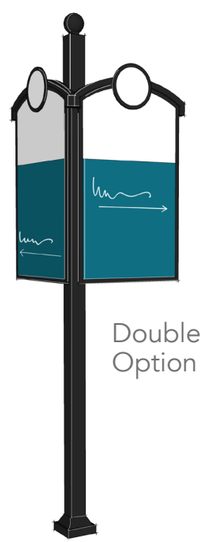
PROPOSED SIGNAGE PLACEMENT

Vehicular Directional Sign

EXISTING SIGNS: 0

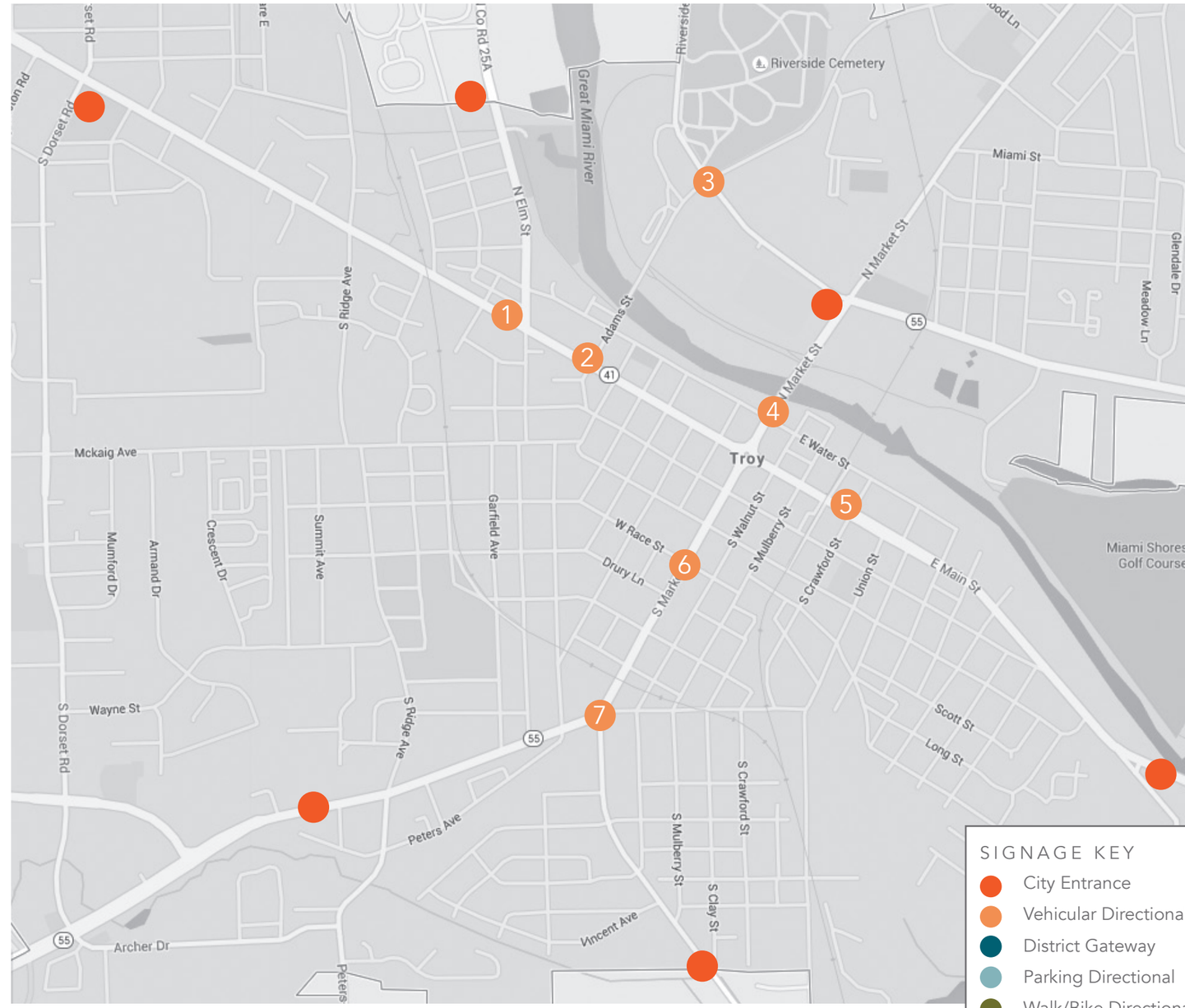
PROPOSED: 7
1. W. Main & N. Elm
2. W. Main & Adams
3. Adams & W. Staunton
4. N. Market & W. Water
5. E. Main & N. Crawford
6. S. Market & W. Race
7. W. Market / S. Market / E. West





Double Panel Option

DIMENSIONS
- Approxiately 4'-10" wide x 12'-11" high
- Dimensions provided are for conceptual reference only.
- NOT FOR CONSTRUCTION



PROPOSED SIGNAGE PLACEMENT

District Gateway Signage

EXISTING SIGNS: 0

PROPOSED: 3
1. W. Main & Adams
2. E. Main & S. Mulberry
3. S. Market & W. Race

DIMENSIONS
- Approxiately 8'-2" wide x 9'-10" high
- Dimensions provided are for conceptual reference only.
- NOT FOR CONSTRUCTION

PROPOSED SIGNAGE PLACEMENT

Parking Directional Sign

EXISTING: 0

PROPOSED: 9
*suggested signs based on 2016 walking map parking locations

1. Hobart Arena
2. Troy Aquatic Park
3. Troy Memorial Stadium
4. North Market Athletic Fields
5. E. Main & S. Mulberry
6. N. Cherry
7. S. Cherry
8. S. Short
9. N. Short

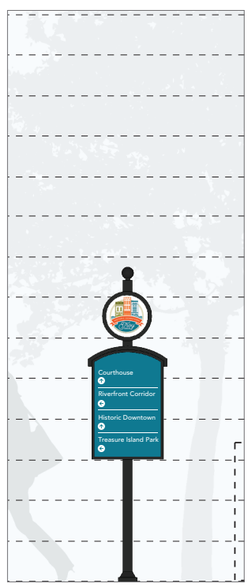
DIMENSIONS
- Approxiately 2'-10" wide x 11'-5" high
- Dimensions provided are for conceptual reference only.
- NOT FOR CONSTRUCTION

PROPOSED SIGNAGE PLACEMENT

Walk/Bike Directional Sign

EXISTING: 0

PROPOSED: 12
1. Adams & W. Water
2. Great Miami River Recreational Trail
3. Walking Path
4. Walking Path
5. Great Miami River Recreational Trail
6. N. Market & W. Water
7. N. Market: Ruby's Salon corner
8. E. Main & S. Walnut
9. S. Market & E. Franklin
10. S. Market: Insightful Eyewear corner
11. W. Main & S. Cherry
12. W. Main & N. Short



Double Panel Option

DIMENSIONS
- Approxiately 1'-11" wide x 7'-9" high
- Dimensions provided are for conceptual reference only.
- NOT FOR CONSTRUCTION

OTHER SIGNAGE REPLACEMENT FOR CONSIDERATION

Historic District Signage

EXISTING:

PROPOSED:

Public Square Kiosk Disc Signage

EXISTING:

PROPOSED:

Public Square Alley Discs & “To Parking” Signage

EXISTING:

PROPOSED:

WALNUT ST.

the olivine

DESIGN STUDIO

thank you

APPENDIX G: TRAFFIC COUNT SHEETS

Cummins Consulting Services

4661 Marlberry Place, Lexington, KY 40509

swcummins@windstream.net 859.361.2589

"simplifying Data Collection since 2004"

File Name : Race_at_Market_11-30-2016
Site Code : Site 1
Start Date : 11/30/2016
Page No : 1

Cloudy and Cold - 30 Degrees
Schools in Session

Groups Printed- Cars - Buses - Trucks

	Market Street From North					E Race Street From East					Market Street From South					E Race Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	16	142	6	2	166	3	4	8	1	16	5	124	9	1	139	7	6	2	7	22	343
04:15 PM	7	105	7	0	119	2	12	5	2	21	2	137	14	2	155	5	12	3	4	24	319
04:30 PM	7	123	6	1	137	4	6	2	1	13	3	157	6	0	166	10	10	3	3	26	342
04:45 PM	10	120	5	0	135	4	4	9	0	17	2	152	7	1	162	2	9	2	3	16	330
Total	40	490	24	3	557	13	26	24	4	67	12	570	36	4	622	24	37	10	17	88	1334
05:00 PM	8	129	4	1	142	5	8	3	1	17	2	122	23	1	148	12	11	2	1	26	333
05:15 PM	11	114	1	0	126	3	6	4	1	14	6	136	3	0	145	4	12	1	0	17	302
05:30 PM	3	114	5	1	123	3	10	9	1	23	1	151	2	0	154	6	7	2	2	17	317
05:45 PM	5	74	4	1	84	9	7	6	0	22	3	147	4	1	155	8	2	2	4	16	277
Total	27	431	14	3	475	20	31	22	3	76	12	556	32	2	602	30	32	7	7	76	1229
Grand Total	67	921	38	6	1032	33	57	46	7	143	24	1126	68	6	1224	54	69	17	24	164	2563
Apprch %	6.5	89.2	3.7	0.6		23.1	39.9	32.2	4.9		2	92	5.6	0.5		32.9	42.1	10.4	14.6		
Total %	2.6	35.9	1.5	0.2	40.3	1.3	2.2	1.8	0.3	5.6	0.9	43.9	2.7	0.2	47.8	2.1	2.7	0.7	0.9	6.4	
Cars	66	911	38	6	1021	32	55	46	7	140	24	1111	67	6	1208	54	69	17	24	164	2533
% Cars	98.5	98.9	100	100	98.9	97	96.5	100	100	97.9	100	98.7	98.5	100	98.7	100	100	100	100	100	98.8
Buses	0	2	0	0	2	0	1	0	0	1	0	5	0	0	5	0	0	0	0	0	8
% Buses	0	0.2	0	0	0.2	0	1.8	0	0	0.7	0	0.4	0	0	0.4	0	0	0	0	0	0.3
Trucks	1	8	0	0	9	1	1	0	0	2	0	10	1	0	11	0	0	0	0	0	22
% Trucks	1.5	0.9	0	0	0.9	3	1.8	0	0	1.4	0	0.9	1.5	0	0.9	0	0	0	0	0	0.9

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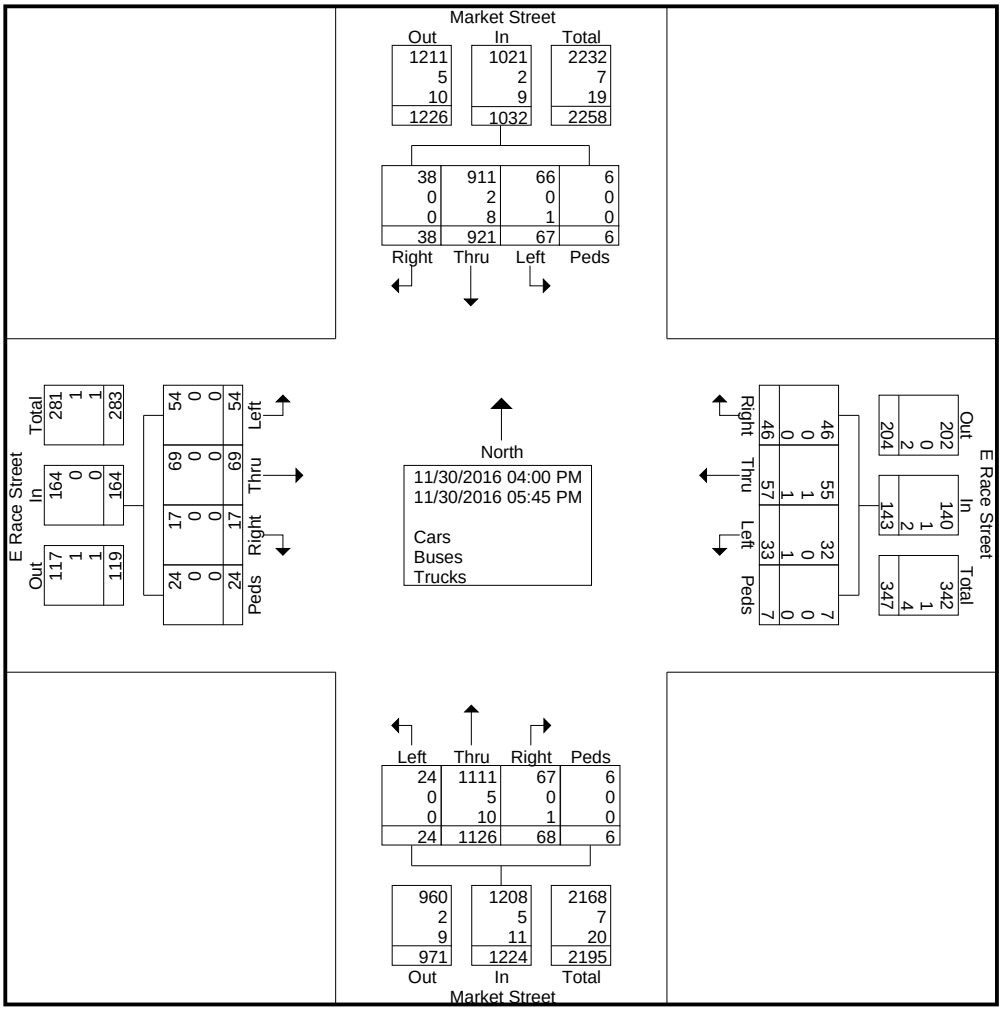

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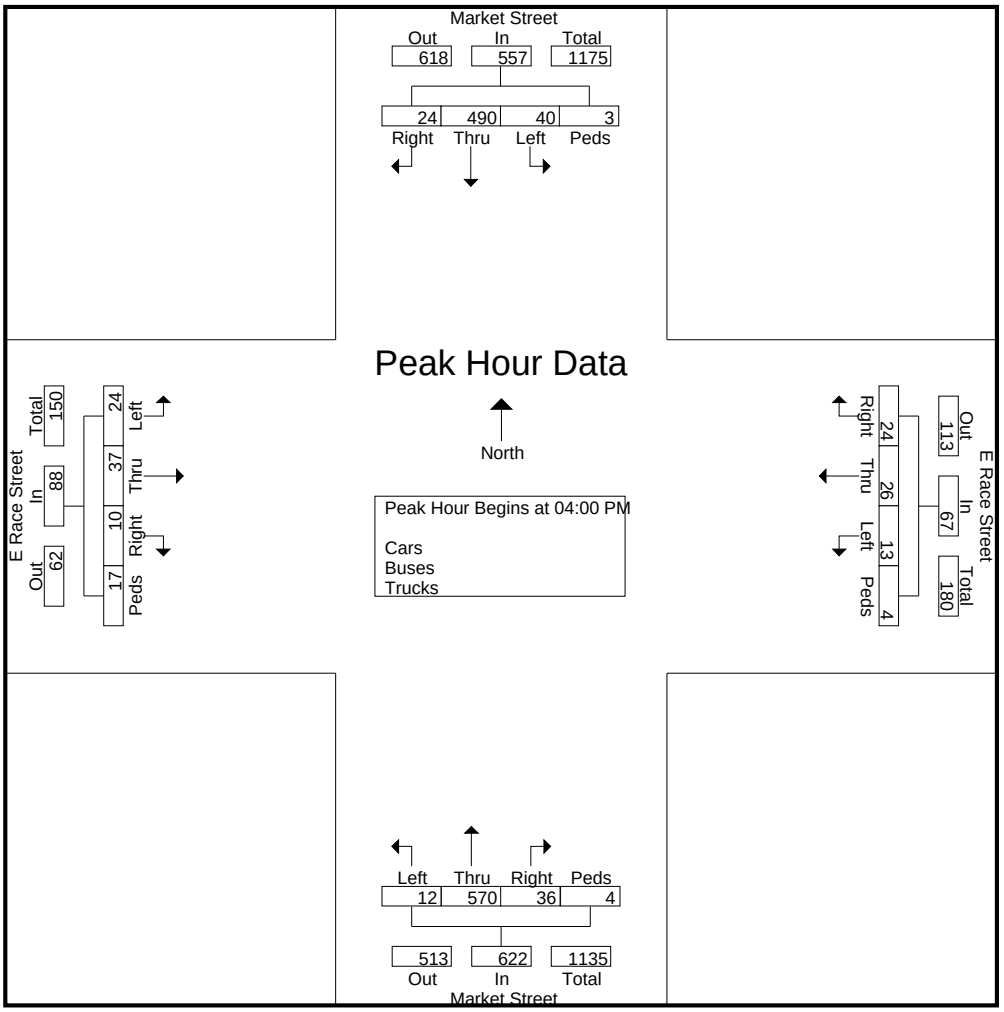
Site Code : Site 1
Start Date : 11/30/2016
Page No : 3

	Market Street From North					E Race Street From East					Market Street From South					E Race Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	**16**	**142**	6	**2**	**166**	3	4	8	1	16	**5**	124	9	1	139	7	6	2	**7**	22	**343**
04:15 PM	7	105	**7**	0	119	2	**12**	5	**2**	**21**	2	137	**14**	**2**	155	5	**12**	**3**	4	24	319
04:30 PM	7	123	6	1	137	**4**	6	2	1	13	3	**157**	6	0	**166**	**10**	10	3	3	**26**	342
04:45 PM	10	120	5	0	135	4	4	**9**	0	17	2	152	7	1	162	2	9	2	3	16	330
Total Volume	40	490	24	3	557	13	26	24	4	67	12	570	36	4	622	24	37	10	17	88	1334
% App. Total	7.2	88	4.3	0.5		19.4	38.8	35.8	6		1.9	91.6	5.8	0.6		27.3	42	11.4	19.3		
PHF	.625	.863	.857	.375	.839	.813	.542	.667	.500	.798	.600	.908	.643	.500	.937	.600	.771	.833	.607	.846	.972



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Cloudy and Cold - 30 Degrees
Schools in Session

File Name : Canal_at_Market_11-30-2016
Site Code : Site 2
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Buses - Trucks

	Market Street From North					E Canal Street From East					Market Street From South					E Canal Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	4	149	3	0	156	3	11	12	0	26	8	124	11	6	149	1	13	12	2	28	359
04:15 PM	9	106	3	0	118	5	12	17	1	35	6	126	17	0	149	3	8	9	0	20	322
04:30 PM	14	132	3	0	149	3	11	8	2	24	8	167	11	0	186	0	12	11	0	23	382
04:45 PM	11	126	1	1	139	6	7	6	0	19	5	152	5	0	162	1	18	8	1	28	348
Total	38	513	10	1	562	17	41	43	3	104	27	569	44	6	646	5	51	40	3	99	1411
05:00 PM	8	130	1	0	139	0	6	9	0	15	4	154	9	2	169	2	11	10	0	23	346
05:15 PM	5	104	2	0	111	3	13	7	0	23	5	129	4	1	139	3	16	17	0	36	309
05:30 PM	13	109	2	0	124	6	6	12	0	24	7	154	14	0	175	1	14	9	0	24	347
05:45 PM	9	75	2	0	86	3	8	22	1	34	16	142	4	0	162	5	18	8	0	31	313
Total	35	418	7	0	460	12	33	50	1	96	32	579	31	3	645	11	59	44	0	114	1315
Grand Total	73	931	17	1	1022	29	74	93	4	200	59	1148	75	9	1291	16	110	84	3	213	2726
Apprch %	7.1	91.1	1.7	0.1		14.5	37	46.5	2		4.6	88.9	5.8	0.7		7.5	51.6	39.4	1.4		
Total %	2.7	34.2	0.6	0	37.5	1.1	2.7	3.4	0.1	7.3	2.2	42.1	2.8	0.3	47.4	0.6	4	3.1	0.1	7.8	
Cars	73	922	17	1	1013	29	74	93	4	200	59	1135	75	9	1278	16	107	84	3	210	2701
% Cars	100	99	100	100	99.1	100	100	100	100	100	100	98.9	100	100	99	100	97.3	100	100	98.6	99.1
Buses	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
% Buses	0	0.2	0	0	0.2	0	0	0	0	0	0	0.3	0	0	0.3	0	0	0	0	0	0.2
Trucks	0	7	0	0	7	0	0	0	0	0	0	9	0	0	9	0	3	0	0	3	19
% Trucks	0	0.8	0	0	0.7	0	0	0	0	0	0	0.8	0	0	0.7	0	2.7	0	0	1.4	0.7

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File Name : Canal_at_Market_11-30-2016
Site Code : Site 2
Start Date : 11/30/2016
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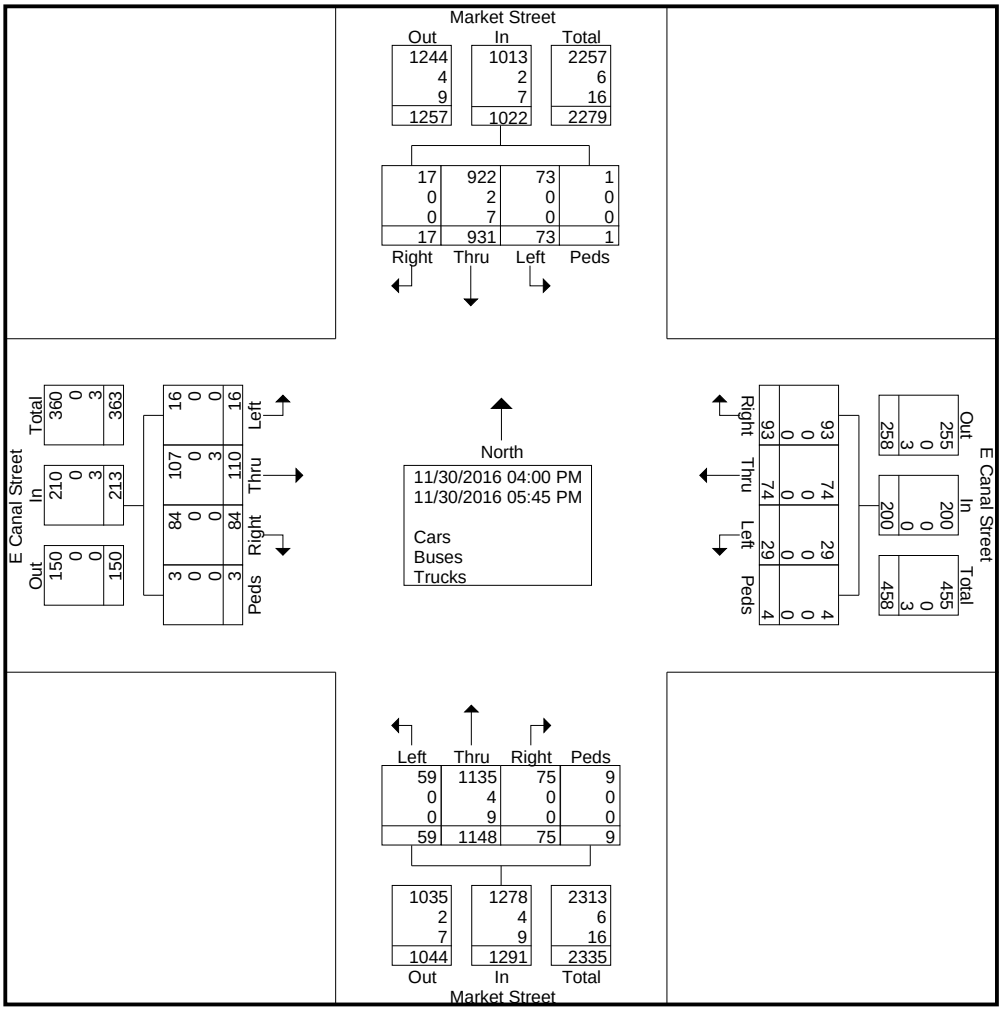

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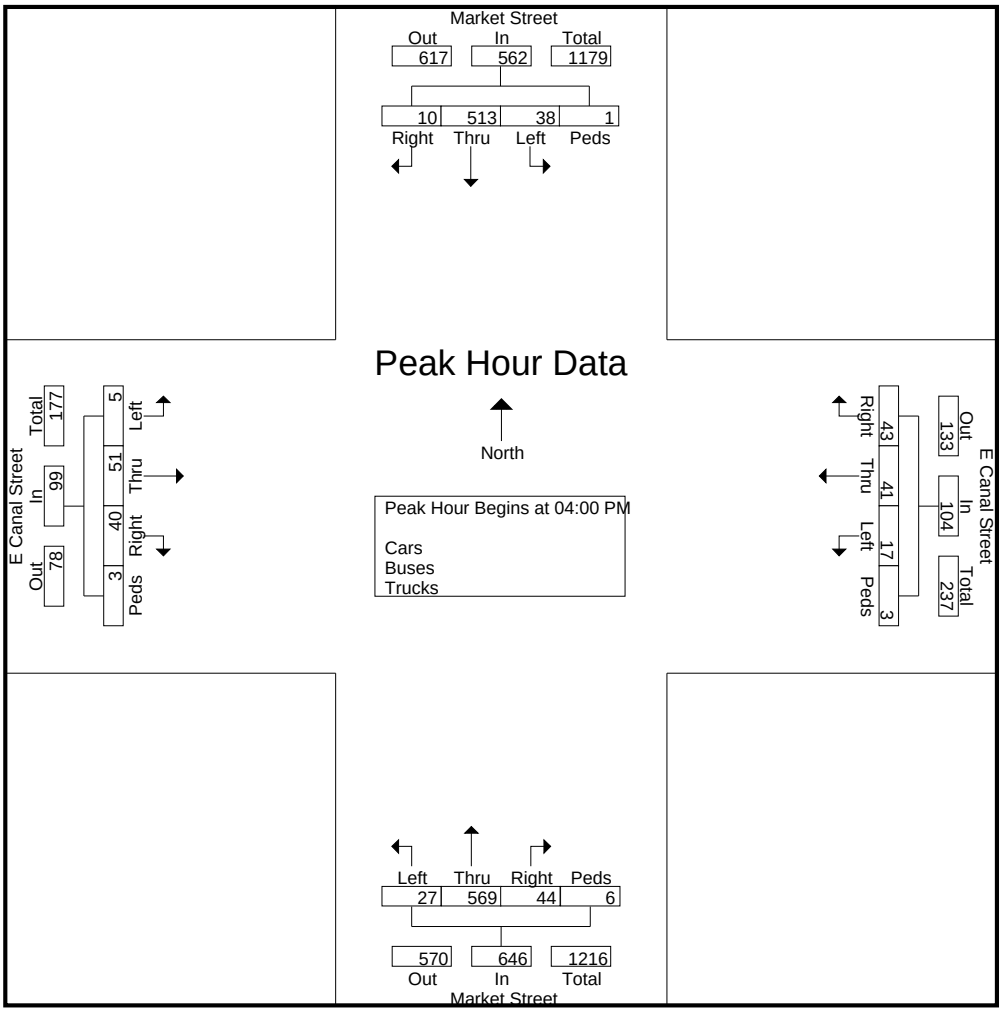
File Name : Canal_at_Market_11-30-2016
Site Code : Site 2
Start Date : 11/30/2016
Page No : 3

	Market Street From North					E Canal Street From East					Market Street From South					E Canal Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	4	**149**	**3**	0	**156**	3	11	12	0	26	**8**	124	11	**6**	149	1	13	**12**	**2**	**28**	359
04:15 PM	9	106	3	0	118	5	**12**	**17**	1	**35**	6	126	**17**	0	149	**3**	8	9	0	20	322
04:30 PM	**14**	132	3	0	149	3	11	8	**2**	24	8	**167**	11	0	**186**	0	12	11	0	23	**382**
04:45 PM	11	126	1	**1**	139	**6**	7	6	0	19	5	152	5	0	162	1	**18**	8	1	28	348
Total Volume	38	513	10	1	562	17	41	43	3	104	27	569	44	6	646	5	51	40	3	99	1411
% App. Total	6.8	91.3	1.8	0.2		16.3	39.4	41.3	2.9		4.2	88.1	6.8	0.9		5.1	51.5	40.4	3		
PHF	.679	.861	.833	.250	.901	.708	.854	.632	.375	.743	.844	.852	.647	.250	.868	.417	.708	.833	.375	.884	.923



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File Name : Frank_at_Market_11-30-2016
Site Code : Site 3
Start Date : 11/30/2016
Page No : 1

Cloudy and Cold - 30 Degrees
School in Session

Groups Printed- Cars - Buses - Trucks

	Market Street From North					E Franklin Street From East					Market Street From South					E Franklin Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	4	138	7	6	155	4	8	5	1	18	5	133	3	4	145	8	8	11	3	30	348
04:15 PM	4	110	4	2	120	5	9	5	0	19	2	139	7	2	150	0	7	9	2	18	307
04:30 PM	4	130	5	4	143	7	10	7	1	25	6	161	3	0	170	3	11	5	2	21	359
04:45 PM	8	129	4	0	141	2	5	10	2	19	5	155	4	0	164	3	9	8	0	20	344
Total	20	507	20	12	559	18	32	27	4	81	18	588	17	6	629	14	35	33	7	89	1358
05:00 PM	8	125	2	3	138	6	11	4	5	26	5	151	6	0	162	3	8	7	1	19	345
05:15 PM	3	101	5	0	109	1	7	6	2	16	8	127	6	1	142	4	7	9	2	22	289
05:30 PM	3	114	4	0	121	2	5	3	2	12	5	157	6	0	168	3	2	3	0	8	309
05:45 PM	6	83	8	10	107	8	10	14	2	34	2	135	8	0	145	5	3	3	2	13	299
Total	20	423	19	13	475	17	33	27	11	88	20	570	26	1	617	15	20	22	5	62	1242
Grand Total	40	930	39	25	1034	35	65	54	15	169	38	1158	43	7	1246	29	55	55	12	151	2600
Apprch %	3.9	89.9	3.8	2.4		20.7	38.5	32	8.9		3	92.9	3.5	0.6		19.2	36.4	36.4	7.9		
Total %	1.5	35.8	1.5	1	39.8	1.3	2.5	2.1	0.6	6.5	1.5	44.5	1.7	0.3	47.9	1.1	2.1	2.1	0.5	5.8	
Cars	40	923	39	25	1027	35	64	54	15	168	37	1148	43	7	1235	29	55	55	12	151	2581
% Cars	100	99.2	100	100	99.3	100	98.5	100	100	99.4	97.4	99.1	100	100	99.1	100	100	100	100	100	99.3
Buses	0	0	0	0	0	0	1	0	0	1	1	3	0	0	4	0	0	0	0	0	5
% Buses	0	0	0	0	0	0	1.5	0	0	0.6	2.6	0.3	0	0	0.3	0	0	0	0	0	0.2
Trucks	0	7	0	0	7	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	14
% Trucks	0	0.8	0	0	0.7	0	0	0	0	0	0	0.6	0	0	0.6	0	0	0	0	0	0.5

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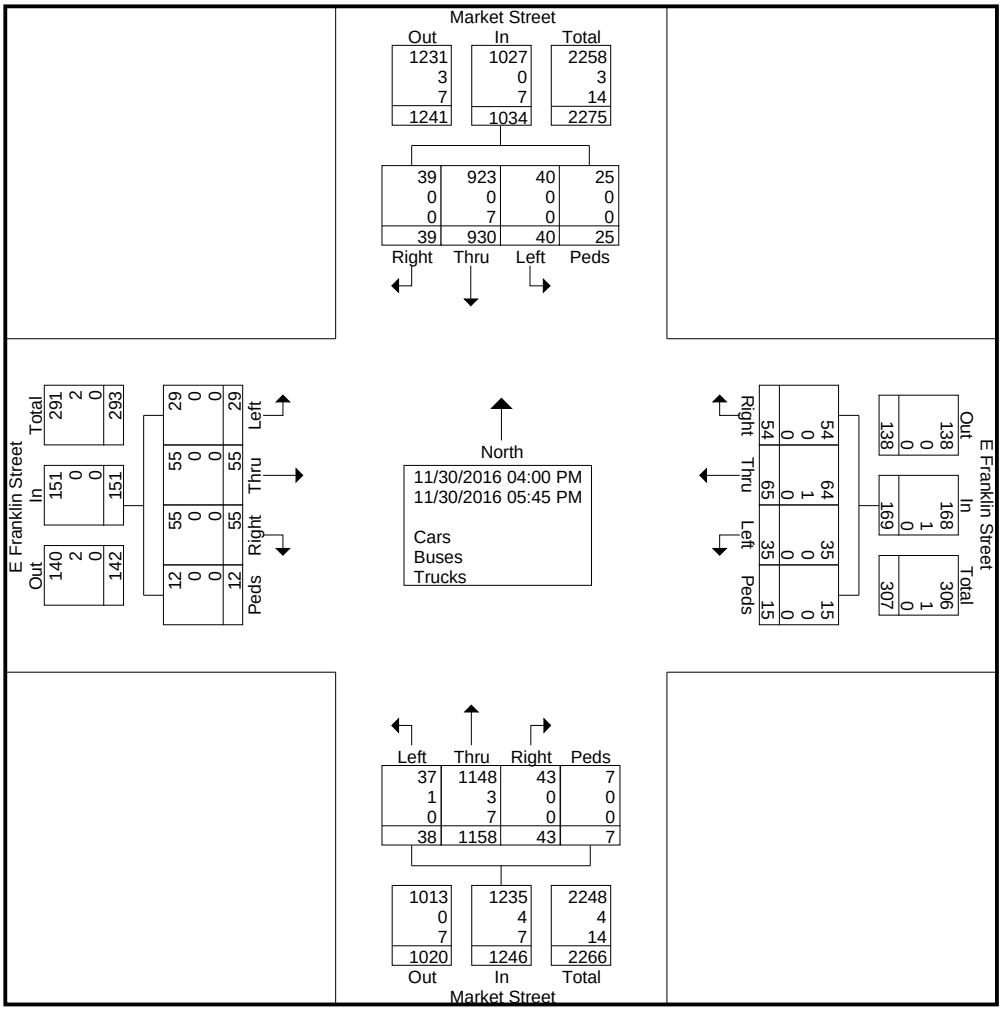
Site Code : Site 3
Start Date : 11/30/2016
Page No : 2



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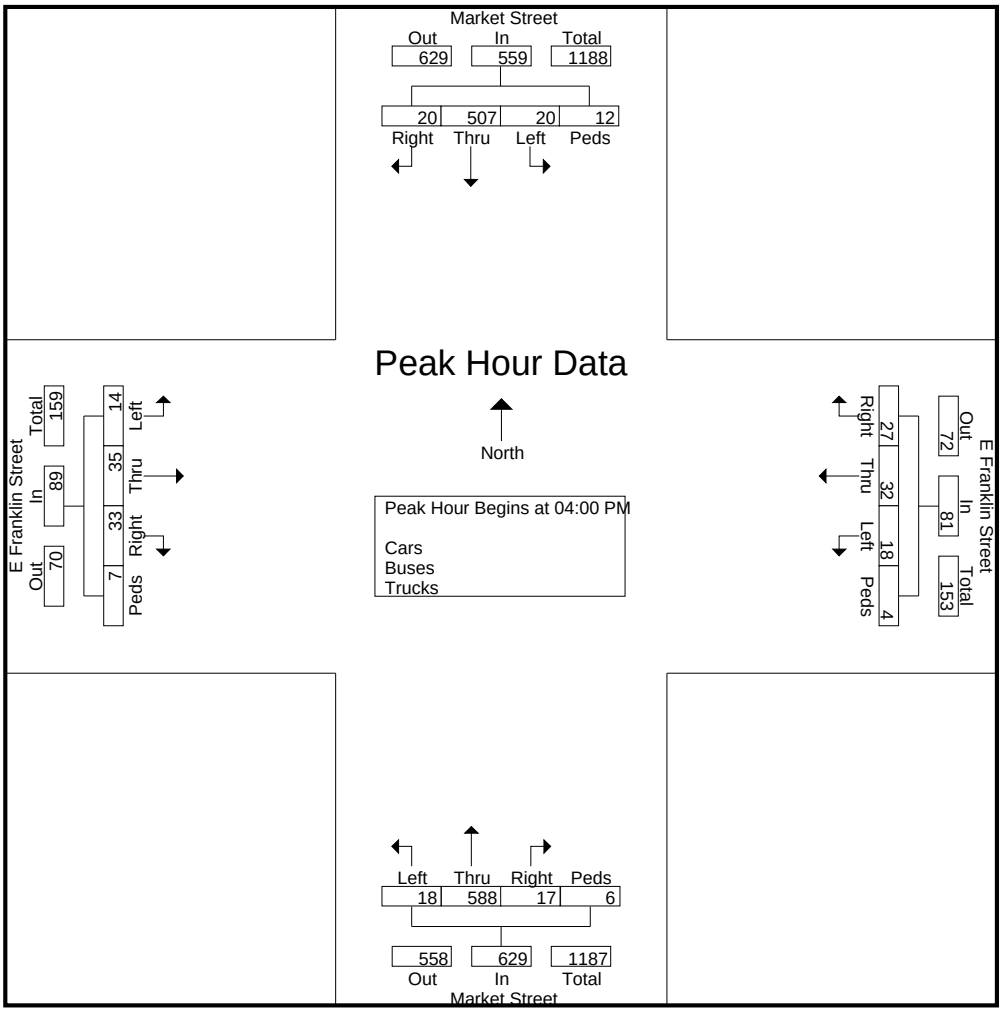
Site Code : Site 3
Start Date : 11/30/2016
Page No : 3

	Market Street From North					E Franklin Street From East					Market Street From South					E Franklin Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	4	**138**	**7**	**6**	**155**	4	8	5	1	18	5	133	3	**4**	145	**8**	8	**11**	**3**	**30**	348
04:15 PM	4	110	4	2	120	5	9	5	0	19	2	139	**7**	2	150	0	7	9	2	18	307
04:30 PM	4	130	5	4	143	**7**	**10**	7	1	**25**	**6**	**161**	3	0	**170**	3	**11**	5	2	21	**359**
04:45 PM	**8**	129	4	0	141	2	5	**10**	**2**	19	5	155	4	0	164	3	9	8	0	20	344
Total Volume	20	507	20	12	559	18	32	27	4	81	18	588	17	6	629	14	35	33	7	89	1358
% App. Total	3.6	90.7	3.6	2.1		22.2	39.5	33.3	4.9		2.9	93.5	2.7	1		15.7	39.3	37.1	7.9		
PHF	.625	.918	.714	.500	.902	.643	.800	.675	.500	.810	.750	.913	.607	.375	.925	.438	.795	.750	.583	.742	.946



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"simplifying Data Collection since 2004"

Cold and Cloudy - 30 Degrees
Schools in Session

File Name : Market_at_Main_11-30-2016
Site Code : PM Peak - Roundabout
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Buses - Trucks - Pedestrians

	SR55 - Market Street From North					SR41 - Main Street From East					SR55 - Market Street From South					SR41 - Main Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	12	84	40	12	148	22	41	16	0	79	46	93	9	0	148	62	40	49	0	151	526
04:15 PM	8	60	31	3	102	17	39	13	0	69	43	84	19	0	146	43	53	44	0	140	457
04:30 PM	5	86	55	3	149	12	39	6	0	57	48	117	18	0	183	46	52	50	0	148	537
04:45 PM	9	78	46	6	139	25	39	13	0	77	43	93	17	0	153	59	44	45	0	148	517
Total	34	308	172	24	538	76	158	48	0	282	180	387	63	0	630	210	189	188	0	587	2037
05:00 PM	2	88	52	1	143	13	38	13	0	64	39	111	15	0	165	53	47	43	0	143	515
05:15 PM	7	70	52	2	131	8	47	4	0	59	36	91	11	0	138	74	53	37	0	164	492
05:30 PM	8	82	55	3	148	12	45	16	0	73	36	110	16	0	162	62	34	36	0	132	515
05:45 PM	13	59	49	3	124	15	24	8	0	47	54	94	22	0	170	76	39	33	0	148	489
Total	30	299	208	9	546	48	154	41	0	243	165	406	64	0	635	265	173	149	0	587	2011
Grand Total	64	607	380	33	1084	124	312	89	0	525	345	793	127	0	1265	475	362	337	0	1174	4048
Apprch %	5.9	56	35.1	3		23.6	59.4	17	0		27.3	62.7	10	0		40.5	30.8	28.7	0		
Total %	1.6	15	9.4	0.8	26.8	3.1	7.7	2.2	0	13	8.5	19.6	3.1	0	31.2	11.7	8.9	8.3	0	29	
Cars	63	597	375	0	1035	122	307	87	0	516	343	785	122	0	1250	474	358	337	0	1169	3970
% Cars	98.4	98.4	98.7	0	95.5	98.4	98.4	97.8	0	98.3	99.4	99	96.1	0	98.8	99.8	98.9	100	0	99.6	98.1
Buses	1	2	1	0	4	0	1	2	0	3	0	2	1	0	3	0	0	0	0	0	10
% Buses	1.6	0.3	0.3	0	0.4	0	0.3	2.2	0	0.6	0	0.3	0.8	0	0.2	0	0	0	0	0	0.2
Trucks	0	8	4	0	12	2	4	0	0	6	2	6	4	0	12	1	4	0	0	5	35
% Trucks	0	1.3	1.1	0	1.1	1.6	1.3	0	0	1.1	0.6	0.8	3.1	0	0.9	0.2	1.1	0	0	0.4	0.9
Pedestrians	0	0	0	33	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33
% Pedestrians	0	0	0	100	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8

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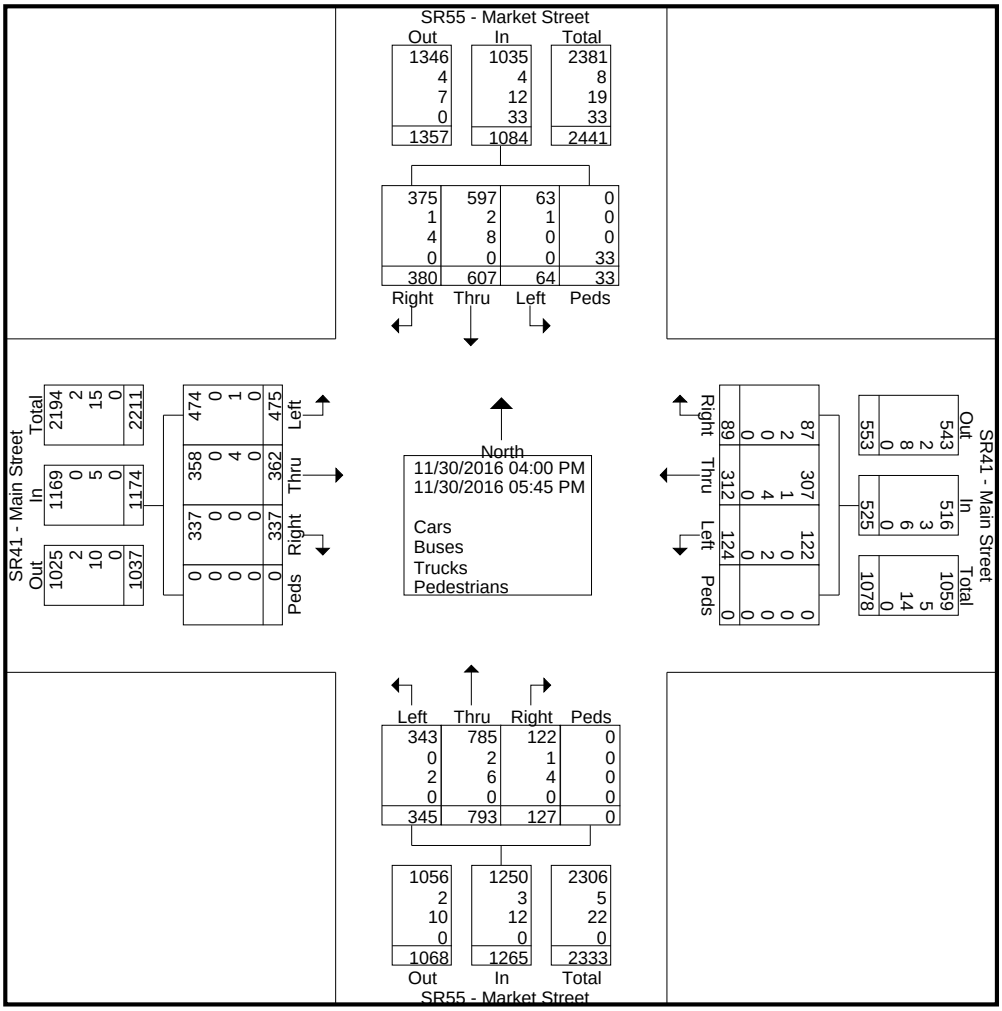
File Name : Market_at_Main_11-30-2016
Site Code : PM Peak - Roundabout
Start Date : 11/30/2016
Page No : 2



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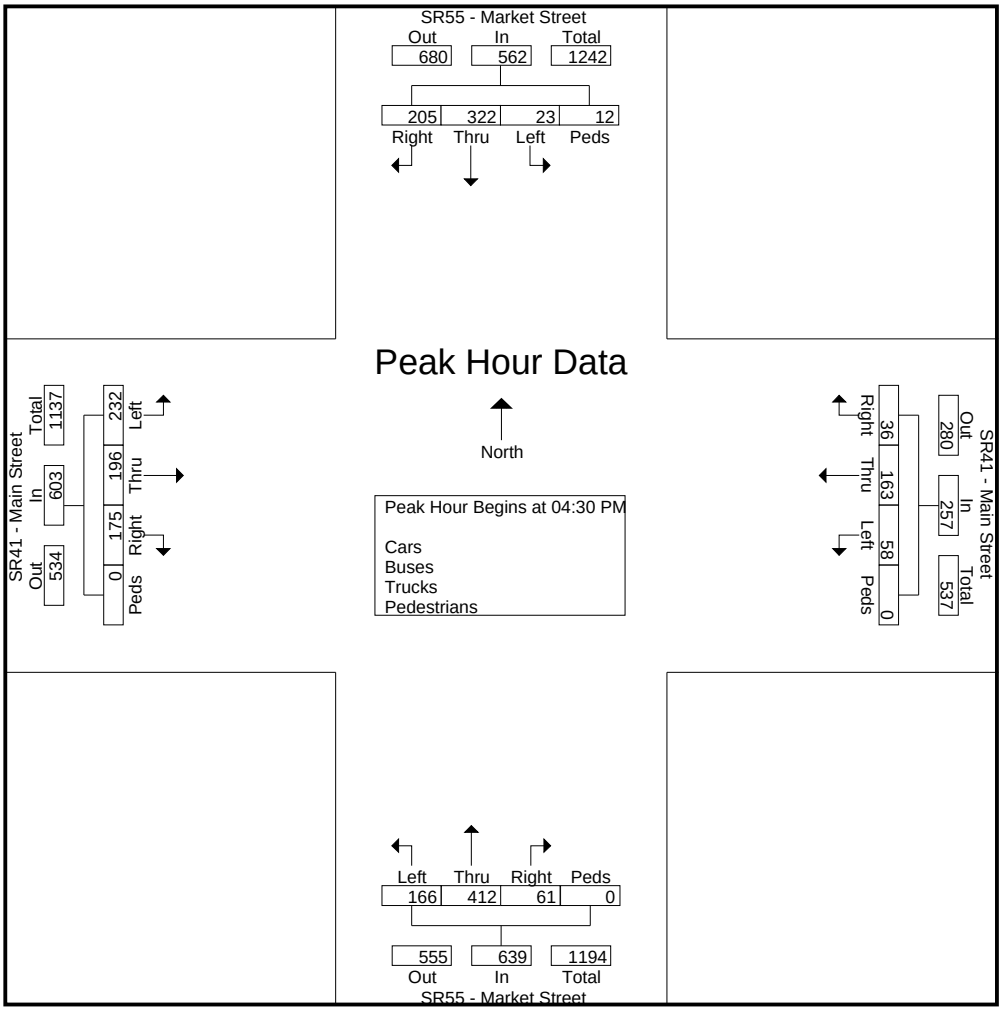
File Name : Market_at_Main_11-30-2016
Site Code : PM Peak - Roundabout
Start Date : 11/30/2016
Page No : 3

	SR55 - Market Street From North					SR41 - Main Street From East					SR55 - Market Street From South					SR41 - Main Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	5	86	**55**	3	**149**	12	39	6	0	57	**48**	**117**	**18**	0	**183**	46	52	**50**	0	148	**537**
04:45 PM	**9**	78	46	**6**	139	**25**	39	**13**	0	**77**	43	93	17	0	153	59	44	45	0	148	517
05:00 PM	2	**88**	52	1	143	13	38	13	0	64	39	111	15	0	165	53	47	43	0	143	515
05:15 PM	7	70	52	2	131	8	**47**	4	0	59	36	91	11	0	138	**74**	**53**	37	0	**164**	492
Total Volume	23	322	205	12	562	58	163	36	0	257	166	412	61	0	639	232	196	175	0	603	2061
% App. Total	4.1	57.3	36.5	2.1		22.6	63.4	14	0		26	64.5	9.5	0		38.5	32.5	29	0		
PHF	.639	.915	.932	.500	.943	.580	.867	.692	.000	.834	.865	.880	.847	.000	.873	.784	.925	.875	.000	.919	.959



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"simplifying Data Collection since 2004"

Cloudy and Cold - 30 Degrees
Schools in Session

File Name : WaterMarket
Site Code : Site 5
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Buses - Trucks

	Market Street From North					Water Street From East					Market Street From South					Water Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	13	108	17	1	139	5	19	14	2	40	10	158	6	0	174	32	16	18	2	68	421
04:15 PM	6	93	9	1	109	1	9	6	6	22	4	131	2	8	145	18	11	11	3	43	319
04:30 PM	9	126	5	7	147	6	8	12	10	36	5	139	11	8	163	13	10	8	5	36	382
Total	28	327	31	9	395	12	36	32	18	98	19	428	19	16	482	63	37	37	10	147	1122
05:00 PM	10	116	6	1	133	9	7	15	0	31	7	151	6	1	165	12	14	2	8	36	365
05:15 PM	12	136	8	0	156	4	13	16	0	33	5	163	2	4	174	22	15	4	0	41	404
05:30 PM	2	113	10	2	127	6	7	8	0	21	3	153	7	1	164	18	10	5	2	35	347
05:45 PM	6	131	8	0	145	6	11	10	2	29	6	172	9	0	187	16	6	7	4	33	394
Total	30	496	32	3	561	25	38	49	2	114	21	639	24	6	690	68	45	18	14	145	1510
06:15 PM	6	110	6	2	124	1	12	8	3	24	6	147	8	3	164	13	5	9	2	29	341
Grand Total	64	933	69	14	1080	38	86	89	23	236	46	1214	51	25	1336	144	87	64	26	321	2973
Apprch %	5.9	86.4	6.4	1.3		16.1	36.4	37.7	9.7		3.4	90.9	3.8	1.9		44.9	27.1	19.9	8.1		
Total %	2.2	31.4	2.3	0.5	36.3	1.3	2.9	3	0.8	7.9	1.5	40.8	1.7	0.8	44.9	4.8	2.9	2.2	0.9	10.8	
Cars	64	927	69	14	1074	37	86	89	23	235	46	1206	50	25	1327	144	86	64	26	320	2956
% Cars	100	99.4	100	100	99.4	97.4	100	100	100	99.6	100	99.3	98	100	99.3	100	98.9	100	100	99.7	99.4
Buses	0	2	0	0	2	0	0	0	0	0	0	5	1	0	6	0	1	0	0	1	9
% Buses	0	0.2	0	0	0.2	0	0	0	0	0	0	0.4	2	0	0.4	0	1.1	0	0	0.3	0.3
Trucks	0	4	0	0	4	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	8
% Trucks	0	0.4	0	0	0.4	2.6	0	0	0	0.4	0	0.2	0	0	0.2	0	0	0	0	0	0.3

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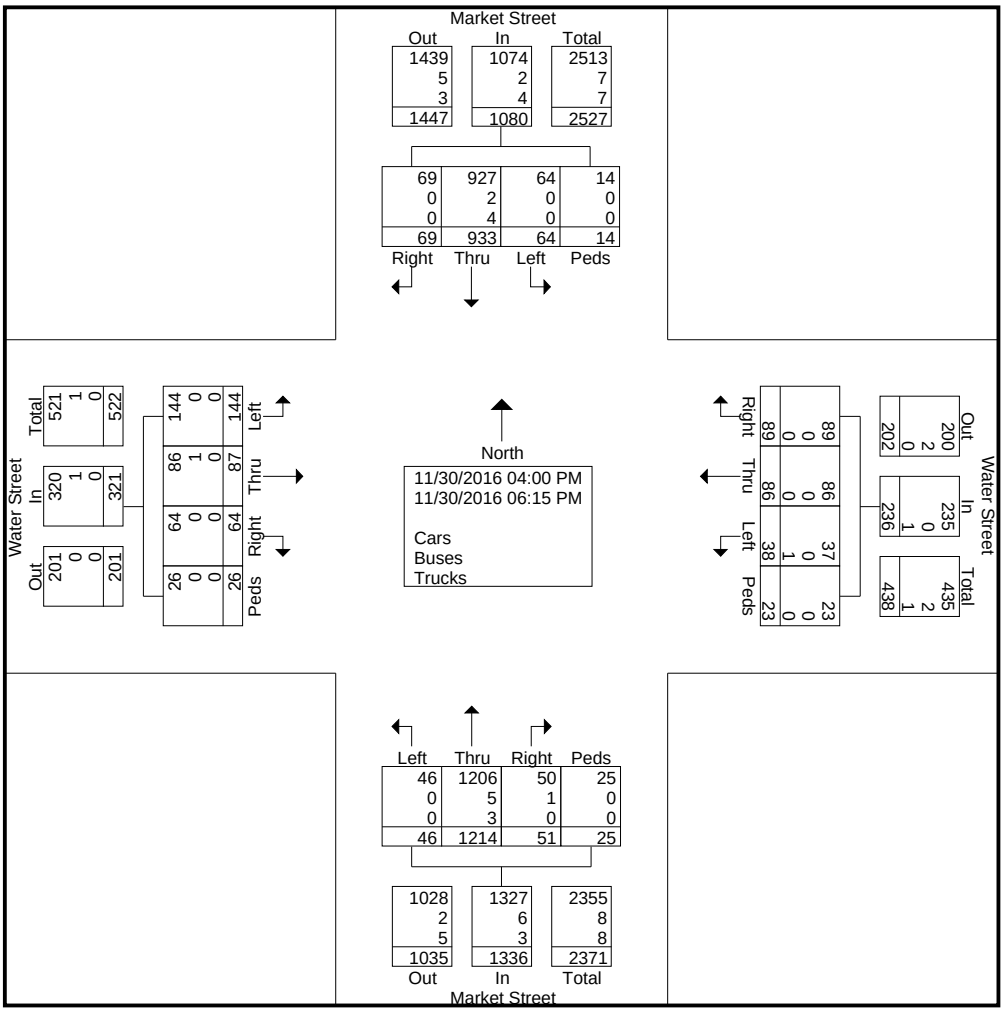
File Name : WaterMarket
Site Code : Site 5
Start Date : 11/30/2016
Page No : 2



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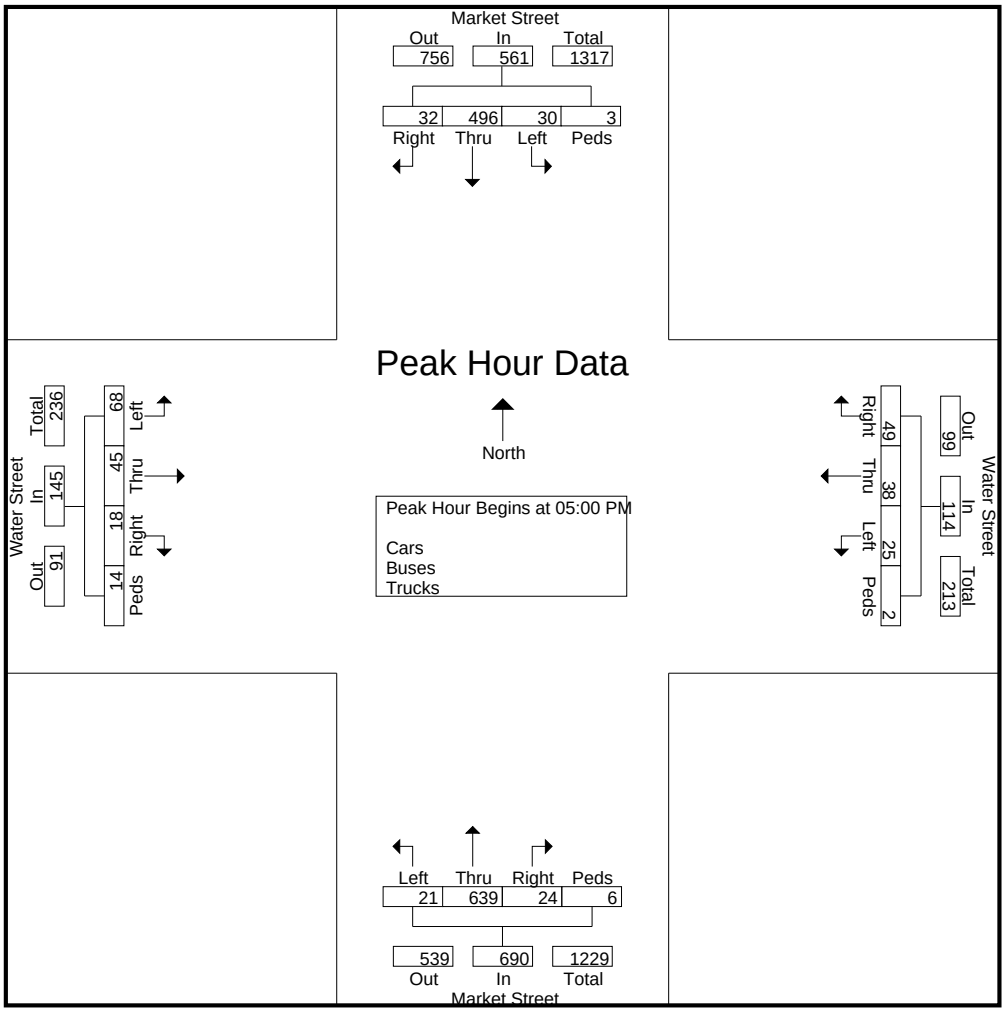
File Name : WaterMarket
Site Code : Site 5
Start Date : 11/30/2016
Page No : 3

	Market Street From North					Water Street From East					Market Street From South					Water Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	10	116	6	1	133	**9**	7	15	0	31	**7**	151	6	1	165	12	14	2	**8**	36	365
05:15 PM	**12**	**136**	8	0	**156**	4	**13**	**16**	0	**33**	5	163	2	**4**	174	**22**	**15**	4	0	**41**	**404**
05:30 PM	2	113	**10**	**2**	127	6	7	8	0	21	3	153	7	1	164	18	10	5	2	35	347
05:45 PM	6	131	8	0	145	6	11	10	**2**	29	6	**172**	**9**	0	**187**	16	6	**7**	4	33	394
Total Volume	30	496	32	3	561	25	38	49	2	114	21	639	24	6	690	68	45	18	14	145	1510
% App. Total	5.3	88.4	5.7	0.5		21.9	33.3	43	1.8		3	92.6	3.5	0.9		46.9	31	12.4	9.7		
PHF	.625	.912	.800	.375	.899	.694	.731	.766	.250	.864	.750	.929	.667	.375	.922	.773	.750	.643	.438	.884	.934



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Cloudy and Cold - 30 Degrees
Schools in Session

File Name : WalnutMain
Site Code : Site 6
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Buses - Trucks

	Walnut Street From North					Main Street From East					Walnut Street From South					Main Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	4	7	8	19	2	71	1	6	80	1	5	3	0	9	3	53	7	0	63	171
04:15 PM	0	1	4	2	7	2	50	0	2	54	8	3	1	1	13	1	56	11	2	70	144
04:30 PM	1	5	4	4	14	3	43	1	0	47	4	2	0	1	7	3	59	6	0	68	136
04:45 PM	0	3	6	4	13	2	58	1	1	62	1	0	3	1	5	6	54	10	0	70	150
Total	1	13	21	18	53	9	222	3	9	243	14	10	7	3	34	13	222	34	2	271	601
05:00 PM	0	5	5	1	11	2	55	0	1	58	4	1	1	1	7	7	48	5	0	60	136
05:15 PM	1	2	4	3	10	0	57	1	8	66	3	2	0	2	7	9	53	6	1	69	152
05:30 PM	0	5	4	0	9	3	63	2	2	70	2	2	1	0	5	3	45	7	0	55	139
05:45 PM	0	1	5	2	8	1	41	0	1	43	5	1	3	1	10	2	53	9	0	64	125
Total	1	13	18	6	38	6	216	3	12	237	14	6	5	4	29	21	199	27	1	248	552
Grand Total	2	26	39	24	91	15	438	6	21	480	28	16	12	7	63	34	421	61	3	519	1153
Apprch %	2.2	28.6	42.9	26.4		3.1	91.2	1.2	4.4		44.4	25.4	19	11.1		6.6	81.1	11.8	0.6		
Total %	0.2	2.3	3.4	2.1	7.9	1.3	38	0.5	1.8	41.6	2.4	1.4	1	0.6	5.5	2.9	36.5	5.3	0.3	45	
Cars	2	26	37	24	89	15	431	6	21	473	28	16	12	7	63	34	413	61	3	511	1136
% Cars	100	100	94.9	100	97.8	100	98.4	100	100	98.5	100	100	100	100	100	100	98.1	100	100	98.5	98.5
Buses	0	0	2	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
% Buses	0	0	5.1	0	2.2	0	0.2	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0.3
Trucks	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	8	0	0	8	14
% Trucks	0	0	0	0	0	0	1.4	0	0	1.2	0	0	0	0	0	0	1.9	0	0	1.5	1.2

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File Name : WalnutMain
Site Code : Site 6
Start Date : 11/30/2016
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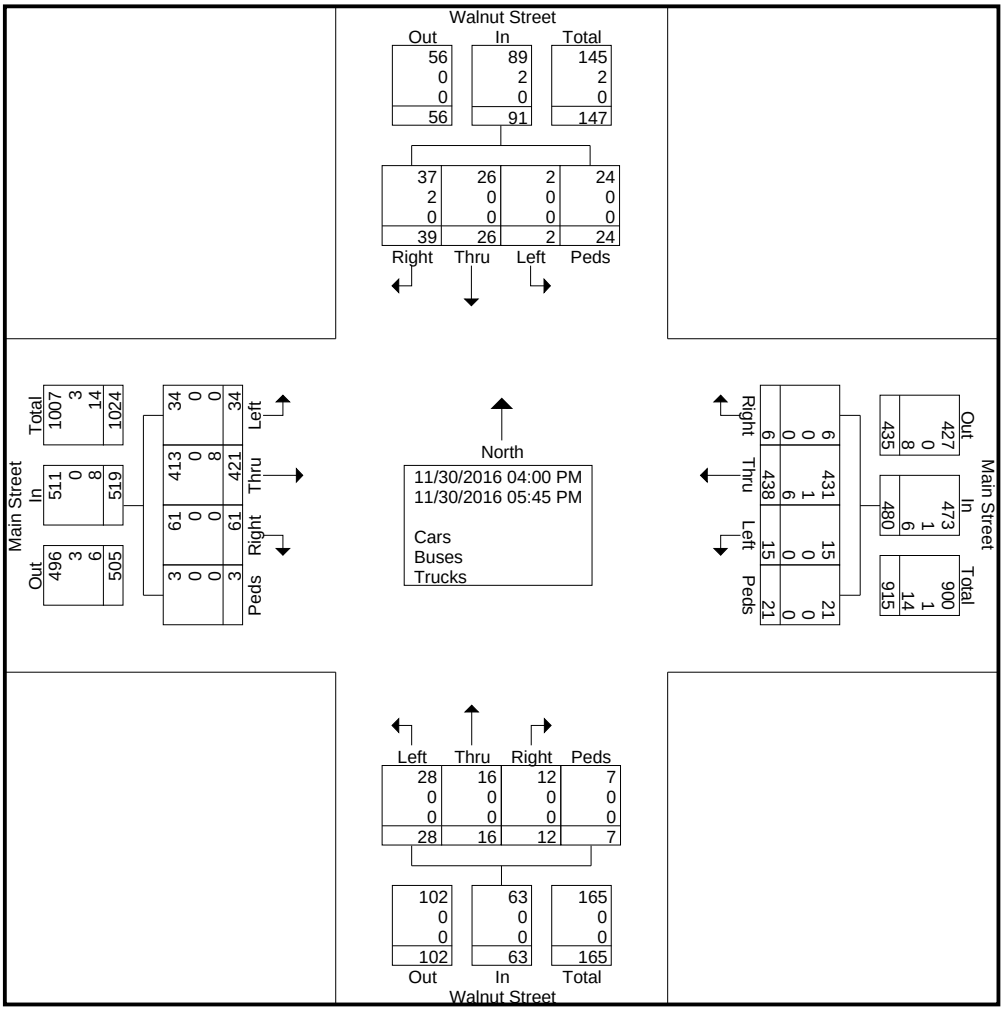

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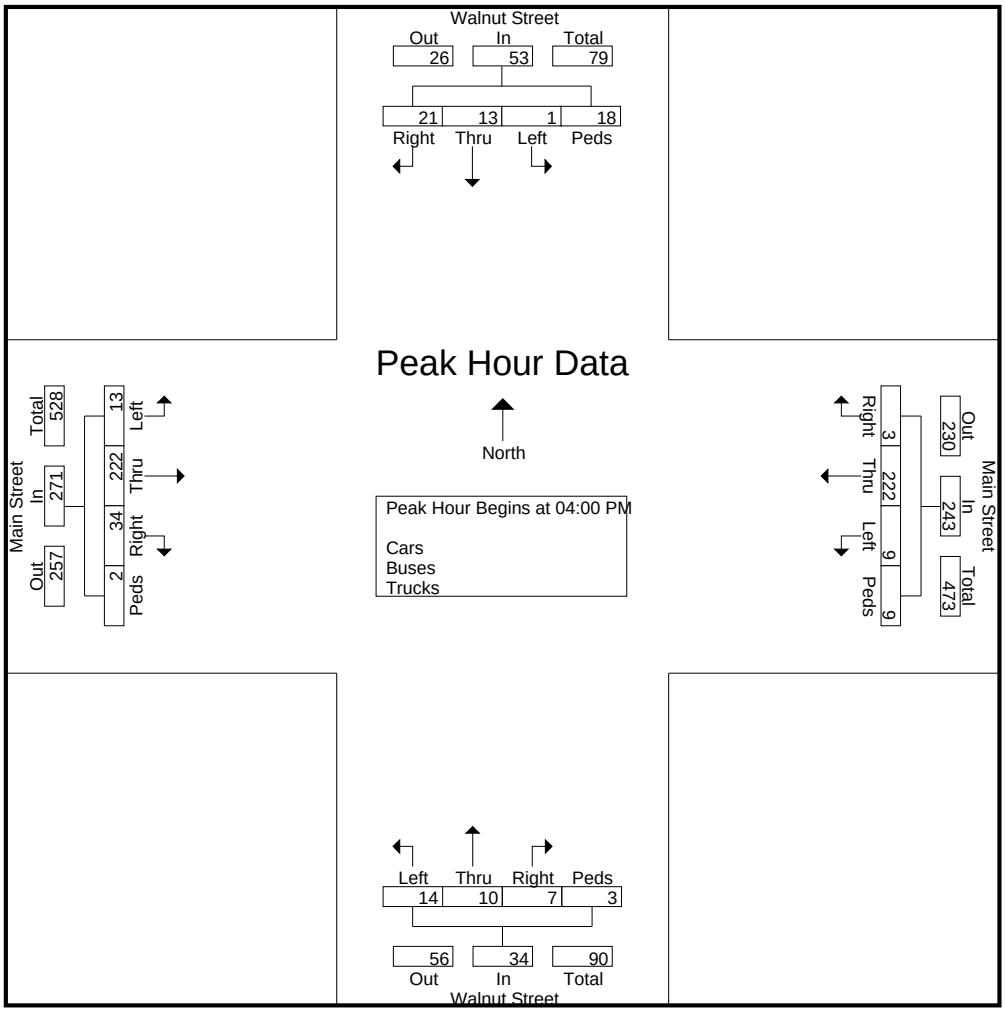
File Name : WalnutMain
Site Code : Site 6
Start Date : 11/30/2016
Page No : 3

	Walnut Street From North					Main Street From East					Walnut Street From South					Main Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	4	**7**	**8**	**19**	2	**71**	**1**	**6**	**80**	1	**5**	**3**	0	9	3	53	7	0	63	**171**
04:15 PM	0	1	4	2	7	2	50	0	2	54	**8**	3	1	**1**	**13**	1	56	**11**	**2**	**70**	144
04:30 PM	**1**	**5**	4	4	14	**3**	43	1	0	47	4	2	0	1	7	3	**59**	6	0	68	136
04:45 PM	0	3	6	4	13	2	58	1	1	62	1	0	3	1	5	**6**	54	10	0	70	150
Total Volume	1	13	21	18	53	9	222	3	9	243	14	10	7	3	34	13	222	34	2	271	601
% App. Total	1.9	24.5	39.6	34		3.7	91.4	1.2	3.7		41.2	29.4	20.6	8.8		4.8	81.9	12.5	0.7		
PHF	.250	.650	.750	.563	.697	.750	.782	.750	.375	.759	.438	.500	.583	.750	.654	.542	.941	.773	.250	.968	.879



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"simplifying Data Collection since 2004"

File Name : Cherry_at_Main_11-30-2016
Site Code : Site 7
Start Date : 11/30/2016
Page No : 1

Cloudy and Cold - 30 degrees
Schools in Session

Groups Printed- Cars - Buses - Trucks

	Cherry Street From North					Main Street From East					Cherry Street From South					Main Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	5	12	8	3	28	1	131	2	0	134	3	5	5	3	16	4	140	3	11	158	336
04:15 PM	1	3	1	0	5	1	111	1	2	115	8	2	4	5	19	2	129	5	8	144	283
04:30 PM	0	4	6	1	11	5	133	5	2	145	3	2	6	3	14	1	138	4	6	149	319
04:45 PM	2	0	2	0	4	1	117	3	1	122	2	2	8	1	13	7	118	5	1	131	270
Total	8	19	17	4	48	8	492	11	5	516	16	11	23	12	62	14	525	17	26	582	1208
05:00 PM	1	4	2	3	10	1	124	2	2	129	4	5	8	1	18	3	130	4	6	143	300
05:15 PM	1	0	3	0	4	3	125	5	2	135	2	2	9	0	13	2	142	5	1	150	302
05:30 PM	0	1	0	1	2	2	125	4	0	131	2	2	2	2	8	4	119	2	2	127	268
05:45 PM	0	3	3	0	6	2	121	4	2	129	7	4	5	0	16	4	141	1	1	147	298
Total	2	8	8	4	22	8	495	15	6	524	15	13	24	3	55	13	532	12	10	567	1168
Grand Total	10	27	25	8	70	16	987	26	11	1040	31	24	47	15	117	27	1057	29	36	1149	2376
Apprch %	14.3	38.6	35.7	11.4		1.5	94.9	2.5	1.1		26.5	20.5	40.2	12.8		2.3	92	2.5	3.1		
Total %	0.4	1.1	1.1	0.3	2.9	0.7	41.5	1.1	0.5	43.8	1.3	1	2	0.6	4.9	1.1	44.5	1.2	1.5	48.4	
Cars	10	27	24	8	69	16	980	26	11	1033	31	24	47	15	117	27	1052	29	36	1144	2363
% Cars	100	100	96	100	98.6	100	99.3	100	100	99.3	100	100	100	100	100	100	99.5	100	100	99.6	99.5
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Buses	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0
Trucks	0	0	1	0	1	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	12
% Trucks	0	0	4	0	1.4	0	0.6	0	0	0.6	0	0	0	0	0	0	0.5	0	0	0.4	0.5

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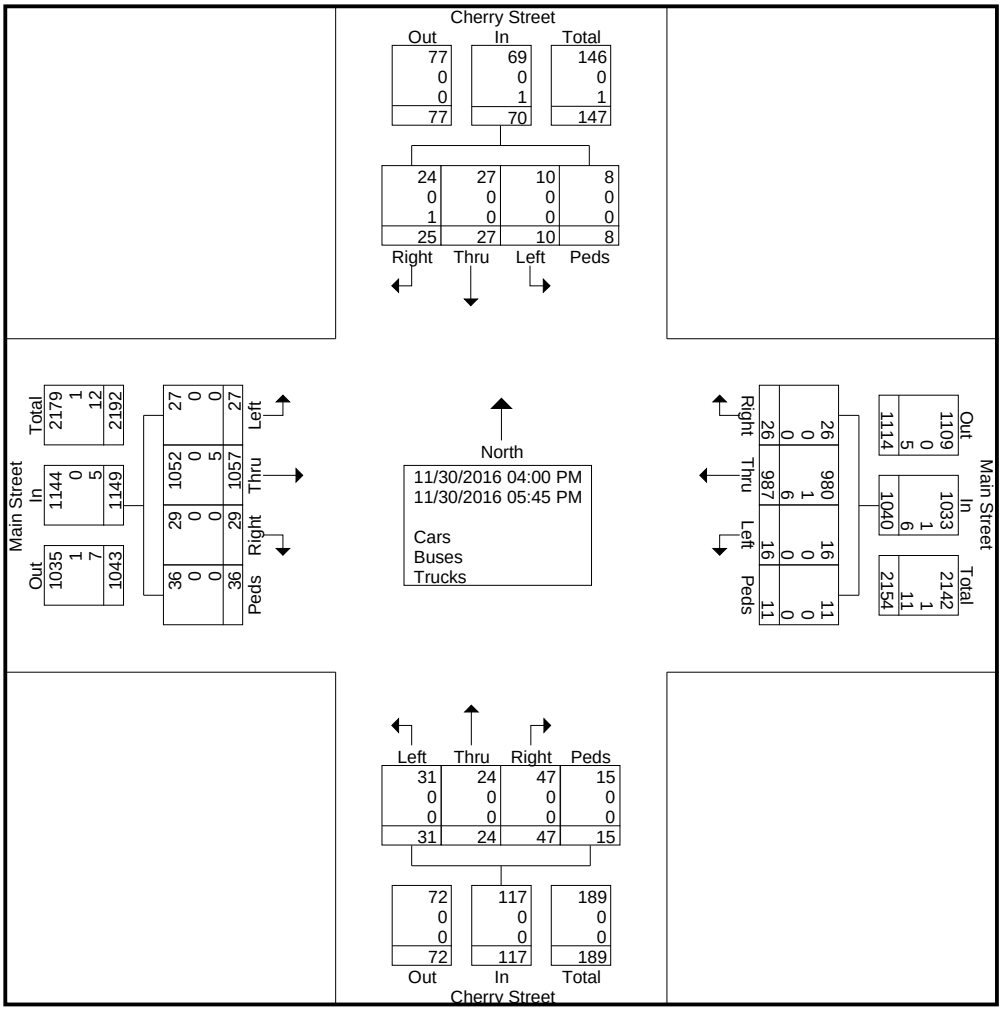
File Name : Cherry_at_Main_11-30-2016
Site Code : Site 7
Start Date : 11/30/2016
Page No : 2



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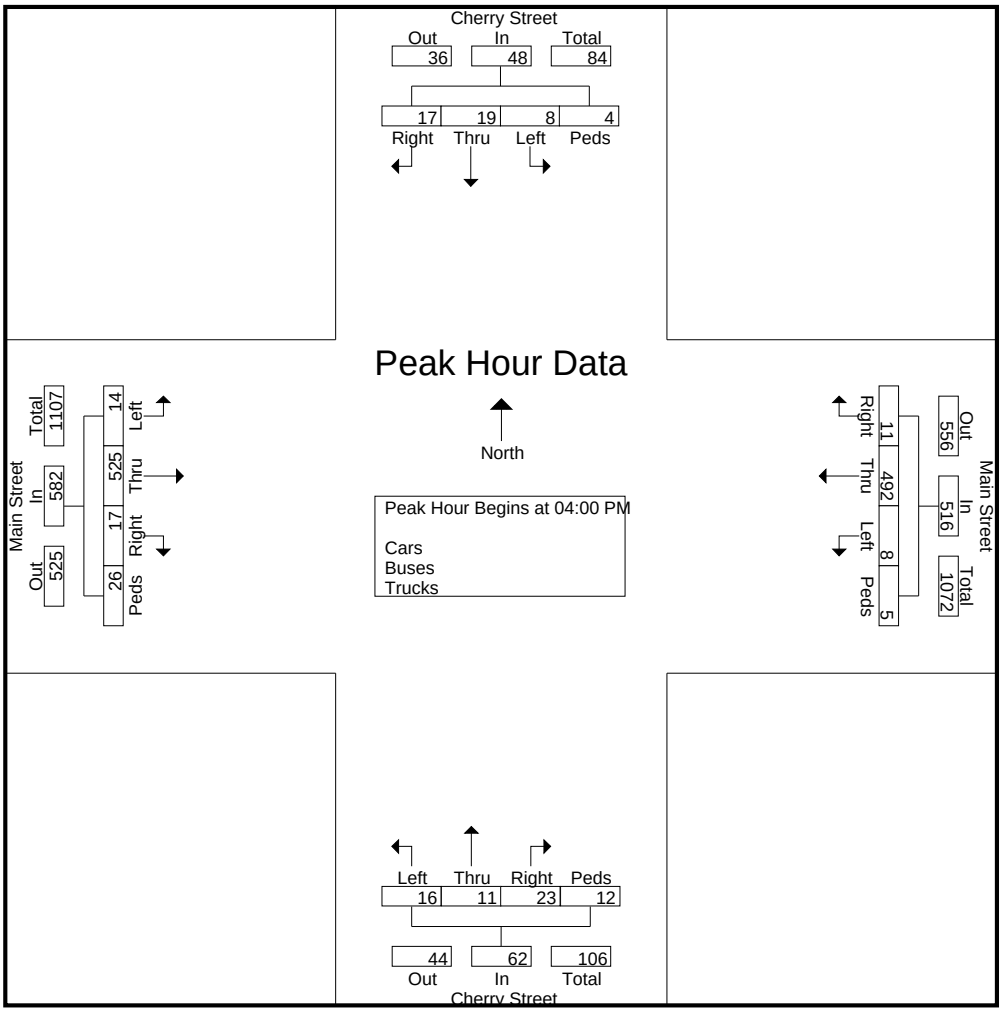
File Name : Cherry_at_Main_11-30-2016
Site Code : Site 7
Start Date : 11/30/2016
Page No : 3

	Cherry Street From North					Main Street From East					Cherry Street From South					Main Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	**5**	**12**	**8**	**3**	**28**	1	131	2	0	134	3	**5**	5	3	16	4	**140**	3	**11**	**158**	**336**
04:15 PM	1	3	1	0	5	1	111	1	**2**	115	**8**	2	4	**5**	**19**	2	129	**5**	8	144	283
04:30 PM	0	4	6	1	11	**5**	**133**	**5**	2	**145**	3	2	6	3	14	1	138	4	6	149	319
04:45 PM	2	0	2	0	4	1	117	3	1	122	2	2	**8**	1	13	**7**	118	5	1	131	270
Total Volume	8	19	17	4	48	8	492	11	5	516	16	11	23	12	62	14	525	17	26	582	1208
% App. Total	16.7	39.6	35.4	8.3		1.6	95.3	2.1	1		25.8	17.7	37.1	19.4		2.4	90.2	2.9	4.5		
PHF	.400	.396	.531	.333	.429	.400	.925	.550	.625	.890	.500	.550	.719	.600	.816	.500	.938	.850	.591	.921	.899



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"simplifying Data Collection since 2004"

Cloudy and Cold - 30 Degrees
Schools in Session

File Name : Plum_at_Main_11-30-2016
Site Code : Site 8
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Buses - Trucks

	Plum Street From North					Main Street From East					Plum Street From South					Main Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	3	3	4	133	0	0	137	7	0	7	3	17	0	142	9	2	153	310
04:15 PM	0	0	0	2	2	3	117	0	0	120	9	0	6	4	19	0	125	9	3	137	278
04:30 PM	0	0	0	0	0	5	136	0	0	141	7	0	8	3	18	0	129	5	4	138	297
04:45 PM	0	0	0	0	0	3	125	0	0	128	10	0	7	0	17	0	130	5	2	137	282
Total	0	0	0	5	5	15	511	0	0	526	33	0	28	10	71	0	526	28	11	565	1167
05:00 PM	0	0	0	2	2	4	130	0	0	134	6	0	3	0	9	0	131	3	3	137	282
05:15 PM	0	0	0	0	0	3	128	0	0	131	7	0	6	0	13	0	141	4	1	146	290
05:30 PM	0	0	0	1	1	1	123	0	0	124	1	0	3	0	4	0	129	5	2	136	265
05:45 PM	0	0	0	0	0	1	126	0	0	127	4	0	3	0	7	0	145	6	0	151	285
Total	0	0	0	3	3	9	507	0	0	516	18	0	15	0	33	0	546	18	6	570	1122
Grand Total	0	0	0	8	8	24	1018	0	0	1042	51	0	43	10	104	0	1072	46	17	1135	2289
Apprch %	0	0	0	100		2.3	97.7	0	0		49	0	41.3	9.6		0	94.4	4.1	1.5		
Total %	0	0	0	0.3	0.3	1	44.5	0	0	45.5	2.2	0	1.9	0.4	4.5	0	46.8	2	0.7	49.6	
Cars	0	0	0	8	8	24	1010	0	0	1034	51	0	43	10	104	0	1067	46	17	1130	2276
% Cars	0	0	0	100	100	100	99.2	0	0	99.2	100	0	100	100	100	0	99.5	100	100	99.6	99.4
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Buses	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0
Trucks	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	5	0	0	5	12
% Trucks	0	0	0	0	0	0	0.7	0	0	0.7	0	0	0	0	0	0	0.5	0	0	0.4	0.5

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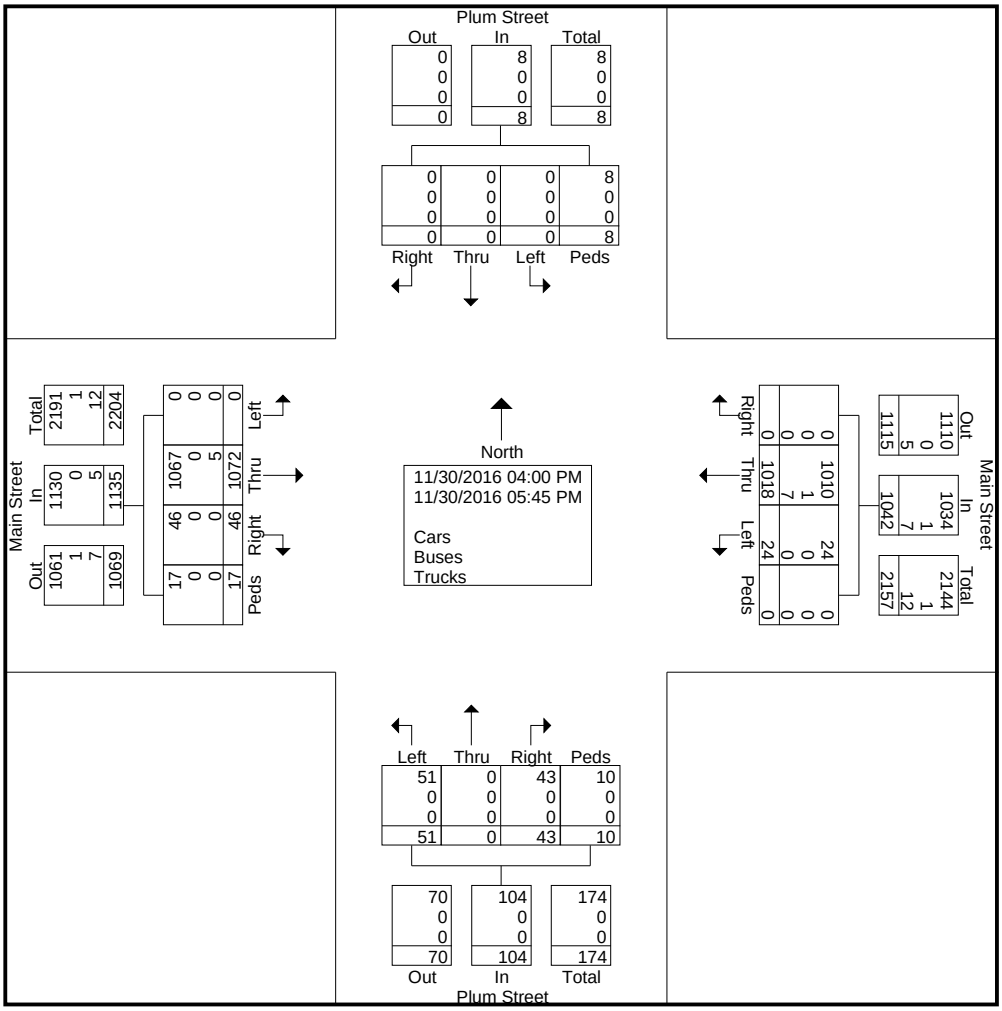
File Name : Plum_at_Main_11-30-2016
Site Code : Site 8
Start Date : 11/30/2016
Page No : 2



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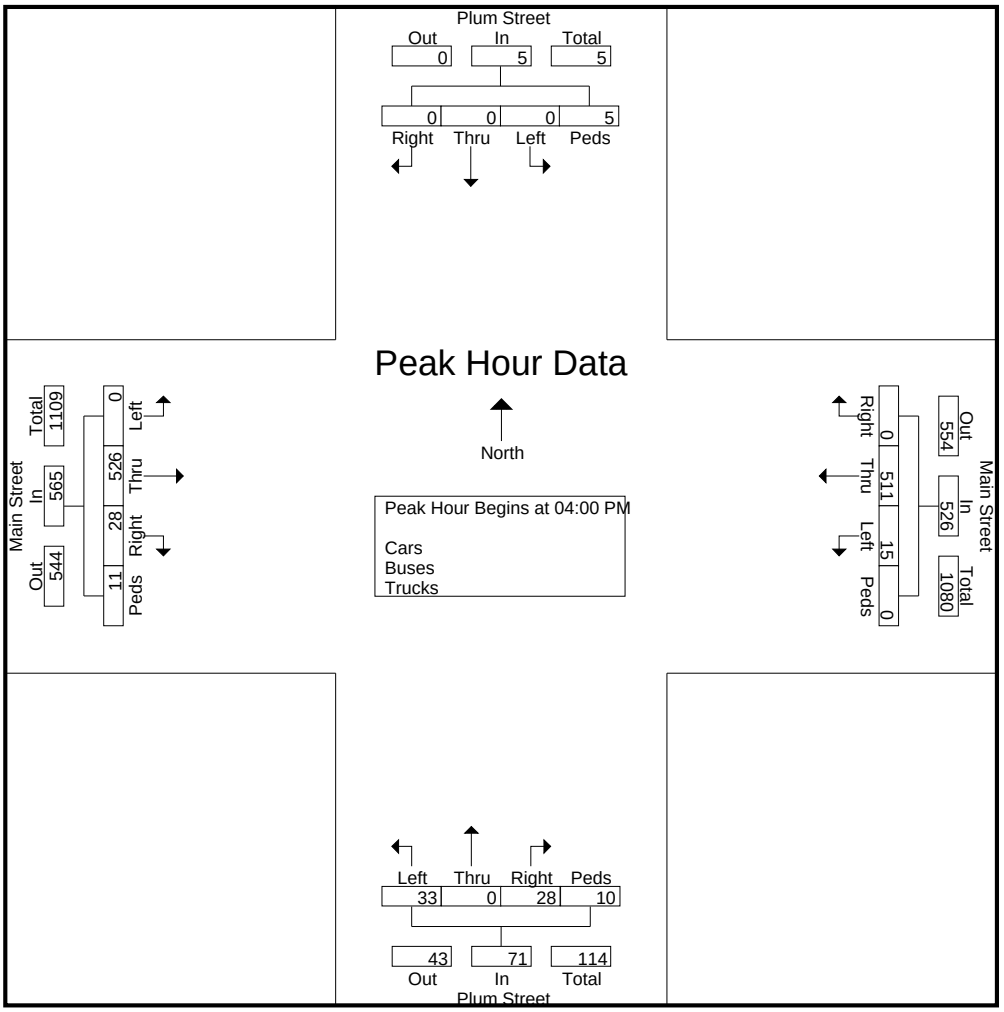
File Name : Plum_at_Main_11-30-2016
Site Code : Site 8
Start Date : 11/30/2016
Page No : 3

	Plum Street From North					Main Street From East					Plum Street From South					Main Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	**3**	**3**	4	133	0	0	137	7	0	7	3	17	0	**142**	**9**	2	**153**	**310**
04:15 PM	0	0	0	2	2	3	117	0	0	120	9	0	6	**4**	**19**	0	125	9	3	137	278
04:30 PM	0	0	0	0	0	**5**	**136**	0	0	**141**	7	0	**8**	3	18	0	129	5	**4**	138	297
04:45 PM	0	0	0	0	0	3	125	0	0	128	**10**	0	7	0	17	0	130	5	2	137	282
Total Volume	0	0	0	5	5	15	511	0	0	526	33	0	28	10	71	0	526	28	11	565	1167
% App. Total	0	0	0	100		2.9	97.1	0	0		46.5	0	39.4	14.1		0	93.1	5	1.9		
PHF	.000	.000	.000	.417	.417	.750	.939	.000	.000	.933	.825	.000	.875	.625	.934	.000	.926	.778	.688	.923	.941



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"simplifying Data Collection since 2004"

Cloudy and Cold - 30 Degrees
Schools in Session

File Name : Monroe_at_Main_11-30-2016
Site Code : Site 9
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Buses - Trucks

	Monroe Street From North					Main Street From East					Monroe Street From South					Main Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	3	6	9	0	18	7	141	1	1	150	3	2	10	2	17	8	138	3	3	152	337
04:15 PM	2	3	10	0	15	1	112	3	0	116	2	4	11	1	18	3	134	5	2	144	293
04:30 PM	1	1	4	0	6	7	154	4	0	165	4	6	5	0	15	5	125	3	2	135	321
04:45 PM	0	0	3	0	3	3	127	1	0	131	0	2	5	0	7	1	128	4	1	134	275
Total	6	10	26	0	42	18	534	9	1	562	9	14	31	3	57	17	525	15	8	565	1226
05:00 PM	2	5	6	1	14	3	127	4	1	135	5	5	9	0	19	5	124	1	1	131	299
05:15 PM	2	2	3	0	7	4	132	2	0	138	1	4	10	0	15	2	131	4	0	137	297
05:30 PM	1	2	1	0	4	6	123	2	0	131	1	2	12	0	15	2	106	4	1	113	263
05:45 PM	0	1	0	0	1	6	114	2	0	122	1	5	12	0	18	2	149	5	0	156	297
Total	5	10	10	1	26	19	496	10	1	526	8	16	43	0	67	11	510	14	2	537	1156
Grand Total	11	20	36	1	68	37	1030	19	2	1088	17	30	74	3	124	28	1035	29	10	1102	2382
Apprch %	16.2	29.4	52.9	1.5		3.4	94.7	1.7	0.2		13.7	24.2	59.7	2.4		2.5	93.9	2.6	0.9		
Total %	0.5	0.8	1.5	0	2.9	1.6	43.2	0.8	0.1	45.7	0.7	1.3	3.1	0.1	5.2	1.2	43.5	1.2	0.4	46.3	
Cars	11	20	36	1	68	37	1023	19	2	1081	17	30	74	3	124	27	1031	29	10	1097	2370
% Cars	100	100	100	100	100	100	99.3	100	100	99.4	100	100	100	100	100	96.4	99.6	100	100	99.5	99.5
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	2
% Buses	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	3.6	0	0	0	0.1	0.1
Trucks	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	4	0	0	4	10
% Trucks	0	0	0	0	0	0	0.6	0	0	0.6	0	0	0	0	0	0	0.4	0	0	0.4	0.4

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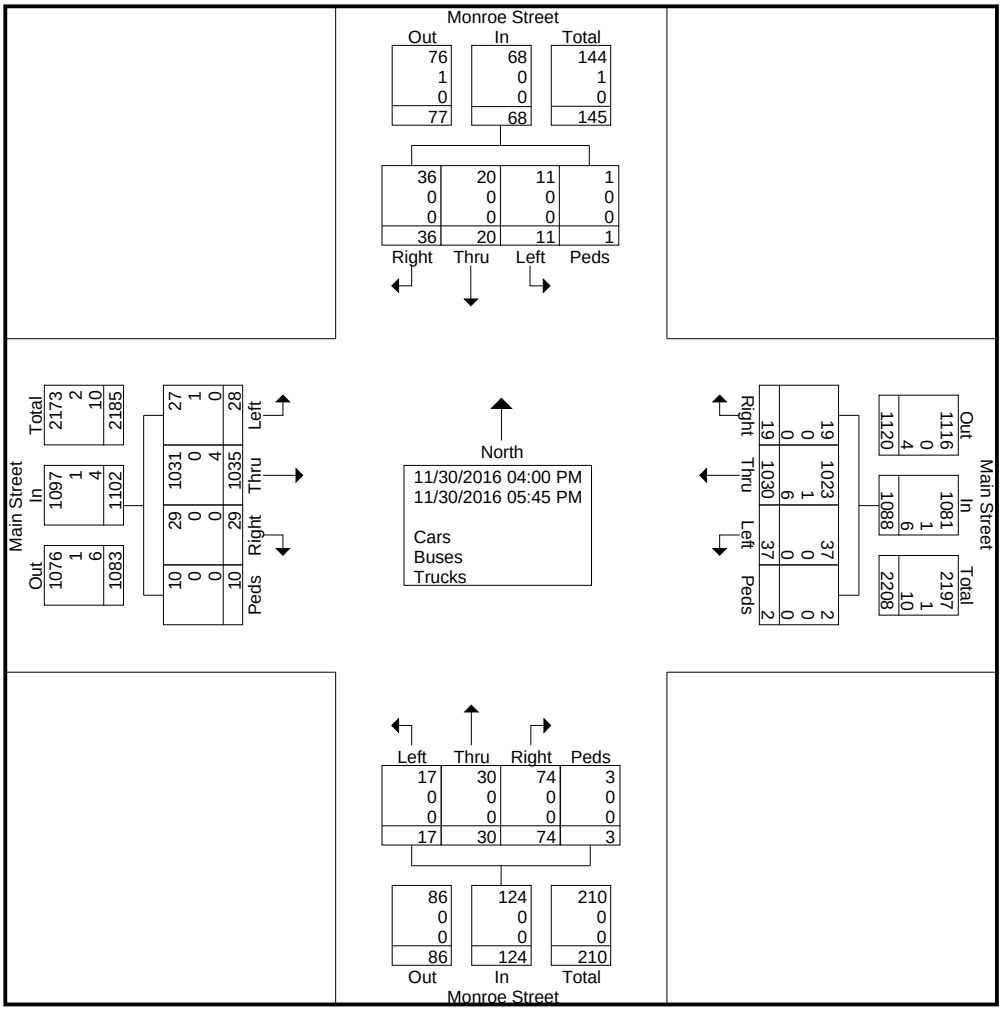
File Name : Monroe_at_Main_11-30-2016
Site Code : Site 9
Start Date : 11/30/2016
Page No : 2



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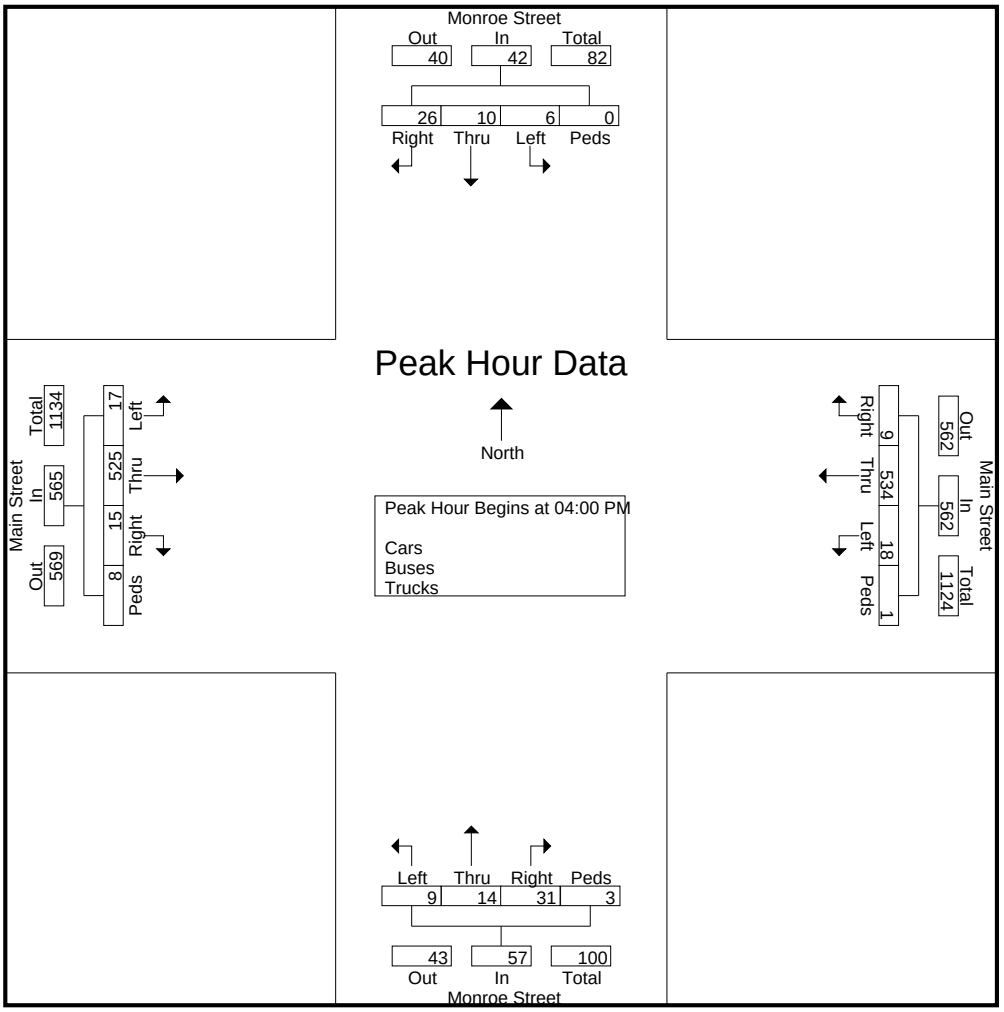
File Name : Monroe_at_Main_11-30-2016
Site Code : Site 9
Start Date : 11/30/2016
Page No : 3

	Monroe Street From North					Main Street From East					Monroe Street From South					Main Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	**3**	**6**	9	0	**18**	**7**	141	1	**1**	150	3	2	10	**2**	17	**8**	**138**	3	**3**	**152**	**337**
04:15 PM	2	3	**10**	0	15	1	112	3	0	116	2	4	**11**	1	**18**	3	134	**5**	2	144	293
04:30 PM	1	1	4	0	6	7	**154**	**4**	0	**165**	**4**	**6**	5	0	15	5	125	3	2	135	321
04:45 PM	0	0	3	0	3	3	127	1	0	131	0	2	5	0	7	1	128	4	1	134	275
Total Volume	6	10	26	0	42	18	534	9	1	562	9	14	31	3	57	17	525	15	8	565	1226
% App. Total	14.3	23.8	61.9	0		3.2	95	1.6	0.2		15.8	24.6	54.4	5.3		3	92.9	2.7	1.4		
PHF	.500	.417	.650	.000	.583	.643	.867	.563	.250	.852	.563	.583	.705	.375	.792	.531	.951	.750	.667	.929	.909



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"simplifying Data Collection since 2004"

File Name : AdamsMain
Site Code :
Start Date : 11/30/2016
Page No : 1

Cloudy and Cold - 30 Degrees
Schools in Session

Groups Printed- Cars - Buses - Trucks

	Adams Street From North					Main Street From East					Adams Street From South					Main Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	7	7	52	0	66	5	152	5	0	162	6	16	1	0	23	47	145	1	1	194	445
04:15 PM	6	15	36	0	57	2	121	4	0	127	7	13	0	0	20	45	125	11	2	183	387
04:30 PM	3	21	50	0	74	3	133	19	0	155	8	19	0	0	27	56	128	5	2	191	447
04:45 PM	4	11	48	0	63	2	129	1	0	132	7	5	0	1	13	45	124	3	1	173	381
Total	20	54	186	0	260	12	535	29	0	576	28	53	1	1	83	193	522	20	6	741	1660
05:00 PM	5	19	56	0	80	5	131	2	0	138	12	9	2	1	24	50	125	7	2	184	426
05:15 PM	2	10	33	0	45	2	138	2	0	142	6	10	2	0	18	53	138	8	0	199	404
05:30 PM	0	9	45	0	54	1	121	2	0	124	5	11	0	0	16	55	117	0	1	173	367
05:45 PM	5	11	51	0	67	0	108	1	0	109	6	6	1	0	13	58	151	3	0	212	401
Total	12	49	185	0	246	8	498	7	0	513	29	36	5	1	71	216	531	18	3	768	1598
Grand Total	32	103	371	0	506	20	1033	36	0	1089	57	89	6	2	154	409	1053	38	9	1509	3258
Apprch %	6.3	20.4	73.3	0		1.8	94.9	3.3	0		37	57.8	3.9	1.3		27.1	69.8	2.5	0.6		
Total %	1	3.2	11.4	0	15.5	0.6	31.7	1.1	0	33.4	1.7	2.7	0.2	0.1	4.7	12.6	32.3	1.2	0.3	46.3	
Cars	32	102	371	0	505	20	1027	35	0	1082	57	79	6	2	144	401	1047	38	9	1495	3226
% Cars	100	99	100	0	99.8	100	99.4	97.2	0	99.4	100	88.8	100	100	93.5	98	99.4	100	100	99.1	99
Buses	0	1	0	0	1	0	0	1	0	1	0	9	0	0	9	7	1	0	0	8	19
% Buses	0	1	0	0	0.2	0	0	2.8	0	0.1	0	10.1	0	0	5.8	1.7	0.1	0	0	0.5	0.6
Trucks	0	0	0	0	0	0	6	0	0	6	0	1	0	0	1	1	5	0	0	6	13
% Trucks	0	0	0	0	0	0	0.6	0	0	0.6	0	1.1	0	0	0.6	0.2	0.5	0	0	0.4	0.4

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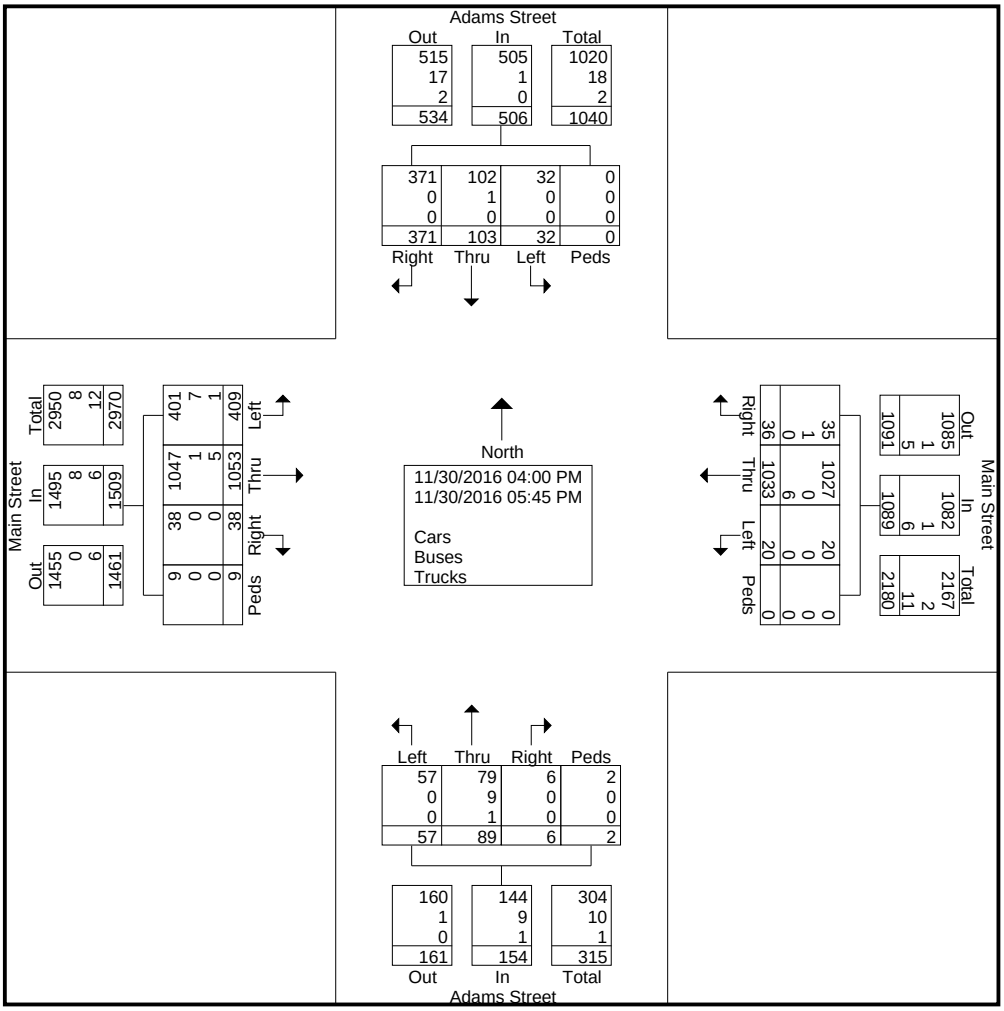
File Name : AdamsMain
Site Code :
Start Date : 11/30/2016
Page No : 2



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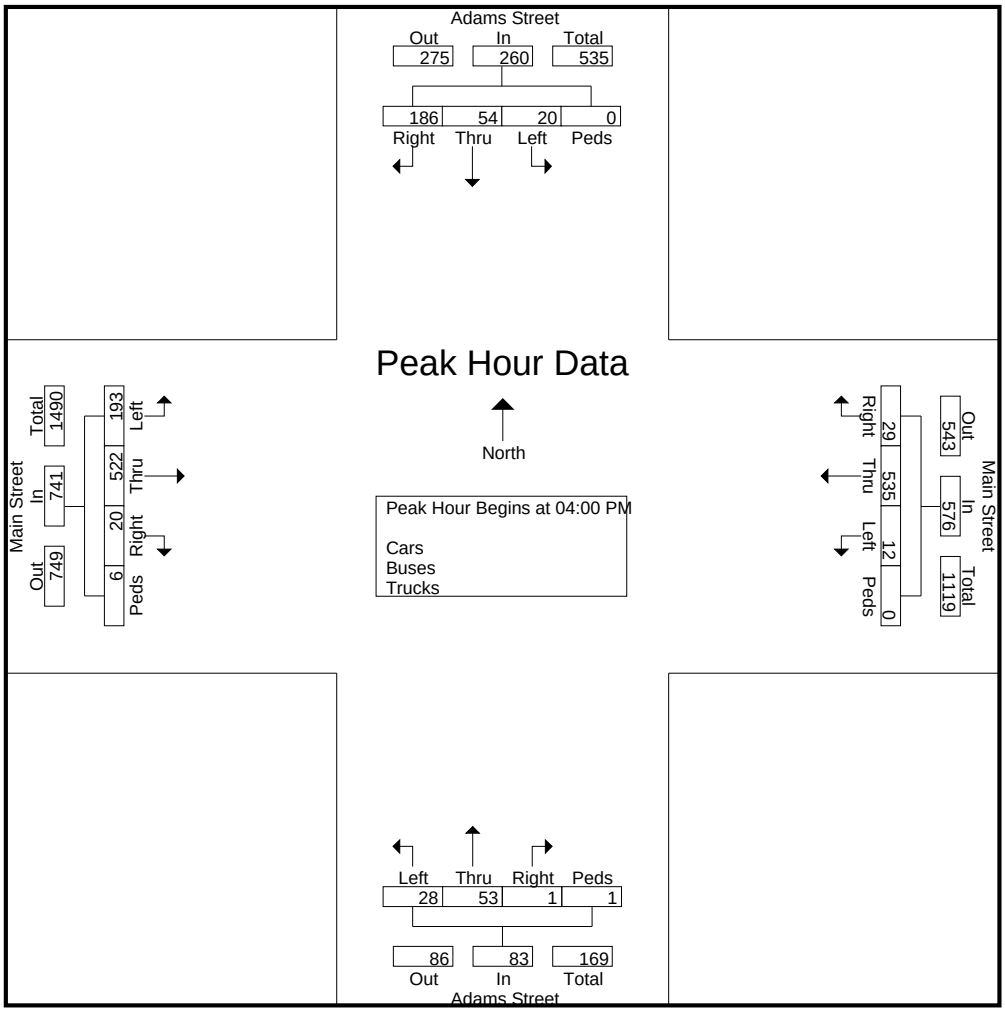
"simplifying Data Collection since 2004"

File Name : AdamsMain
Site Code :
Start Date : 11/30/2016
Page No : 3

	Adams Street From North					Main Street From East					Adams Street From South					Main Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	**7**	7	**52**	0	66	**5**	**152**	5	0	**162**	6	16	**1**	0	23	47	**145**	1	1	**194**	445
04:15 PM	6	15	36	0	57	2	121	4	0	127	7	13	0	0	20	45	125	**11**	**2**	183	387
04:30 PM	3	**21**	50	0	**74**	3	133	**19**	0	155	**8**	**19**	0	0	**27**	**56**	128	5	2	191	**447**
04:45 PM	4	11	48	0	63	2	129	1	0	132	7	5	0	**1**	13	45	124	3	1	173	381
Total Volume	20	54	186	0	260	12	535	29	0	576	28	53	1	1	83	193	522	20	6	741	1660
% App. Total	7.7	20.8	71.5	0		2.1	92.9	5	0		33.7	63.9	1.2	1.2		26	70.4	2.7	0.8		
PHF	.714	.643	.894	.000	.878	.600	.880	.382	.000	.889	.875	.697	.250	.250	.769	.862	.900	.455	.750	.955	.928



APPENDIX H: ODOT HOURLY PROFILE

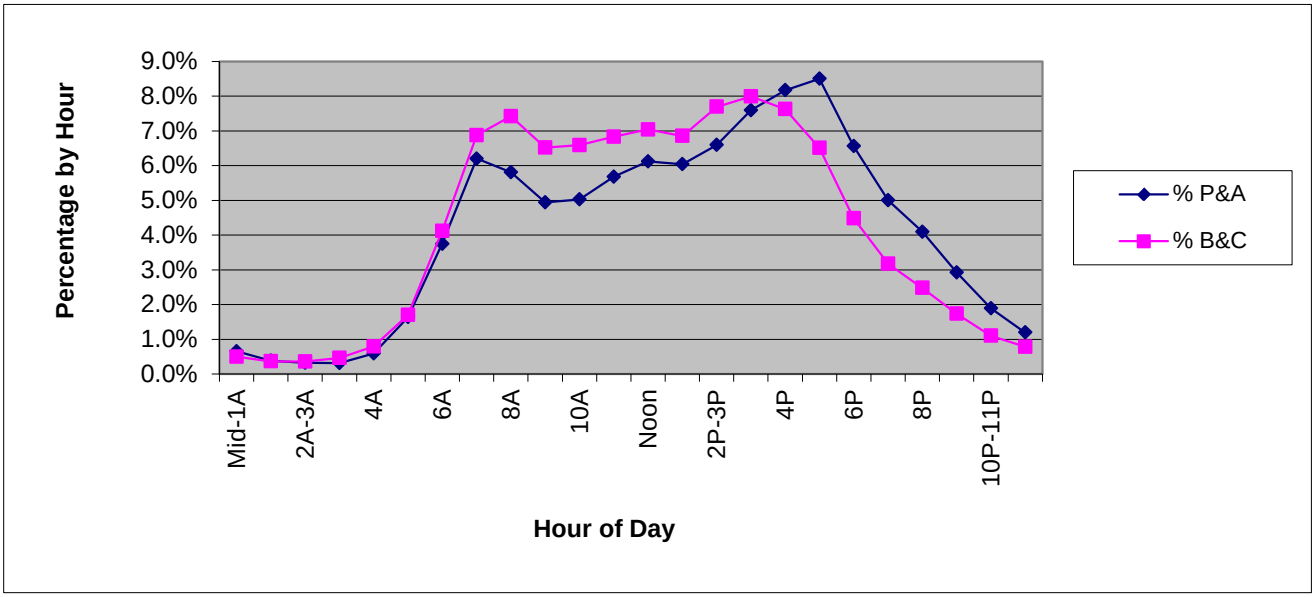
Hourly Percent by Vehicle Type

Urban Minor Arterial

Sample = 409 Counts

Sample of Permanent ATR's and Portable Counts Taken in 2013

Hour	Hour of Day	FC	P& A (Cars)	% P&A (Cars)	B&C (Trucks)	% B&C (Trucks)	Total	% Total
0	Mid-1A	16	**34,348**	0.7%	**1,531**	0.5%	**35,879**	0.6%
1	1A-2A	16	**19,929**	0.4%	**1,119**	0.4%	**21,048**	0.4%
2	2A-3A	16	**16,823**	0.3%	**1,113**	0.4%	**17,936**	0.3%
3	3A	16	**16,493**	0.3%	**1,413**	0.5%	**17,906**	0.3%
4	4A	16	**31,175**	0.6%	**2,445**	0.8%	**33,620**	0.6%
5	5A	16	**85,616**	1.6%	**5,221**	1.7%	**90,837**	1.6%
6	6A	16	**195,956**	3.7%	**12,663**	4.1%	**208,619**	3.8%
7	7A	16	**324,065**	6.2%	**21,115**	6.9%	**345,180**	6.2%
8	8A	16	**303,402**	5.8%	**22,787**	7.4%	**326,189**	5.9%
9	9A	16	**258,134**	4.9%	**20,027**	6.5%	**278,161**	5.0%
10	10A	16	**262,681**	5.0%	**20,247**	6.6%	**282,928**	5.1%
11	11A-Noon	16	**296,593**	5.7%	**20,977**	6.8%	**317,570**	5.7%
12	Noon	16	**319,785**	6.1%	**21,628**	7.0%	**341,413**	6.2%
13	1P-2P	16	**315,812**	6.0%	**21,053**	6.9%	**336,865**	6.1%
14	2P-3P	16	**344,607**	6.6%	**23,627**	7.7%	**368,234**	6.7%
15	3P	16	**396,799**	7.6%	**24,550**	8.0%	**421,349**	7.6%
16	4P	16	**426,840**	8.2%	**23,420**	7.6%	**450,260**	8.1%
17	5P	16	**444,353**	8.5%	**19,996**	6.5%	**464,349**	8.4%
18	6P	16	**342,749**	6.6%	**13,774**	4.5%	**356,523**	6.4%
19	7P	16	**261,346**	5.0%	**9,745**	3.2%	**271,091**	4.9%
20	8P	16	**213,914**	4.1%	**7,610**	2.5%	**221,524**	4.0%
21	9P	16	**152,916**	2.9%	**5,326**	1.7%	**158,242**	2.9%
22	10P-11P	16	**98,856**	1.9%	**3,391**	1.1%	**102,247**	1.8%
23	11P-Mid	16	**62,551**	1.2%	**2,404**	0.8%	**64,955**	1.2%
			5,225,743	100%	**307,182**	100%	**5,532,925**	100%



http://www.dot.state.oh.us/Divisions/Planning/TechServ/traffic/Reports/HrlyPctbyVeh/2013HrlyPctVehType.pdf

APPENDIX I: LANE UTILIZATION COUNTS

Study Name **Market N of Canal**
Start Date **11/30/2016**
Start Time **4:00 PM**
Site Code **PM Peak**

Channel	Lane 1	Lane 2	Lane 1	Lane 2
Direction	Southbound	Southbound	Northbound	Northbound
4:00 PM	76	75	10	125
4:15 PM	66	65	31	117
4:30 PM	80	62	20	147
4:45 PM	67	71	24	133
5:00 PM	66	68	20	141
5:15 PM	56	54	14	125
5:30 PM	51	68	28	129
5:45 PM	42	43	29	129

Study Name **Market N of Franklin**
Start Date **11/30/2016**
Start Time **4:00 PM**
Site Code **PM Peak**

Channel	Lane 1	Lane 2	Lane 1	Lane 2
Direction	Southbound	Southbound	Northbound	Northbound
4:00 PM	81	65	10	133
4:15 PM	62	56	23	120
4:30 PM	77	64	16	159
4:45 PM	68	69	18	140
5:00 PM	67	65	11	148
5:15 PM	62	48	8	125
5:30 PM	58	62	17	137
5:45 PM	63	39	16	146

Study Name **Market N of Main**
Start Date **11/30/2016**
Start Time **4:00 PM**
Site Code **PM Peak**

Channel	Lane 1	Lane 2	Lane 1	Lane 2
Direction	Southbound	Southbound	Northbound	Northbound
4:00 PM	36	92	85	72
4:15 PM	27	74	70	60
4:30 PM	61	86	105	58
4:45 PM	39	88	77	79
5:00 PM	53	87	92	82
5:15 PM	52	72	78	80
5:30 PM	48	93	102	79
5:45 PM	51	69	77	85

Study Name **Main W of Market**
Start Date **11/30/2016**
Start Time **4:00 PM**
Site Code **PM Peak**

Channel	Lane 1	Lane 2	Lane 1	Lane 2
Direction	Westbound	Westbound	Eastbound	Eastbound
4:00 PM	76	51	53	101
4:15 PM	78	33	42	89
4:30 PM	79	57	49	92
4:45 PM	75	49	42	95
5:00 PM	73	56	38	98
5:15 PM	72	56	37	118
5:30 PM	79	54	33	94
5:45 PM	80	44	35	108

Study Name **Main W of Cherry**
Start Date **11/30/2016**
Start Time **4:00 PM**
Site Code **PM Peak**

Channel	Lane 1	Lane 2	Lane 1	Lane 2
Direction	Westbound	Westbound	Eastbound	Eastbound
4:00 PM	67	65	52	100
4:15 PM	67	49	44	89
4:30 PM	77	62	51	89
4:45 PM	74	52	37	98
5:00 PM	67	62	38	98
5:15 PM	64	63	35	114
5:30 PM	66	59	38	93
5:45 PM	73	49	32	113

Study Name **Main W of Oxford**
Start Date **11/30/2016**
Start Time **4:00 PM**
Site Code **PM Peak**

Channel	Lane 1	Lane 2	Lane 1	Lane 2
Direction	Westbound	Westbound	Eastbound	Eastbound
4:00 PM	82	69	71	85
4:15 PM	73	48	57	86
4:30 PM	86	74	60	73
4:45 PM	63	69	44	89
5:00 PM	70	59	58	79
5:15 PM	79	68	54	95
5:30 PM	70	61	45	82
5:45 PM	66	56	51	113

APPENDIX J: PEDESTRIAN COUNT SHEETS

Date: 5/19 Weather: Sunny

Time: 11:15 – 12:15 pm

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

51

NORTH

NORTH LEG (MARKET STREET)

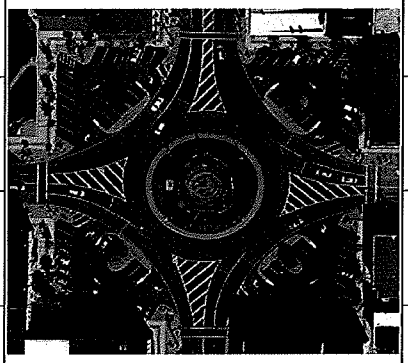
Westbound/Eastbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

WEST LEG (MAIN STREET) — Southbound/Northbound

27

15-30 ~~0:00-0:15~~	II	2
30-45 ~~0:15-0:30~~	卌 III	8
45-00 ~~0:30-0:45~~	卌 III	8
00-15 ~~0:45-1:00~~	卌 IIII	9



EAST LEG (MAIN STREET) — Northbound/Southbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

15-30 ~~0:00-0:15~~	III	3
30-45 ~~0:15-0:30~~	卌 II	7
45-00 ~~0:30-0:45~~	卌 II	7
00-15 ~~0:45-1:00~~	卌 II	7

Westbound/Eastbound

SOUTH LEG (MARKET STREET)

24

Date: 5/19 Weather: Sunny

Time: 12:15 - 1:15pm

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

81

NORTH

NORTH LEG (MARKET STREET)

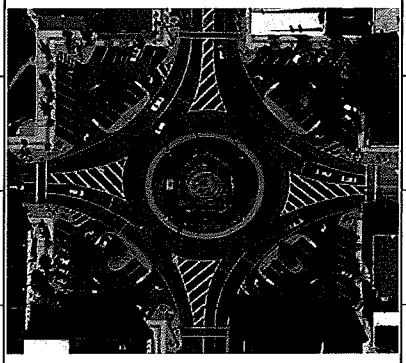
Westbound/Eastbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

WEST LEG (MAIN STREET) — Southbound/Northbound

40

15-30 ~~0:00-0:15~~	𝍸 𝍸 II	12
30-45 ~~0:15-0:30~~	𝍸 III	8
45-00 ~~0:30-0:45~~	𝍸 I	6
00-15 ~~0:45-1:00~~	𝍸 𝍸 IIII	14



EAST LEG (MAIN STREET) — Northbound/Southbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

15-30 ~~0:00-0:15~~	𝍸 IIII	9
30-45 ~~0:15-0:30~~	𝍸 𝍸 𝍸 IIII	19
45-00 ~~0:30-0:45~~	III	3
00-15 ~~0:45-1:00~~	𝍸 𝍸	10

Westbound/Eastbound

SOUTH LEG (MARKET STREET)

41

Date: 5/19 Weather: Sunny

Time: 4:15-5:15pm

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

54

NORTH

NORTH LEG (MARKET STREET)

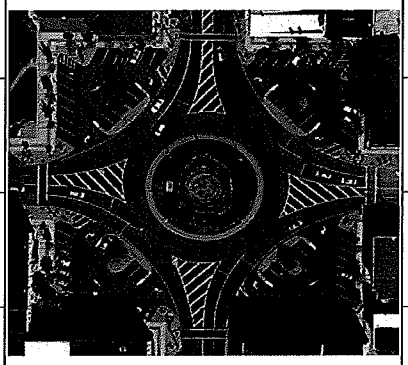
Westbound/Eastbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

WEST LEG (MAIN STREET) — Southbound/Northbound

15-30 ~~0:00-0:15~~	𝍸 𝍸 III	13
30-45 ~~0:15-0:30~~	𝍸 𝍸 II	12
45-00 ~~0:30-0:45~~	𝍸 III	8
00-15 ~~0:45-1:00~~	IIII	4

37



EAST LEG (MAIN STREET) — Northbound/Southbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

SOUTH LEG (MARKET STREET)

15-30 ~~0:00-0:15~~	𝍸	5
30-45 ~~0:15-0:30~~	III	3
45-00 ~~0:30-0:45~~	𝍸	5
00-15 ~~0:45-1:00~~	IIII	4

Westbound/Eastbound

17

Date: 5/19 Weather: Sunny

Time: 5:15-6:15pm

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

33

NORTH

NORTH LEG (MARKET STREET)

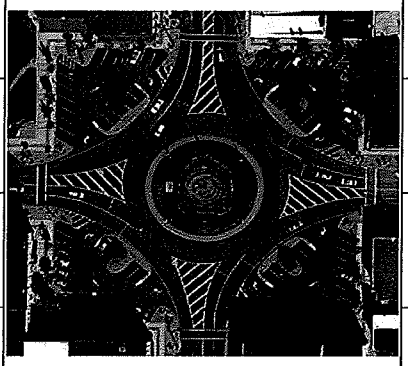
Westbound/Eastbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

WEST LEG (MAIN STREET) — Southbound/Northbound

15-30 [redacted]	III	3
30-45 [redacted]	卌	5
45-00 [redacted]	IIII	4
00-15 [redacted]	卌	5

17



EAST LEG (MAIN STREET) — Northbound/Southbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

15-30 [redacted]	IIII	4
30-45 [redacted]	卌	5
45-00 [redacted]	卌	5
00-15 [redacted]	II	2

Westbound/Eastbound

SOUTH LEG (MARKET STREET)

16

22

NORTH

NORTH LEG (MARKET STREET)	
Westbound/Eastbound	
15-30 ~~0:00-0:15~~	4
30-45 ~~0:15-0:30~~	10
45-00 ~~0:30-0:45~~	4
00-15 ~~0:45-1:00~~	4

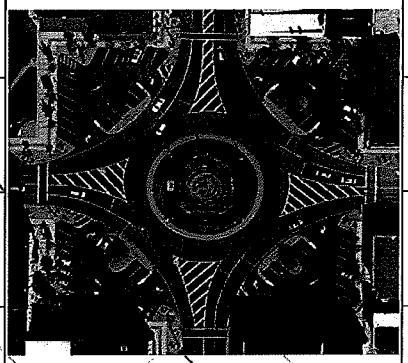
Date: 14 MAY Weather: Sunny, 64°

Time: 1115 - 1215

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

36

WEST LEG (MAIN STREET) Southbound/Northbound	
0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	



EAST LEG (MAIN STREET) Northbound/Southbound	
3	~~0:00-0:15~~
3	~~0:15-0:30~~
2	~~0:30-0:45~~
6	~~0:45-1:00~~

14

SOUTH LEG (MARKET STREET) Westbound/Eastbound	
0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

37

NORTH

NORTH LEG (MARKET STREET)

Westbound/Eastbound

Date: 19 MAY Weather: Sunny, 64°

Time: 1215 - 1315 (1:15)

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

54

15-30 ~~0:00-0:15~~	12	
30-45 ~~0:15-0:30~~	11	
45-00 ~~0:30-0:45~~	3	
00-15 ~~0:45-1:00~~	11	

WEST LEG (MAIN STREET)

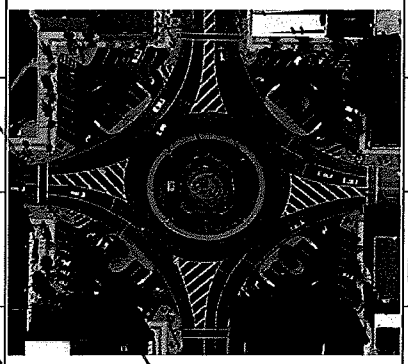
Southbound/Northbound

0:00-0:15	10	~~0:00-0:15~~
0:15-0:30	4	~~0:15-0:30~~
0:30-0:45	2	~~0:30-0:45~~
0:45-1:00	1	~~0:45-1:00~~

Northbound/Southbound

EAST LEG (MAIN STREET)

17



0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

Westbound/Eastbound

SOUTH LEG (MARKET STREET)

60 sunny

28

Date: 5/9 Weather: Nice out

Time: 4:15 – 5:15 pm

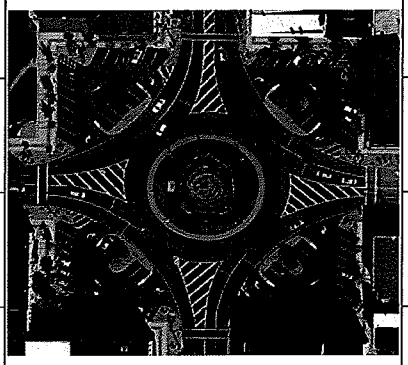
Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The buslest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

44

NORTH

NORTH LEG (MARKET STREET) Westbound/Eastbound		
0:00-0:15	11	11
0:15-0:30	9	9
0:30-0:45	6	6
0:45-1:00	4	4

15-30 30 45 60 0-15



WEST LEG (MAIN STREET) Southbound/Northbound	
0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

EAST LEG (MAIN STREET) Northbound/Southbound	
0:00-0:15	10
0:15-0:30	3
0:30-0:45	2
0:45-1:00	1

16

SOUTH LEG (MARKET STREET) Westbound/Eastbound	
0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

68° F Sunshine

23

NORTH

NORTH LEG (MARKET STREET)

Westbound/Eastbound

Date: 5/19 Weather: Nice out

Time: 5:15-6:15pm

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

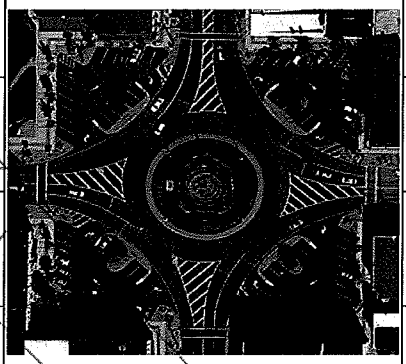
42

15-30 ~~0:00-0:15~~	I	1
30-45 ~~0:15-0:30~~	卌 卌	10
45-00 ~~0:30-0:45~~	卌 I	6
00-15 ~~0:45-1:00~~	卌 I	6

WEST LEG (MAIN STREET)

Southbound/Northbound

0:00-0:15	I	1
0:15-0:30	卌 III	8
0:30-0:45	卌 II	7
0:45-1:00	III	3



EAST LEG (MAIN STREET)

Northbound/Southbound

~~0:00-0:15~~	
~~0:15-0:30~~	
~~0:30-0:45~~	
~~0:45-1:00~~	

19

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

Westbound/Eastbound

SOUTH LEG (MARKET STREET)

Date: 5/18/16 Weather: Sunny · 65°F

Time: 4:15 - 5:15

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

NORTH

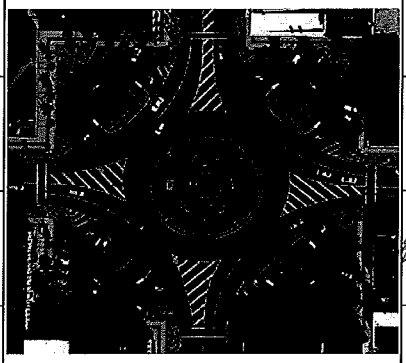
NORTH LEG (MARKET STREET) — 37

Westbound/Eastbound

15-30 ~~0:00-0:15~~	~~IIII~~ ~~IIII~~	10
30-45 0:15-0:30	~~IIII~~ II	7
45-60 0:30-0:45	~~IIII~~ ~~IIII~~	10
00-15 0:45-1:00	~~IIII~~ ~~IIII~~	10

WEST LEG (MAIN STREET) — Southbound/Northbound

0:00-0:15		
0:15-0:30		
0:30-0:45		
0:45-1:00		



EAST LEG (MAIN STREET) — Northbound/Southbound

15-30 ~~0:00-0:15~~	II	2
30-45 0:15-0:30	~~IIII~~ I ~~IIII~~ IIII	14
45-00 ~~0:30-0:45~~	~~IIII~~ IIII	4
00-15 ~~0:45-1:00~~	I	1

21

SOUTH LEG (MAIN STREET)

Westbound/Eastbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

58

March $593.00
USBank payment

14

NORTH LEG (MARKET STREET)

Westbound/Eastbound

Date: 5/18/16 Weather: Sunny - 60°F

Time: 11:15 - 12:15

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

NORTH

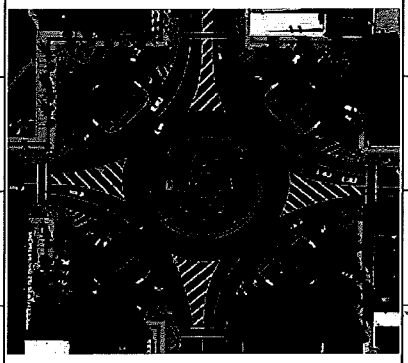
11:15-11:30 ~~0:00-0:15~~	I	1
11:30-11:45 ~~0:15-0:30~~	IIII	4
11:45-12 ~~0:30-0:45~~	III	3
12-12:15 0:45-1:00	~~IIII~~ I	6

32

18

WEST LEG (MAIN STREET) — Southbound/Northbound

0:00-0:15		IIII	4
0:15-0:30		II	2
0:30-0:45		~~IIII~~ I	6
0:45-1:00		~~IIII~~ I	6



EAST LEG (MAIN STREET) — Northbound/Southbound

11:15 ~~0:00-0:15~~	
11:30 ~~0:15-0:30~~	
11:45 ~~0:30-0:45~~	
12-12:15 ~~0:45-1:00~~	

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

Westbound/Eastbound

SOUTH LEG (MARKET STREET)

24

NORTH

NORTH LEG (MARKET STREET)

Westbound/Eastbound

Date: 5/18/16 Weather: 61°F - Sunny

Time: 12:15-1:15

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

47

15-30 ~~0:00-0:15~~	III	3
30-45 ~~0:15-0:30~~	III	3
45-00 ~~0:30-0:45~~	~~IIII~~ ~~IIII~~	10
00-15 ~~0:45-1:00~~	~~IIII~~ III	8

WEST LEG (MAIN STREET)

Southbound/Northbound

0:00-0:15	III	3
0:15-0:30	~~IIII~~ I	6
0:30-0:45	IIII	4
0:45-1:00	~~IIII~~ ~~IIII~~	10

EAST LEG (MAIN STREET)

Northbound/Southbound

15-30 ~~0:00-0:15~~	
30-45 ~~0:15-0:30~~	
45-60 ~~0:30-0:45~~	
00-15 ~~0:45-1:00~~	

23

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

Westbound/Eastbound

SOUTH LEG (MARKET STREET)

Date: 5/18 Weather: Sunny

Time: 5:15-6:15 pm

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

67

NORTH

NORTH LEG (MARKET STREET)

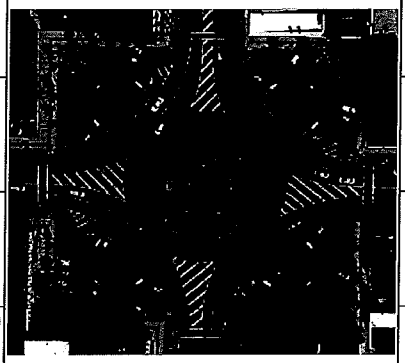
Westbound/Eastbound

5:15 - 5:30 ~~0:00-0:15~~	
5:30 - 5:45 ~~0:15-0:30~~	
5:45 - 6:00 ~~0:30-0:45~~	
6:00 - 6:15 ~~0:45-1:00~~	

WEST LEG (MAIN STREET) — Southbound/Northbound

15-30 ~~0:00-0:15~~	III	3
30-45 ~~0:15-0:30~~	𝍸 II	7
45-00 ~~0:30-0:45~~	𝍸 II	7
00-15 ~~0:45-1:00~~	𝍸 𝍸 𝍸 𝍸	20

37



EAST LEG (MAIN STREET) — Northbound/Southbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

SOUTH LEG (MARKET STREET)

Westbound/Eastbound

15-30 ~~0:00-0:15~~	𝍸 II	7
30-45 ~~0:15-0:30~~	𝍸 III	8
45-00 ~~0:30-0:45~~	𝍸	5
00-15 ~~0:45-1:00~~	𝍸 𝍸	10

30

Revised 12/3/07

Revised 12/3/07

NORTH

NORTH LEG (MARKET STREET)

Westbound/Eastbound

Date: 5/18 Weather: Sunny

Time: 12:15-1:15pm

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

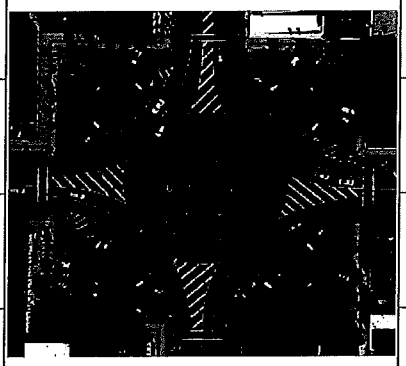
60

12:15-12:30 ~~0:00-0:15~~	
12:30-12:45 ~~0:15-0:30~~	
12:45-1:00 ~~0:30-0:45~~	
1:00-1:15 ~~0:45-1:00~~	

WEST LEG (MAIN STREET) — Southbound/Northbound

27

15-30 ~~0:00-0:15~~	III	3
30-45 ~~0:15-0:30~~	卌 I	6
45-00 ~~0:30-0:45~~	卌 卌 IIII	14
00-15 ~~0:45-1:00~~	IIII	4



EAST LEG (MAIN STREET) — Northbound/Southbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

12:15-12:30 ~~0:00-0:15~~	卌 I	6
30-45 ~~0:15-0:30~~	卌 II	7
45-1:00 ~~0:30-0:45~~	卌 卌	10
1-1:15 ~~0:45-1:00~~	卌 卌	10

Westbound/Eastbound

SOUTH LEG (MARKET STREET)

33

Revised 12/3/07

NORTH

NORTH LEG (MARKET STREET)

Westbound/Eastbound

Date: 5/18 Weather: Sunny

Time: 11:15-12:15pm

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

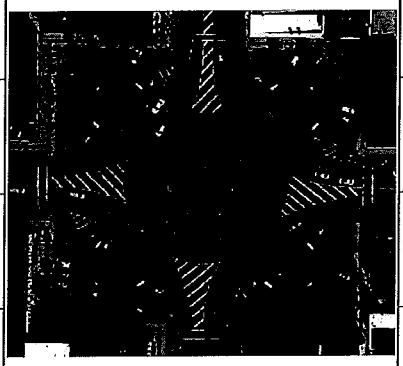
48

11:15-11:30 ~~0:00-0:15~~	
11:30-11:45 ~~0:15-0:30~~	
11:45-12:00 ~~0:30-0:45~~	
12:00-12:15 ~~0:45-1:00~~	

WEST LEG (MAIN STREET) — Southbound/Northbound

0:00-0:15	IIII	2
0:15-0:30	II	2
0:30-0:45	IIIII	6
0:45-1:00	I	1

11



EAST LEG (MAIN STREET) — Northbound/Southbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

15-30 ~~0:00-0:15~~	IIII	5
30-45 ~~0:15-0:30~~	IIII	5
45-12:00 ~~0:30-0:45~~	IIII IIII IIII I	16
12:00-15 ~~0:45-1:00~~	IIII IIII I	11

Westbound/Eastbound

SOUTH LEG (MARKET STREET)

37

Date: 5/18 Weather: Sunny

Time: 4:15 - 5:15 pm

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

39

NORTH

NORTH LEG (MARKET STREET)

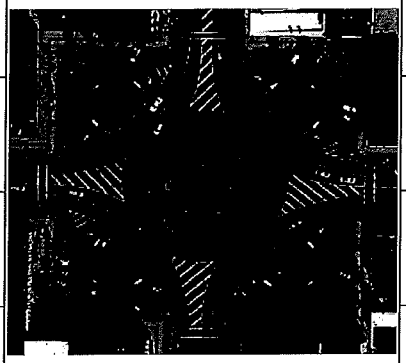
Westbound/Eastbound

4:15-4:30 ~~0:00-0:15~~	
4:30-4:45 ~~0:15-0:30~~	
4:45-5:00 ~~0:30-0:45~~	
5:00-5:15 ~~0:45-1:00~~	

WEST LEG (MAIN STREET) — Southbound/Northbound

18

15-30 ~~0:00-0:15~~	11
30-45 ~~0:15-0:30~~	3
45-00 ~~0:30-0:45~~	2
00-15 ~~0:45-1:00~~	2



EAST LEG (MAIN STREET) — Northbound/Southbound

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

15-30 ~~0:00-0:15~~	3
30-45 ~~0:15-0:30~~	11
45-00 ~~0:30-0:45~~	4
00-15 0:45-1:00	3

Westbound/Eastbound

SOUTH LEG (MARKET STREET)

21

Revised 12/3/07

Date: 5/18/16 Weather: Sunny - 65°F

Time: 5:15 - 6:15

Notes: Use one sheet per hour recorded. Pedestrian Counts must be completed on a Tuesday, Wednesday or Thursday and can not be during a Holiday week. A minimum of 4 hours of count data is required. The busiest 4 hours for pedestrian traffic is needed. The 4 hours do not need to be consecutive.

NORTH

NORTH LEG (MARKET STREET)

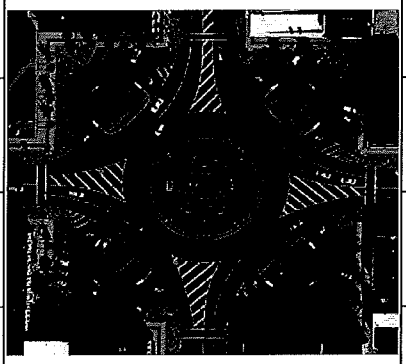
Westbound/Eastbound

5	15-30 ~~0:00-0:15~~	𝍸 𝍸 𝍸
	30-45 ~~0:15-0:30~~	𝍸
	45-60 ~~0:30-0:45~~	𝍸 𝍸
6	00-15 ~~0:45-1:00~~	𝍸 𝍸 𝍸

WEST LEG (MAIN STREET)

Southbound/Northbound

0:00-0:15		
0:15-0:30		
0:30-0:45		
0:45-1:00		



EAST LEG (MAIN STREET)

Northbound/Southbound

5	15-30 ~~0:00-0:15~~	𝍸 𝍸 𝍸
	30-45 ~~0:15-0:30~~	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸
	45-60 ~~0:30-0:45~~	𝍸 𝍸
6	00-15 ~~0:45-1:00~~	𝍸 𝍸 𝍸 𝍸 𝍸

0:00-0:15	
0:15-0:30	
0:30-0:45	
0:45-1:00	

Westbound/Eastbound

SOUTH LEG (MARKET STREET)

APPENDIX K: HCS ROUNDABOUT ANALYSIS

HCS 2010 Roundabout Report

General Information		Site Information	
Analyst	Sunny Mikkilineni	Intersection	MAIN STREET & MARKET STREET
Agency or Co.	WOOLPERT	E/W Street Name	MAIN STREET
Date Performed	1/18/2017	N/S Street Name	MARKET STREET
Analysis Year	2016	Analysis Time Period (hrs)	0.25
Time Period	PM PEAK HOUR (EXISTING)	Peak Hour Factor	0.95
Project Description	PARKING AND TRAFFIC ASSESSMENT	Jurisdiction	CITY OF TROY

Volume Adjustment and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
Lane Assignment	LT		R		LT		R		LT		R		LT		R	
Volume (V), veh/h	0	232	196	175	0	58	163	36	0	166	412	61	0	23	322	205
Percent Heavy Vehicles, %	0	1	1	1	0	2	2	2	0	1	1	1	0	1	1	1
Flow Rate (vPCE) pc/h	0	247	208	186	0	62	175	39	0	176	438	65	0	24	342	218
Right-Turn Bypass	Yielding				Yielding				Yielding				Yielding			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing	37				37				30				33			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (sec)	5.1929	5.1929	5.1929	5.1929	5.1929	5.1929	5.1929	5.1929	4.1129	5.1929	5.1929	5.1929
Follow-Up Headway (sec)	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (Ve), pc/h	455	0	186	237	0	39	614	0	65	366	0	218
Entry Volume veh/h	450	0	184	232	0	38	608	0	64	362	0	216
Circulating Flow (Vc), pc/h	428			861			479			413		
Exiting Flow (Vex), pc/h	232			351			685			404		
Capacity (cPCE), pc/h	737	737	754	478	478	570	700	700	961	748	748	796
Capacity (c), veh/h	710	710	727	466	466	556	679	679	932	722	722	768
v/c Ratio (X)	0.63	0.00	0.25	0.50	0.00	0.07	0.90	0.00	0.07	0.50	0.00	0.28

Delay and Level of Service

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	16.6	5.1	7.9	17.6	7.7	7.3	38.0	5.3	4.5	12.4	5.0	7.9
Lane LOS	C	A	A	C	A	A	E	A	A	B	A	A
95% Queue	4.6	0.0	1.0	2.7	0.0	0.2	11.3	0.0	0.2	2.8	0.0	1.2
Approach Delay, s/veh	14.1			16.2			34.8			10.7		
Approach LOS	B			C			D			B		
Intersection Delay, s/veh / LOS	19.9						C					

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HCS 2010 Roundabout Report

General Information

Analyst	Sunny Mikkilineni
Agency or Co.	WOOLPERT
Date Performed	1/18/2016
Analysis Year	2036
Time Period	PM PEAK HOUR (EXISTING)
Project Description	PARKING AND TRAFFIC ASSESSMENT

Site Information

Intersection	MAIN STREET & MARKET STREET
E/W Street Name	MAIN STREET
N/S Street Name	MARKET STREET
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.95
Jurisdiction	CITY OF TROY

Volume Adjustment and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
Lane Assignment	LT		R		LT		R		LT		R		LT		R	
Volume (V), veh/h	0	249	210	188	0	62	175	39	0	178	442	65	0	25	346	220
Percent Heavy Vehicles, %	0	1	1	1	0	2	2	2	0	1	1	1	0	1	1	1
Flow Rate (vPCE) pc/h	0	265	223	200	0	67	188	42	0	189	470	69	0	27	368	234
Right-Turn Bypass	Yielding				Yielding				Yielding				Yielding			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing	37				37				30				33			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (sec)	5.1929	5.1929	5.1929	5.1929	5.1929	5.1929	5.1929	5.1929	4.1129	5.1929	5.1929	5.1929
Follow-Up Headway (sec)	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858	3.1858

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (Ve), pc/h	488	0	200	255	0	42	659	0	69	395	0	234
Entry Volume veh/h	483	0	198	250	0	41	652	0	68	391	0	232
Circulating Flow (Vc), pc/h	462			924			515			444		
Exiting Flow (Vex), pc/h	250			377			735			435		
Capacity (cPCE), pc/h	712	712	731	449	449	542	675	675	949	725	725	775
Capacity (c), veh/h	687	687	706	440	440	531	656	656	922	701	701	750
v/c Ratio (X)	0.70	0.00	0.28	0.57	0.00	0.08	0.99	0.00	0.07	0.56	0.00	0.31

Delay and Level of Service

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	20.2	5.2	8.5	21.3	8.2	7.7	58.8	5.5	4.6	14.2	5.1	8.5
Lane LOS	C	A	A	C	A	A	F	A	A	B	A	A
95% Queue	5.8	0.0	1.1	3.5	0.0	0.3	15.4	0.0	0.2	3.5	0.0	1.3
Approach Delay, s/veh	16.8			19.4			53.7			12.1		
Approach LOS	C			C			F			B		
Intersection Delay, s/veh / LOS	27.3						D					

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HCS 2010 Roundabout Report

General Information		Site Information	
Analyst	Sunny Mikkilineni	Intersection	MAIN STREET & MARKET STREET
Agency or Co.	WOOLPERT	E/W Street Name	MAIN STREET
Date Performed	1/27/2016	N/S Street Name	MARKET STREET
Analysis Year	2016	Analysis Time Period (hrs)	0.25
Time Period	PM PEAK HOUR (PROPOSED)	Peak Hour Factor	0.95
Project Description	PARKING AND TRAFFIC ASSESSMENT	Jurisdiction	CITY OF TROY

Volume Adjustment and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	1	1	0	0	0	1	0
Lane Assignment			LT				LTR		L		TR				LTR	
Volume (V), veh/h	0	232	196	175	0	58	163	36	0	166	412	61	0	23	322	205
Percent Heavy Vehicles, %	0	1	1	1	0	2	2	2	0	1	1	1	0	1	1	1
Flow Rate (vPCE) pc/h	0	247	208	186	0	62	175	39	0	176	438	65	0	24	342	218
Right-Turn Bypass	Yielding				None				None				None			
Conflicting Lanes	1				2				1				1			
Pedestrians Crossing	37				37				30				33			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (sec)		5.1929	5.1929		4.1129		5.1929	5.1929			5.1929	
Follow-Up Headway (sec)		3.1858	3.1858		3.1858		3.1858	3.1858			3.1858	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (Ve), pc/h		455	186		276		176	503			584	
Entry Volume veh/h		450	184		271		174	498			578	
Circulating Flow (Vc), pc/h	428			861			479			413		
Exiting Flow (Vex), pc/h	297			569			724			404		
Capacity (cPCE), pc/h		737	754		618		700	700			748	
Capacity (c), veh/h		726	743		603		679	679			737	
v/c Ratio (X)		0.62	0.25		0.45		0.26	0.73			0.78	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		15.8	7.7		13.0		8.4	22.1			24.2	
Lane LOS		C	A		B		A	C			C	
95% Queue		4.4	1.0		2.3		1.0	6.4			7.8	
Approach Delay, s/veh	13.5			13.0			18.5			24.2		
Approach LOS	B			B			C			C		
Intersection Delay, s/veh / LOS	17.9						C					

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HCS 2010 Roundabout Report

General Information		Site Information	
Analyst	Sunny Mikkilineni	Intersection	MAIN STREET & MARKET STREET
Agency or Co.	WOOLPERT	E/W Street Name	MAIN STREET
Date Performed	1/27/2017	N/S Street Name	MARKET STREET
Analysis Year	2036	Analysis Time Period (hrs)	0.25
Time Period	PM PEAK HOUR (PROPOSED)	Peak Hour Factor	0.95
Project Description	PARKING AND TRAFFIC ASSESSMENT	Jurisdiction	CITY OF TROY

Volume Adjustment and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	1	1	0	0	0	1	0
Lane Assignment			LT				LTR		L		TR				LTR	
Volume (V), veh/h	0	249	210	188	0	62	175	39	0	178	442	65	0	25	346	220
Percent Heavy Vehicles, %	0	1	1	1	0	2	2	2	0	1	1	1	0	1	1	1
Flow Rate (vPCE) pc/h	0	265	223	200	0	67	188	42	0	189	470	69	0	27	368	234
Right-Turn Bypass	Yielding				None				None				None			
Conflicting Lanes	1				2				1				1			
Pedestrians Crossing	37				37				30				33			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (sec)		5.1929	5.1929		4.1129		5.1929	5.1929			5.1929	
Follow-Up Headway (sec)		3.1858	3.1858		3.1858		3.1858	3.1858			3.1858	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (Ve), pc/h		488	200		297		189	539			629	
Entry Volume veh/h		483	198		291		187	534			623	
Circulating Flow (Vc), pc/h	462			924			515			444		
Exiting Flow (Vex), pc/h	319			611			777			435		
Capacity (cPCE), pc/h		712	731		592		675	675			725	
Capacity (c), veh/h		701	721		580		656	656			714	
v/c Ratio (X)		0.69	0.27		0.50		0.29	0.81			0.87	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		19.1	8.3		14.8		9.1	29.0			33.5	
Lane LOS		C	A		B		A	D			D	
95% Queue		5.5	1.1		2.8		1.2	8.4			10.6	
Approach Delay, s/veh	16.0			14.8			23.8			33.5		
Approach LOS	C			B			C			D		
Intersection Delay, s/veh / LOS	23.0						C					

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APPENDIX L: SYNCHRO CAPACITY RESULT SUMMARY SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	37	10	13	26	24	12	570	36	40	490	24
Future Volume (veh/h)	24	37	10	13	26	24	12	570	36	40	490	24
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	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	26	40	11	14	28	26	13	620	39	43	533	26
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	79	19	72	64	51	68	2502	156	190	2268	110
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.77	0.77	0.77	1.00	1.00	1.00
Sat Flow, veh/h	443	1026	245	230	825	653	27	3259	203	180	2955	143
Grp Volume(v), veh/h	77	0	0	68	0	0	353	0	319	299	0	303
Grp Sat Flow(s),veh/h/ln	1713	0	0	1708	0	0	1830	0	1659	1608	0	1670
Q Serve(g_s), s	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.0	2.9	0.0	0.0	4.3	0.0	4.4	0.0	0.0	0.0
Prop In Lane	0.34		0.14	0.21		0.38	0.04		0.12	0.14		0.09
Lane Grp Cap(c), veh/h	193	0	0	186	0	0	1451	0	1274	1286	0	1282
V/C Ratio(X)	0.40	0.00	0.00	0.36	0.00	0.00	0.24	0.00	0.25	0.23	0.00	0.24
Avail Cap(c_a), veh/h	699	0	0	697	0	0	1451	0	1274	1286	0	1282
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.98	0.00	0.98
Uniform Delay (d), s/veh	35.6	0.0	0.0	35.4	0.0	0.0	2.7	0.0	2.7	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.0	1.7	0.0	0.0	0.4	0.0	0.5	0.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	0.0	0.0	2.7	0.0	0.0	4.2	0.0	3.8	0.3	0.0	0.3
LnGrp Delay(d),s/veh	37.5	0.0	0.0	37.1	0.0	0.0	3.1	0.0	3.1	0.4	0.0	0.4
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		77			68			672			602	
Approach Delay, s/veh		37.5			37.1			3.1			0.4	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		67.1		12.9		67.1		12.9
Change Period (Y+Rc), s		* 5.7		* 6.7		* 5.7		* 6.7
Max Green Setting (Gmax), s		* 36		* 31		* 36		* 31
Max Q Clear Time (g_c+I1), s		6.4		5.3		2.0		4.9
Green Ext Time (p_c), s		14.3		1.2		15.3		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	51	40	17	41	43	27	569	44	38	513	10
Future Volume (veh/h)	5	51	40	17	41	43	27	569	44	38	513	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	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	5	55	43	18	45	47	29	618	48	41	558	11
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	51	103	76	70	85	77	113	2252	172	172	2252	44
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	35	967	718	170	803	726	88	3084	236	166	3084	60
Grp Volume(v), veh/h	103	0	0	110	0	0	359	0	336	303	0	307
Grp Sat Flow(s),veh/h/ln	1721	0	0	1698	0	0	1755	0	1653	1626	0	1684
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.5	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.05		0.42	0.16		0.43	0.08		0.14	0.14		0.04
Lane Grp Cap(c), veh/h	230	0	0	233	0	0	1330	0	1207	1238	0	1230
V/C Ratio(X)	0.45	0.00	0.00	0.47	0.00	0.00	0.27	0.00	0.28	0.24	0.00	0.25
Avail Cap(c_a), veh/h	706	0	0	693	0	0	1330	0	1207	1238	0	1230
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.97	0.00	0.97	0.98	0.00	0.98
Uniform Delay (d), s/veh	34.0	0.0	0.0	34.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.0	2.1	0.0	0.0	0.5	0.0	0.6	0.5	0.0	0.5
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(95%),veh/ln	4.1	0.0	0.0	4.4	0.0	0.0	0.3	0.0	0.3	0.3	0.0	0.3
LnGrp Delay(d),s/veh	35.9	0.0	0.0	36.2	0.0	0.0	0.5	0.0	0.6	0.5	0.0	0.5
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		103			110			695			610	
Approach Delay, s/veh		35.9			36.2			0.5			0.5	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		64.4		15.6		64.4		15.6
Change Period (Y+Rc), s		6.0		7.1		6.0		* 7.1
Max Green Setting (Gmax), s		36.0		30.9		36.0		* 31
Max Q Clear Time (g_c+I1), s		2.0		6.5		2.0		6.8
Green Ext Time (p_c), s		15.8		1.8		15.8		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	5.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	35	33	18	32	27	18	588	17	20	507	20
Future Volume (veh/h)	14	35	33	18	32	27	18	588	17	20	507	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	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	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	15	38	36	20	35	29	20	639	18	22	551	22
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	68	74	61	80	75	52	92	2656	74	110	2574	102
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	1.00	1.00	1.00	0.80	0.80	0.80
Sat Flow, veh/h	179	835	689	275	843	590	56	3325	93	77	3223	127
Grp Volume(v), veh/h	89	0	0	84	0	0	350	0	327	306	0	289
Grp Sat Flow(s),veh/h/ln	1703	0	0	1709	0	0	1794	0	1679	1754	0	1673
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4
Cycle Q Clear(g_c), s	3.9	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	3.2	0.0	3.4
Prop In Lane	0.17		0.40	0.24		0.35	0.06		0.06	0.07		0.08
Lane Grp Cap(c), veh/h	204	0	0	207	0	0	1481	0	1341	1450	0	1336
V/C Ratio(X)	0.44	0.00	0.00	0.41	0.00	0.00	0.24	0.00	0.24	0.21	0.00	0.22
Avail Cap(c_a), veh/h	641	0	0	637	0	0	1481	0	1341	1450	0	1336
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.97	0.00	0.97	0.88	0.00	0.88
Uniform Delay (d), s/veh	35.0	0.0	0.0	34.9	0.0	0.0	0.0	0.0	0.0	1.9	0.0	2.0
Incr Delay (d2), s/veh	2.1	0.0	0.0	1.8	0.0	0.0	0.4	0.0	0.4	0.3	0.0	0.3
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(95%),veh/ln	3.6	0.0	0.0	3.4	0.0	0.0	0.3	0.0	0.3	3.1	0.0	3.0
LnGrp Delay(d),s/veh	37.1	0.0	0.0	36.7	0.0	0.0	0.4	0.0	0.4	2.2	0.0	2.3
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		89			84			677			595	
Approach Delay, s/veh		37.1			36.7			0.4			2.3	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		68.4		11.6		68.4		11.6
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		42.5		28.5		42.5		28.5
Max Q Clear Time (g_c+I1), s		2.0		5.9		5.4		5.6
Green Ext Time (p_c), s		16.2		1.4		15.6		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	5.5
HCM 2010 LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	21.3
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	655	279	694	598
Demand Flow Rate, veh/h	662	285	701	604
Vehicles Circulating, veh/h	442	889	495	427
Vehicles Exiting, veh/h	363	240	417	707
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	14.3	17.4	38.5	10.8
Approach LOS	B	C	E	B

Lane	Left	Bypass	Left	Bypass	Left	Bypass	Left	Bypass
Designated Moves	LT	R	LT	R	LT	R	LT	R
Assumed Moves	LT	R	LT	R	LT	R	LT	R
RT Channelized		Yield		Yield		Yield		Yield
Lane Util	1.000		1.000		1.000		1.000	
Critical Headway, s	5.193		5.193		5.193		5.193	
Entry Flow, veh/h	470	192	245	40	634	67	379	225
Cap Entry Lane, veh/h	726	745	464	557	689	889	737	786
Entry HV Adj Factor	0.989	0.990	0.981	0.980	0.990	0.990	0.991	0.990
Flow Entry, veh/h	465	190	240	39	628	66	375	223
Cap Entry, veh/h	718	737	456	546	682	880	730	778
V/C Ratio	0.647	0.258	0.527	0.071	0.920	0.075	0.514	0.287
Control Delay, s/veh	17.0	7.9	19.0	7.5	42.1	4.8	12.6	7.9
LOS	C	A	C	A	E	A	B	A
95th %tile Queue, veh	5	1	3	0	12	0	3	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	45	18	25	38	49	21	639	24	30	496	32
Future Volume (veh/h)	68	45	18	25	38	49	21	639	24	30	496	32
Number	1	6	16	5	2	12	3	8	18	7	4	14
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	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	74	49	20	27	41	53	23	695	26	33	539	35
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	232	95	208	66	85	637	2472	92	555	2398	155
Arrive On Green	0.05	0.18	0.18	0.09	0.09	0.09	0.71	0.71	0.71	0.71	0.71	0.71
Sat Flow, veh/h	1774	1258	514	1326	739	955	835	3479	130	729	3375	219
Grp Volume(v), veh/h	74	0	69	27	0	94	23	353	368	33	282	292
Grp Sat Flow(s),veh/h/ln	1774	0	1772	1326	0	1694	835	1770	1840	729	1770	1824
Q Serve(g_s), s	2.9	0.0	2.6	1.5	0.0	4.3	0.8	5.8	5.8	1.4	4.4	4.4
Cycle Q Clear(g_c), s	2.9	0.0	2.6	1.5	0.0	4.3	5.2	5.8	5.8	7.2	4.4	4.4
Prop In Lane	1.00		0.29	1.00		0.56	1.00		0.07	1.00		0.12
Lane Grp Cap(c), veh/h	226	0	327	208	0	151	637	1257	1307	555	1257	1296
V/C Ratio(X)	0.33	0.00	0.21	0.13	0.00	0.62	0.04	0.28	0.28	0.06	0.22	0.23
Avail Cap(c_a), veh/h	278	0	793	518	0	546	637	1257	1307	555	1257	1296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.4	0.0	27.7	33.9	0.0	35.1	4.9	4.2	4.2	5.5	4.0	4.0
Incr Delay (d2), s/veh	0.8	0.0	0.3	0.3	0.0	4.2	0.1	0.5	0.5	0.2	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	0.0	2.4	1.0	0.0	3.9	0.4	5.3	5.5	0.6	4.1	4.2
LnGrp Delay(d),s/veh	30.2	0.0	28.0	34.2	0.0	39.3	5.0	4.7	4.7	5.7	4.4	4.4
LnGrp LOS	C		C	C		D	A	A	A	A	A	A
Approach Vol, veh/h		143			121			744			607	
Approach Delay, s/veh		29.2			38.2			4.7			4.5	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	7.6	11.3		61.0		19.0		61.0
Change Period (Y+Rc), s	3.6	* 4.2		* 4.2		* 4.2		* 4.2
Max Green Setting (Gmax), s	6.4	* 26		* 36		* 36		* 36
Max Q Clear Time (g_c+I1), s	4.9	6.3		9.2		4.6		7.8
Green Ext Time (p_c), s	0.0	0.9		10.4		1.1		10.6

Intersection Summary	
HCM 2010 Ctrl Delay	9.3
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	222	34	9	222	3	14	10	7	1	13	21
Future Volume (veh/h)	13	222	34	9	222	3	14	10	7	1	13	21
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	14	241	37	10	241	3	15	11	8	1	14	23
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	578	799	123	548	929	12	282	203	129	49	229	356
Arrive On Green	0.51	0.51	0.51	0.51	0.51	0.51	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1131	1578	242	1097	1836	23	622	580	370	8	656	1017
Grp Volume(v), veh/h	14	0	278	10	0	244	34	0	0	38	0	0
Grp Sat Flow(s),veh/h/ln	1131	0	1820	1097	0	1859	1571	0	0	1681	0	0
Q Serve(g_s), s	0.6	0.0	7.1	0.4	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.5	0.0	7.1	7.6	0.0	6.0	1.0	0.0	0.0	1.2	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.01	0.44		0.24	0.03		0.61
Lane Grp Cap(c), veh/h	578	0	921	548	0	941	615	0	0	634	0	0
V/C Ratio(X)	0.02	0.00	0.30	0.02	0.00	0.26	0.06	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	578	0	921	548	0	941	615	0	0	634	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.00	0.99	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.1	0.0	11.5	13.7	0.0	11.2	17.2	0.0	0.0	17.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.8	0.1	0.0	0.7	0.2	0.0	0.0	0.2	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(95%),veh/ln	0.3	0.0	6.8	0.3	0.0	5.8	0.9	0.0	0.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	13.2	0.0	12.3	13.8	0.0	11.9	17.4	0.0	0.0	17.5	0.0	0.0
LnGrp LOS	B		B	B		B	B			B		
Approach Vol, veh/h		292			254			34			38	
Approach Delay, s/veh		12.4			12.0			17.4			17.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.0		34.0		46.0		34.0
Change Period (Y+Rc), s		5.5		6.0		5.5		6.0
Max Green Setting (Gmax), s		40.5		28.0		40.5		28.0
Max Q Clear Time (g_c+I1), s		9.1		3.2		9.6		3.0
Green Ext Time (p_c), s		5.4		0.5		5.3		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	525	17	8	492	11	16	11	23	8	19	17
Future Volume (veh/h)	14	525	17	8	492	11	16	11	23	8	19	17
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	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	15	571	18	9	535	12	17	12	25	9	21	18
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	1807	56	55	1845	41	189	141	234	121	267	200
Arrive On Green	1.00	1.00	1.00	0.54	0.54	0.54	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	33	3363	105	16	3432	76	407	444	733	211	836	628
Grp Volume(v), veh/h	315	0	289	291	0	265	54	0	0	48	0	0
Grp Sat Flow(s),veh/h/ln	1824	0	1677	1843	0	1682	1584	0	0	1675	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.8	0.0	6.9	1.8	0.0	0.0	1.5	0.0	0.0
Prop In Lane	0.05		0.06	0.03		0.05	0.31		0.46	0.19		0.37
Lane Grp Cap(c), veh/h	1027	0	901	1037	0	904	564	0	0	587	0	0
V/C Ratio(X)	0.31	0.00	0.32	0.28	0.00	0.29	0.10	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1027	0	901	1037	0	904	564	0	0	587	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)	0.95	0.00	0.95	0.89	0.00	0.89	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	10.1	0.0	10.2	19.2	0.0	0.0	19.1	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.9	0.6	0.0	0.7	0.3	0.0	0.0	0.3	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(95%),veh/ln	0.4	0.0	0.4	6.6	0.0	6.0	1.6	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	0.7	0.0	0.9	10.7	0.0	10.9	19.5	0.0	0.0	19.4	0.0	0.0
LnGrp LOS	A		A	B		B	B			B		
Approach Vol, veh/h		604			556			54			48	
Approach Delay, s/veh		0.8			10.8			19.5			19.4	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		31.0		49.0		31.0		49.0
Change Period (Y+Rc), s		5.5		6.0		5.5		6.0
Max Green Setting (Gmax), s		25.5		43.0		25.5		43.0
Max Q Clear Time (g_c+I1), s		3.8		2.0		3.5		8.9
Green Ext Time (p_c), s		0.7		13.5		0.7		12.7

Intersection Summary	
HCM 2010 Ctrl Delay	6.7
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	526	28	15	511	33	28
Future Volume (veh/h)	526	28	15	511	33	28
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1900	1863	1863	1900
Adj Flow Rate, veh/h	572	30	16	555	36	30
Adj No. of Lanes	2	0	0	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1668	87	65	1652	326	272
Arrive On Green	0.49	0.49	0.98	0.98	0.36	0.36
Sat Flow, veh/h	3515	179	37	3474	905	754
Grp Volume(v), veh/h	295	307	304	267	67	0
Grp Sat Flow(s),veh/h/ln	1770	1831	1815	1610	1684	0
Q Serve(g_s), s	8.2	8.2	0.0	0.5	2.1	0.0
Cycle Q Clear(g_c), s	8.2	8.2	0.5	0.5	2.1	0.0
Prop In Lane		0.10	0.05		0.54	0.45
Lane Grp Cap(c), veh/h	863	893	932	785	606	0
V/C Ratio(X)	0.34	0.34	0.33	0.34	0.11	0.00
Avail Cap(c_a), veh/h	863	893	932	785	606	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	1.00	0.00
Uniform Delay (d), s/veh	12.6	12.6	0.5	0.5	17.1	0.0
Incr Delay (d2), s/veh	1.1	1.1	0.9	1.1	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.7	7.9	0.7	0.7	1.9	0.0
LnGrp Delay(d),s/veh	13.7	13.7	1.4	1.7	17.4	0.0
LnGrp LOS	B	B	A	A	B	
Approach Vol, veh/h	602			571	67	
Approach Delay, s/veh	13.7			1.5	17.4	
Approach LOS	B			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		45.0				45.0		35.0
Change Period (Y+Rc), s		6.0				6.0		6.2
Max Green Setting (Gmax), s		39.0				39.0		28.8
Max Q Clear Time (g_c+I1), s		10.2				2.5		4.1
Green Ext Time (p_c), s		12.5				13.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	525	15	18	534	9	9	14	31	6	10	26
Future Volume (veh/h)	17	525	15	18	534	9	9	14	31	6	10	26
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	18	571	16	20	580	10	10	15	34	7	11	28
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	68	1635	45	72	1647	28	117	179	331	107	169	349
Arrive On Green	0.98	0.98	0.98	0.49	0.49	0.49	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	42	3354	93	49	3379	57	184	507	939	157	481	991
Grp Volume(v), veh/h	315	0	290	316	0	294	59	0	0	46	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1679	1801	0	1685	1630	0	0	1628	0	0
Q Serve(g_s), s	0.0	0.0	0.5	0.0	0.0	8.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.5	8.4	0.0	8.7	1.9	0.0	0.0	1.5	0.0	0.0
Prop In Lane	0.06		0.06	0.06		0.03	0.17		0.58	0.15		0.61
Lane Grp Cap(c), veh/h	930	0	818	926	0	821	627	0	0	626	0	0
V/C Ratio(X)	0.34	0.00	0.35	0.34	0.00	0.36	0.09	0.00	0.00	0.07	0.00	0.00
Avail Cap(c_a), veh/h	930	0	818	926	0	821	627	0	0	626	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)	0.98	0.00	0.98	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.5	0.0	0.5	12.7	0.0	12.7	17.4	0.0	0.0	17.2	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	1.2	1.0	0.0	1.2	0.3	0.0	0.0	0.2	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(95%),veh/ln	0.8	0.0	0.8	8.1	0.0	7.7	1.7	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	1.5	0.0	1.7	13.7	0.0	13.9	17.7	0.0	0.0	17.5	0.0	0.0
LnGrp LOS	A		A	B		B	B			B		
Approach Vol, veh/h		605			610			59			46	
Approach Delay, s/veh		1.6			13.8			17.7			17.5	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		45.0		35.0		45.0		35.0
Change Period (Y+Rc), s		6.0		* 6.8		6.0		* 6.8
Max Green Setting (Gmax), s		39.0		* 28		39.0		* 28
Max Q Clear Time (g_c+I1), s		2.5		3.5		10.7		3.9
Green Ext Time (p_c), s		14.6		0.8		13.0		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	522	20	12	535	29	28	53	1	20	54	186
Future Volume (veh/h)	193	522	20	12	535	29	28	53	1	20	54	186
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	210	567	22	13	582	32	30	58	1	22	59	202
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	580	2117	82	456	1516	83	178	412	7	358	84	286
Arrive On Green	0.09	0.61	0.61	0.89	0.89	0.89	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1774	3474	135	824	3412	187	1114	1826	31	1338	370	1268
Grp Volume(v), veh/h	210	289	300	13	302	312	30	0	59	22	0	261
Grp Sat Flow(s),veh/h/ln	1774	1770	1839	824	1770	1830	1114	0	1857	1338	0	1639
Q Serve(g_s), s	4.8	6.1	6.1	0.1	2.3	2.3	2.0	0.0	2.0	1.1	0.0	11.7
Cycle Q Clear(g_c), s	4.8	6.1	6.1	0.1	2.3	2.3	13.8	0.0	2.0	3.1	0.0	11.7
Prop In Lane	1.00		0.07	1.00		0.10	1.00		0.02	1.00		0.77
Lane Grp Cap(c), veh/h	580	1078	1121	456	786	813	178	0	419	358	0	370
V/C Ratio(X)	0.36	0.27	0.27	0.03	0.38	0.38	0.17	0.00	0.14	0.06	0.00	0.71
Avail Cap(c_a), veh/h	708	1078	1121	456	786	813	304	0	629	506	0	551
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	1.00	1.00	0.92	0.92	0.92	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.1	7.3	7.3	2.5	2.6	2.6	34.9	0.0	24.8	26.0	0.0	28.5
Incr Delay (d2), s/veh	0.4	0.6	0.6	0.1	1.3	1.3	0.6	0.0	0.2	0.1	0.0	3.5
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(95%),veh/ln	4.2	5.7	5.9	0.1	2.3	2.4	1.2	0.0	1.9	0.7	0.0	9.6
LnGrp Delay(d),s/veh	9.4	7.9	7.9	2.6	3.9	3.9	35.5	0.0	25.0	26.1	0.0	32.0
LnGrp LOS	A	A	A	A	A	A	D		C	C		C
Approach Vol, veh/h		799			627			89			283	
Approach Delay, s/veh		8.3			3.9			28.5			31.6	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		54.9		25.1	13.2	41.8		25.1
Change Period (Y+Rc), s		* 6.2		7.0	* 6.2	* 6.2		* 7
Max Green Setting (Gmax), s		* 40		26.9	* 13	* 21		* 27
Max Q Clear Time (g_c+I1), s		8.1		13.7	6.8	4.3		15.8
Green Ext Time (p_c), s		13.6		2.5	0.3	9.4		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	40	11	14	28	26	13	612	39	43	526	26
Future Volume (veh/h)	26	40	11	14	28	26	13	612	39	43	526	26
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	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	28	43	12	15	30	28	14	665	42	47	572	28
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	84	20	73	68	54	68	2484	155	191	2235	109
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.76	0.76	0.76	1.00	1.00	1.00
Sat Flow, veh/h	441	1025	248	227	826	655	27	3256	203	182	2930	142
Grp Volume(v), veh/h	83	0	0	73	0	0	378	0	343	318	0	329
Grp Sat Flow(s),veh/h/ln	1713	0	0	1708	0	0	1827	0	1659	1585	0	1670
Q Serve(g_s), s	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.0	3.2	0.0	0.0	4.8	0.0	4.9	0.0	0.0	0.0
Prop In Lane	0.34		0.14	0.21		0.38	0.04		0.12	0.15		0.09
Lane Grp Cap(c), veh/h	201	0	0	195	0	0	1441	0	1266	1261	0	1274
V/C Ratio(X)	0.41	0.00	0.00	0.38	0.00	0.00	0.26	0.00	0.27	0.25	0.00	0.26
Avail Cap(c_a), veh/h	678	0	0	676	0	0	1441	0	1266	1261	0	1274
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.97	0.00	0.97
Uniform Delay (d), s/veh	35.3	0.0	0.0	35.2	0.0	0.0	2.8	0.0	2.8	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.0	1.7	0.0	0.0	0.4	0.0	0.5	0.5	0.0	0.5
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(95%),veh/ln	3.4	0.0	0.0	2.9	0.0	0.0	4.7	0.0	4.3	0.3	0.0	0.3
LnGrp Delay(d),s/veh	37.2	0.0	0.0	36.9	0.0	0.0	3.3	0.0	3.4	0.5	0.0	0.5
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		83			73			721			647	
Approach Delay, s/veh		37.2			36.9			3.3			0.5	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		66.7		13.3		66.7		13.3
Change Period (Y+Rc), s		* 5.7		* 6.7		* 5.7		* 6.7
Max Green Setting (Gmax), s		* 37		* 30		* 37		* 30
Max Q Clear Time (g_c+I1), s		6.9		5.5		2.0		5.2
Green Ext Time (p_c), s		15.7		1.2		17.0		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	55	43	18	44	46	29	611	47	41	551	11
Future Volume (veh/h)	5	55	43	18	44	46	29	611	47	41	551	11
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	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	5	60	47	20	48	50	32	664	51	45	599	12
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	51	108	81	73	90	81	115	2226	168	173	2214	44
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	32	967	722	178	801	721	91	3074	233	169	3058	61
Grp Volume(v), veh/h	112	0	0	118	0	0	384	0	363	323	0	333
Grp Sat Flow(s),veh/h/ln	1721	0	0	1700	0	0	1744	0	1654	1603	0	1684
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.9	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.04		0.42	0.17		0.42	0.08		0.14	0.14		0.04
Lane Grp Cap(c), veh/h	240	0	0	243	0	0	1312	0	1198	1212	0	1220
V/C Ratio(X)	0.47	0.00	0.00	0.49	0.00	0.00	0.29	0.00	0.30	0.27	0.00	0.27
Avail Cap(c_a), veh/h	686	0	0	673	0	0	1312	0	1198	1212	0	1220
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.97	0.00	0.97	0.98	0.00	0.98
Uniform Delay (d), s/veh	33.7	0.0	0.0	33.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.0	2.1	0.0	0.0	0.6	0.0	0.6	0.5	0.0	0.5
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(95%),veh/ln	4.4	0.0	0.0	4.7	0.0	0.0	0.4	0.0	0.4	0.3	0.0	0.3
LnGrp Delay(d),s/veh	35.7	0.0	0.0	35.9	0.0	0.0	0.6	0.0	0.6	0.5	0.0	0.5
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		112			118			747			656	
Approach Delay, s/veh		35.7			35.9			0.6			0.5	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		63.9		16.1		63.9		16.1
Change Period (Y+Rc), s		6.0		7.1		6.0		* 7.1
Max Green Setting (Gmax), s		37.0		29.9		37.0		* 30
Max Q Clear Time (g_c+I1), s		2.0		6.9		2.0		7.1
Green Ext Time (p_c), s		17.5		1.9		17.5		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	5.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	38	35	19	34	29	19	631	18	21	544	21
Future Volume (veh/h)	15	38	35	19	34	29	19	631	18	21	544	21
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	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	16	41	38	21	37	32	21	686	20	23	591	23
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	69	79	64	81	78	57	90	2637	76	107	2561	99
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	1.00	1.00	1.00	0.79	0.79	0.79
Sat Flow, veh/h	178	844	682	268	833	607	54	3321	96	74	3225	124
Grp Volume(v), veh/h	95	0	0	90	0	0	376	0	351	327	0	310
Grp Sat Flow(s),veh/h/ln	1705	0	0	1708	0	0	1792	0	1678	1750	0	1673
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7
Cycle Q Clear(g_c), s	4.1	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	3.5	0.0	3.7
Prop In Lane	0.17		0.40	0.23		0.36	0.06		0.06	0.07		0.07
Lane Grp Cap(c), veh/h	212	0	0	215	0	0	1471	0	1332	1438	0	1328
V/C Ratio(X)	0.45	0.00	0.00	0.42	0.00	0.00	0.26	0.00	0.26	0.23	0.00	0.23
Avail Cap(c_a), veh/h	642	0	0	637	0	0	1471	0	1332	1438	0	1328
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.96	0.00	0.96	0.86	0.00	0.86
Uniform Delay (d), s/veh	34.8	0.0	0.0	34.6	0.0	0.0	0.0	0.0	0.0	2.1	0.0	2.1
Incr Delay (d2), s/veh	2.1	0.0	0.0	1.8	0.0	0.0	0.4	0.0	0.5	0.3	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	0.0	0.0	3.6	0.0	0.0	0.3	0.0	0.3	3.3	0.0	3.3
LnGrp Delay(d),s/veh	36.9	0.0	0.0	36.5	0.0	0.0	0.4	0.0	0.5	2.4	0.0	2.4
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		95			90			727			637	
Approach Delay, s/veh		36.9			36.5			0.4			2.4	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		68.0		12.0		68.0		12.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		42.5		28.5		42.5		28.5
Max Q Clear Time (g_c+I1), s		2.0		6.1		5.7		5.8
Green Ext Time (p_c), s		17.8		1.5		17.1		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	29.8
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	703	299	744	642
Demand Flow Rate, veh/h	710	305	752	648
Vehicles Circulating, veh/h	475	954	531	457
Vehicles Exiting, veh/h	389	257	448	759
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	17.2	21.2	60.4	12.2
Approach LOS	C	C	F	B

Lane	Left	Bypass	Left	Bypass	Left	Bypass	Left	Bypass
Designated Moves	LT	R	LT	R	LT	R	LT	R
Assumed Moves	LT	R	LT	R	LT	R	LT	R
RT Channelized		Yield		Yield		Yield		Yield
Lane Util	1.000		1.000		1.000		1.000	
Critical Headway, s	5.193		5.193		5.193		5.193	
Entry Flow, veh/h	504	206	262	43	680	72	407	241
Cap Entry Lane, veh/h	703	722	435	529	664	874	715	766
Entry HV Adj Factor	0.990	0.990	0.982	0.980	0.990	0.990	0.991	0.990
Flow Entry, veh/h	499	204	257	42	673	71	403	239
Cap Entry, veh/h	695	715	427	519	658	865	709	758
V/C Ratio	0.717	0.285	0.602	0.081	1.023	0.082	0.569	0.315
Control Delay, s/veh	20.8	8.5	23.4	8.0	66.2	4.9	14.4	8.5
LOS	C	A	C	A	F	A	B	A
95th %tile Queue, veh	6	1	4	0	17	0	4	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	48	19	27	41	53	23	686	26	32	532	34
Future Volume (veh/h)	73	48	19	27	41	53	23	686	26	32	532	34
Number	1	6	16	5	2	12	3	8	18	7	4	14
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	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	79	52	21	29	45	58	25	746	28	35	578	37
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	244	99	216	71	91	605	2442	92	520	2371	152
Arrive On Green	0.05	0.19	0.19	0.10	0.10	0.10	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	1774	1263	510	1322	740	954	804	3479	131	694	3378	216
Grp Volume(v), veh/h	79	0	73	29	0	103	25	379	395	35	302	313
Grp Sat Flow(s),veh/h/ln	1774	0	1773	1322	0	1694	804	1770	1840	694	1770	1825
Q Serve(g_s), s	3.1	0.0	2.8	1.6	0.0	4.7	0.9	6.5	6.5	1.6	4.9	4.9
Cycle Q Clear(g_c), s	3.1	0.0	2.8	1.6	0.0	4.7	5.9	6.5	6.5	8.1	4.9	4.9
Prop In Lane	1.00		0.29	1.00		0.56	1.00		0.07	1.00		0.12
Lane Grp Cap(c), veh/h	231	0	342	216	0	162	605	1242	1291	520	1242	1281
V/C Ratio(X)	0.34	0.00	0.21	0.13	0.00	0.64	0.04	0.31	0.31	0.07	0.24	0.24
Avail Cap(c_a), veh/h	279	0	793	516	0	546	605	1242	1291	520	1242	1281
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.9	0.0	27.2	33.5	0.0	34.8	5.3	4.5	4.5	6.1	4.3	4.3
Incr Delay (d2), s/veh	0.9	0.0	0.3	0.3	0.0	4.1	0.1	0.6	0.6	0.2	0.5	0.5
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(95%),veh/ln	2.8	0.0	2.5	1.1	0.0	4.3	0.4	6.1	6.3	0.6	4.5	4.7
LnGrp Delay(d),s/veh	29.8	0.0	27.5	33.7	0.0	39.0	5.5	5.1	5.1	6.3	4.8	4.7
LnGrp LOS	C		C	C		D	A	A	A	A	A	A
Approach Vol, veh/h		152			132			799			650	
Approach Delay, s/veh		28.7			37.8			5.1			4.8	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	7.8	11.8		60.3		19.7		60.3
Change Period (Y+Rc), s	3.6	* 4.2		* 4.2		* 4.2		* 4.2
Max Green Setting (Gmax), s	6.4	* 26		* 36		* 36		* 36
Max Q Clear Time (g_c+I1), s	5.1	6.7		10.1		4.8		8.5
Green Ext Time (p_c), s	0.0	1.0		11.2		1.2		11.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	238	36	10	238	3	15	11	8	1	14	23
Future Volume (veh/h)	14	238	36	10	238	3	15	11	8	1	14	23
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	15	259	39	11	259	3	16	12	9	1	15	25
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	579	821	124	547	953	11	269	197	129	48	219	346
Arrive On Green	0.52	0.52	0.52	0.52	0.52	0.52	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1113	1582	238	1077	1838	21	605	585	383	7	649	1024
Grp Volume(v), veh/h	15	0	298	11	0	262	37	0	0	41	0	0
Grp Sat Flow(s),veh/h/ln	1113	0	1821	1077	0	1859	1573	0	0	1680	0	0
Q Serve(g_s), s	0.6	0.0	7.5	0.5	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.9	0.0	7.5	8.0	0.0	6.3	1.1	0.0	0.0	1.3	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.01	0.43		0.24	0.02		0.61
Lane Grp Cap(c), veh/h	579	0	944	547	0	964	595	0	0	613	0	0
V/C Ratio(X)	0.03	0.00	0.32	0.02	0.00	0.27	0.06	0.00	0.00	0.07	0.00	0.00
Avail Cap(c_a), veh/h	579	0	944	547	0	964	595	0	0	613	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.00	0.98	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.7	0.0	11.1	13.4	0.0	10.8	17.9	0.0	0.0	18.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.9	0.1	0.0	0.7	0.2	0.0	0.0	0.2	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(95%),veh/ln	0.4	0.0	7.1	0.3	0.0	6.1	1.1	0.0	0.0	1.2	0.0	0.0
LnGrp Delay(d),s/veh	12.8	0.0	11.9	13.4	0.0	11.5	18.1	0.0	0.0	18.2	0.0	0.0
LnGrp LOS	B		B	B		B	B			B		
Approach Vol, veh/h		313			273			37			41	
Approach Delay, s/veh		12.0			11.6			18.1			18.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		47.0		33.0		47.0		33.0
Change Period (Y+Rc), s		5.5		6.0		5.5		6.0
Max Green Setting (Gmax), s		41.5		27.0		41.5		27.0
Max Q Clear Time (g_c+I1), s		9.5		3.3		10.0		3.1
Green Ext Time (p_c), s		5.9		0.5		5.8		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	564	18	9	528	12	17	12	25	9	20	18
Future Volume (veh/h)	15	564	18	9	528	12	17	12	25	9	20	18
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	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	16	613	20	10	574	13	18	13	27	10	22	20
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	1804	58	56	1842	41	186	143	235	123	258	205
Arrive On Green	1.00	1.00	1.00	0.54	0.54	0.54	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	33	3357	108	17	3426	77	399	447	738	218	809	642
Grp Volume(v), veh/h	339	0	310	312	0	285	58	0	0	52	0	0
Grp Sat Flow(s),veh/h/ln	1822	0	1676	1839	0	1682	1585	0	0	1669	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	7.4	0.0	7.5	1.9	0.0	0.0	1.7	0.0	0.0
Prop In Lane	0.05		0.06	0.03		0.05	0.31		0.47	0.19		0.38
Lane Grp Cap(c), veh/h	1026	0	901	1035	0	904	564	0	0	586	0	0
V/C Ratio(X)	0.33	0.00	0.34	0.30	0.00	0.32	0.10	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	1026	0	901	1035	0	904	564	0	0	586	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)	0.93	0.00	0.93	0.87	0.00	0.87	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	10.3	0.0	10.3	19.2	0.0	0.0	19.1	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	1.0	0.7	0.0	0.8	0.4	0.0	0.0	0.3	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(95%),veh/ln	0.4	0.0	0.4	7.1	0.0	6.6	1.7	0.0	0.0	1.5	0.0	0.0
LnGrp Delay(d),s/veh	0.8	0.0	1.0	10.9	0.0	11.1	19.6	0.0	0.0	19.4	0.0	0.0
LnGrp LOS	A		A	B		B	B			B		
Approach Vol, veh/h		649			597			58			52	
Approach Delay, s/veh		0.9			11.0			19.6			19.4	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		31.0		49.0		31.0		49.0
Change Period (Y+Rc), s		5.5		6.0		5.5		6.0
Max Green Setting (Gmax), s		25.5		43.0		25.5		43.0
Max Q Clear Time (g_c+I1), s		3.9		2.0		3.7		9.5
Green Ext Time (p_c), s		0.7		15.0		0.7		13.9

Intersection Summary	
HCM 2010 Ctrl Delay	6.9
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	565	30	16	549	35	30
Future Volume (veh/h)	565	30	16	549	35	30
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1900	1863	1863	1900
Adj Flow Rate, veh/h	614	33	17	597	38	33
Adj No. of Lanes	2	0	0	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1623	87	65	1608	331	287
Arrive On Green	0.47	0.47	0.95	0.95	0.37	0.37
Sat Flow, veh/h	3510	183	37	3470	888	771
Grp Volume(v), veh/h	318	329	326	288	72	0
Grp Sat Flow(s),veh/h/ln	1770	1830	1812	1610	1682	0
Q Serve(g_s), s	9.2	9.2	0.0	1.1	2.2	0.0
Cycle Q Clear(g_c), s	9.2	9.2	1.1	1.1	2.2	0.0
Prop In Lane		0.10	0.05		0.53	0.46
Lane Grp Cap(c), veh/h	841	869	908	765	627	0
V/C Ratio(X)	0.38	0.38	0.36	0.38	0.11	0.00
Avail Cap(c_a), veh/h	841	869	908	765	627	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.95	0.95	1.00	0.00
Uniform Delay (d), s/veh	13.4	13.4	1.1	1.1	16.5	0.0
Incr Delay (d2), s/veh	1.3	1.3	1.1	1.3	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.3	8.5	1.1	1.1	2.0	0.0
LnGrp Delay(d),s/veh	14.7	14.7	2.1	2.4	16.8	0.0
LnGrp LOS	B	B	A	A	B	
Approach Vol, veh/h	647			614	72	
Approach Delay, s/veh	14.7			2.3	16.8	
Approach LOS	B			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		44.0				44.0		36.0
Change Period (Y+Rc), s		6.0				6.0		6.2
Max Green Setting (Gmax), s		38.0				38.0		29.8
Max Q Clear Time (g_c+I1), s		11.2				3.1		4.2
Green Ext Time (p_c), s		13.1				14.9		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	564	16	19	573	10	10	15	33	6	11	28
Future Volume (veh/h)	18	564	16	19	573	10	10	15	33	6	11	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	613	17	21	623	11	11	16	36	7	12	30
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	70	1630	45	71	1646	29	120	178	328	102	173	352
Arrive On Green	0.98	0.98	0.98	0.49	0.49	0.49	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	45	3344	91	48	3376	59	192	506	930	143	490	999
Grp Volume(v), veh/h	337	0	313	339	0	316	63	0	0	49	0	0
Grp Sat Flow(s),veh/h/ln	1802	0	1679	1798	0	1685	1628	0	0	1632	0	0
Q Serve(g_s), s	0.0	0.0	0.6	0.0	0.0	9.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	0.6	9.1	0.0	9.5	2.0	0.0	0.0	1.6	0.0	0.0
Prop In Lane	0.06		0.05	0.06		0.03	0.17		0.57	0.14		0.61
Lane Grp Cap(c), veh/h	926	0	819	924	0	821	627	0	0	627	0	0
V/C Ratio(X)	0.36	0.00	0.38	0.37	0.00	0.38	0.10	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	926	0	819	924	0	821	627	0	0	627	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)	0.98	0.00	0.98	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.5	0.0	0.5	12.8	0.0	12.9	17.4	0.0	0.0	17.3	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	1.3	1.1	0.0	1.4	0.3	0.0	0.0	0.2	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(95%),veh/ln	0.8	0.0	0.9	8.5	0.0	8.3	1.8	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	1.6	0.0	1.8	14.0	0.0	14.3	17.7	0.0	0.0	17.5	0.0	0.0
LnGrp LOS	A		A	B		B	B			B		
Approach Vol, veh/h		650			655			63			49	
Approach Delay, s/veh		1.7			14.1			17.7			17.5	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		45.0		35.0		45.0		35.0
Change Period (Y+Rc), s		6.0		* 6.8		6.0		* 6.8
Max Green Setting (Gmax), s		39.0		* 28		39.0		* 28
Max Q Clear Time (g_c+I1), s		2.6		3.6		11.5		4.0
Green Ext Time (p_c), s		16.0		0.8		14.0		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	8.7
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	560	21	13	574	31	30	57	1	21	58	200
Future Volume (veh/h)	207	560	21	13	574	31	30	57	1	21	58	200
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	225	609	23	14	624	34	33	62	1	23	63	217
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	551	2071	78	426	1448	79	180	438	7	374	88	304
Arrive On Green	0.09	0.60	0.60	0.85	0.85	0.85	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	3478	131	792	3414	186	1095	1828	29	1334	369	1270
Grp Volume(v), veh/h	225	310	322	14	323	335	33	0	63	23	0	280
Grp Sat Flow(s),veh/h/ln	1774	1770	1840	792	1770	1830	1095	0	1858	1334	0	1639
Q Serve(g_s), s	5.3	6.9	6.9	0.2	3.5	3.5	2.3	0.0	2.1	1.1	0.0	12.5
Cycle Q Clear(g_c), s	5.3	6.9	6.9	0.2	3.5	3.5	14.8	0.0	2.1	3.2	0.0	12.5
Prop In Lane	1.00		0.07	1.00		0.10	1.00		0.02	1.00		0.77
Lane Grp Cap(c), veh/h	551	1054	1096	426	750	776	180	0	445	374	0	392
V/C Ratio(X)	0.41	0.29	0.29	0.03	0.43	0.43	0.18	0.00	0.14	0.06	0.00	0.71
Avail Cap(c_a), veh/h	645	1054	1096	426	750	776	289	0	629	503	0	551
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	1.00	1.00	0.90	0.90	0.90	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.8	7.9	7.9	3.5	3.8	3.8	34.7	0.0	24.0	25.2	0.0	27.9
Incr Delay (d2), s/veh	0.5	0.7	0.7	0.1	1.6	1.6	0.7	0.0	0.2	0.1	0.0	3.6
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(95%),veh/ln	4.6	6.4	6.7	0.1	3.5	3.6	1.3	0.0	2.0	0.8	0.0	10.1
LnGrp Delay(d),s/veh	10.3	8.6	8.6	3.6	5.4	5.3	35.4	0.0	24.2	25.3	0.0	31.5
LnGrp LOS	B	A	A	A	A	A	D		C	C		C
Approach Vol, veh/h		857			672			96			303	
Approach Delay, s/veh		9.1			5.3			28.0			31.0	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		53.8		26.2	13.7	40.1		26.2
Change Period (Y+Rc), s		* 6.2		7.0	* 6.2	* 6.2		* 7
Max Green Setting (Gmax), s		* 40		26.9	* 12	* 22		* 27
Max Q Clear Time (g_c+I1), s		8.9		14.5	7.3	5.5		16.8
Green Ext Time (p_c), s		14.6		2.6	0.3	10.0		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	37	10	13	26	24	12	570	36	40	490	24
Future Volume (veh/h)	24	37	10	13	26	24	12	570	36	40	490	24
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	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	26	40	11	14	28	26	13	620	39	43	533	26
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	79	19	72	63	50	741	1333	84	584	1353	66
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.77	0.77	0.77	1.00	1.00	1.00
Sat Flow, veh/h	445	1024	245	231	825	654	847	1734	109	772	1762	86
Grp Volume(v), veh/h	77	0	0	68	0	0	13	0	659	43	0	559
Grp Sat Flow(s),veh/h/ln	1714	0	0	1709	0	0	847	0	1843	772	0	1848
Q Serve(g_s), s	0.4	0.0	0.0	0.0	0.0	0.0	0.3	0.0	10.3	0.8	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.0	2.9	0.0	0.0	0.3	0.0	10.3	11.1	0.0	0.0
Prop In Lane	0.34		0.14	0.21		0.38	1.00		0.06	1.00		0.05
Lane Grp Cap(c), veh/h	192	0	0	185	0	0	741	0	1416	584	0	1419
V/C Ratio(X)	0.40	0.00	0.00	0.37	0.00	0.00	0.02	0.00	0.47	0.07	0.00	0.39
Avail Cap(c_a), veh/h	638	0	0	636	0	0	741	0	1416	584	0	1419
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.92	0.00	0.92
Uniform Delay (d), s/veh	35.6	0.0	0.0	35.5	0.0	0.0	2.2	0.0	3.3	0.9	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.0	1.7	0.0	0.0	0.0	0.0	1.1	0.2	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	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	0.0	0.0	2.7	0.0	0.0	0.1	0.0	9.4	0.4	0.0	0.5
LnGrp Delay(d),s/veh	37.5	0.0	0.0	37.2	0.0	0.0	2.2	0.0	4.4	1.2	0.0	0.8
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		77			68			672			602	
Approach Delay, s/veh		37.5			37.2			4.4			0.8	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		67.2		12.8		67.2		12.8
Change Period (Y+Rc), s		* 5.7		* 6.7		* 5.7		* 6.7
Max Green Setting (Gmax), s		* 39		* 28		* 39		* 28
Max Q Clear Time (g_c+I1), s		12.3		5.3		13.1		4.9
Green Ext Time (p_c), s		14.6		1.1		14.4		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	6.2
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	51	40	17	41	43	27	569	44	38	513	10
Future Volume (veh/h)	5	51	40	17	41	43	27	569	44	38	513	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	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	5	55	43	18	45	47	29	618	48	41	558	11
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	51	102	76	70	85	77	703	1247	97	651	1331	26
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	36	967	718	171	803	726	839	1707	133	767	1821	36
Grp Volume(v), veh/h	103	0	0	110	0	0	29	0	666	41	0	569
Grp Sat Flow(s),veh/h/ln	1721	0	0	1700	0	0	839	0	1839	767	0	1856
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.5	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.05		0.42	0.16		0.43	1.00		0.07	1.00		0.02
Lane Grp Cap(c), veh/h	228	0	0	231	0	0	703	0	1344	651	0	1357
V/C Ratio(X)	0.45	0.00	0.00	0.48	0.00	0.00	0.04	0.00	0.50	0.06	0.00	0.42
Avail Cap(c_a), veh/h	655	0	0	645	0	0	703	0	1344	651	0	1357
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.89	0.00	0.89	0.93	0.00	0.93
Uniform Delay (d), s/veh	34.0	0.0	0.0	34.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.0	2.1	0.0	0.0	0.1	0.0	1.2	0.2	0.0	0.9
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(95%),veh/ln	4.1	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.8	0.1	0.0	0.6
LnGrp Delay(d),s/veh	36.0	0.0	0.0	36.3	0.0	0.0	0.1	0.0	1.2	0.2	0.0	0.9
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		103			110			695			610	
Approach Delay, s/veh		36.0			36.3			1.1			0.8	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		64.5		15.5		64.5		15.5
Change Period (Y+Rc), s		6.0		7.1		6.0		* 7.1
Max Green Setting (Gmax), s		38.4		28.5		38.4		* 29
Max Q Clear Time (g_c+I1), s		2.0		6.5		2.0		6.8
Green Ext Time (p_c), s		17.6		1.7		17.6		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	5.9
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	35	33	18	32	27	18	588	17	20	507	20
Future Volume (veh/h)	14	35	33	18	32	27	18	588	17	20	507	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	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	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	15	38	36	20	35	29	20	639	18	22	551	22
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	68	74	61	80	75	52	682	1440	41	708	1421	57
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	1.00	1.00	1.00	0.80	0.80	0.80
Sat Flow, veh/h	179	835	689	275	843	590	836	1803	51	773	1779	71
Grp Volume(v), veh/h	89	0	0	84	0	0	20	0	657	22	0	573
Grp Sat Flow(s),veh/h/ln	1703	0	0	1709	0	0	836	0	1854	773	0	1850
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.5	0.0	7.2
Cycle Q Clear(g_c), s	3.9	0.0	0.0	3.6	0.0	0.0	7.4	0.0	0.0	0.5	0.0	7.2
Prop In Lane	0.17		0.40	0.24		0.35	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	204	0	0	207	0	0	682	0	1481	708	0	1478
V/C Ratio(X)	0.44	0.00	0.00	0.41	0.00	0.00	0.03	0.00	0.44	0.03	0.00	0.39
Avail Cap(c_a), veh/h	641	0	0	637	0	0	682	0	1481	708	0	1478
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.88	0.00	0.88	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.0	0.0	0.0	34.9	0.0	0.0	0.4	0.0	0.0	1.7	0.0	2.3
Incr Delay (d2), s/veh	2.1	0.0	0.0	1.8	0.0	0.0	0.1	0.0	0.8	0.1	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	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.6	0.0	0.0	3.4	0.0	0.0	0.1	0.0	0.6	0.2	0.0	6.9
LnGrp Delay(d),s/veh	37.1	0.0	0.0	36.7	0.0	0.0	0.5	0.0	0.8	1.7	0.0	3.1
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		89			84			677			595	
Approach Delay, s/veh		37.1			36.7			0.8			3.1	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		68.4		11.6		68.4		11.6
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		42.5		28.5		42.5		28.5
Max Q Clear Time (g_c+I1), s		9.4		5.9		9.2		5.6
Green Ext Time (p_c), s		16.3		1.4		16.4		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	6.1
HCM 2010 LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	18.9
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	655	279	694	598
Demand Flow Rate, veh/h	662	285	701	604
Vehicles Circulating, veh/h	442	889	495	427
Vehicles Exiting, veh/h	588	240	417	747
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	14.3	22.7	14.3	27.3
Approach LOS	B	C	B	D

Lane	Left	Bypass	Left	Left	Right	Bypass	Left
Designated Moves	LT	R	LTR	L	TR	R	LTR
Assumed Moves	LT	R	LTR	L	TR	R	LTR
RT Channelized		Yield				Yield	
Lane Util	1.000		1.000	0.287	0.713		1.000
Critical Headway, s	5.193		5.193	5.193	5.193		5.193
Entry Flow, veh/h	470	192	285	182	452	67	604
Cap Entry Lane, veh/h	726	745	464	689	689	889	737
Entry HV Adj Factor	0.989	0.990	0.981	0.989	0.990	0.990	0.991
Flow Entry, veh/h	465	190	279	180	448	66	598
Cap Entry, veh/h	718	737	455	681	682	880	731
V/C Ratio	0.647	0.258	0.614	0.264	0.656	0.075	0.819
Control Delay, s/veh	17.0	7.9	22.7	8.5	18.1	4.8	27.3
LOS	C	A	C	A	C	A	D
95th %tile Queue, veh	5	1	4	1	5	0	9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	45	18	25	38	49	21	639	24	30	496	32
Future Volume (veh/h)	68	45	18	25	38	49	21	639	24	30	496	32
Number	1	6	16	5	2	12	3	8	18	7	4	14
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	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	74	49	20	27	41	53	23	695	26	33	539	35
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	232	95	208	66	85	585	1268	47	473	1324	1125
Arrive On Green	0.05	0.18	0.18	0.09	0.09	0.09	0.71	0.71	0.71	0.71	0.71	0.71
Sat Flow, veh/h	1774	1258	514	1326	739	955	835	1784	67	729	1863	1583
Grp Volume(v), veh/h	74	0	69	27	0	94	23	0	721	33	539	35
Grp Sat Flow(s),veh/h/ln	1774	0	1772	1326	0	1694	835	0	1851	729	1863	1583
Q Serve(g_s), s	2.9	0.0	2.6	1.5	0.0	4.3	0.9	0.0	14.8	1.8	9.4	0.5
Cycle Q Clear(g_c), s	2.9	0.0	2.6	1.5	0.0	4.3	10.4	0.0	14.8	16.6	9.4	0.5
Prop In Lane	1.00		0.29	1.00		0.56	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	226	0	327	208	0	151	585	0	1315	473	1324	1125
V/C Ratio(X)	0.33	0.00	0.21	0.13	0.00	0.62	0.04	0.00	0.55	0.07	0.41	0.03
Avail Cap(c_a), veh/h	278	0	793	518	0	546	585	0	1315	473	1324	1125
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.4	0.0	27.7	33.9	0.0	35.1	6.8	0.0	5.5	9.4	4.7	3.4
Incr Delay (d2), s/veh	0.8	0.0	0.3	0.3	0.0	4.2	0.1	0.0	1.6	0.3	0.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	0.0	2.4	1.0	0.0	3.9	0.4	0.0	12.7	0.7	8.8	0.4
LnGrp Delay(d),s/veh	30.2	0.0	28.0	34.2	0.0	39.3	7.0	0.0	7.1	9.7	5.6	3.5
LnGrp LOS	C		C	C		D	A		A	A	A	A
Approach Vol, veh/h		143			121			744			607	
Approach Delay, s/veh		29.2			38.2			7.1			5.7	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	7.6	11.3		61.0		19.0		61.0
Change Period (Y+Rc), s	3.6	* 4.2		* 4.2		* 4.2		* 4.2
Max Green Setting (Gmax), s	6.4	* 26		* 36		* 36		* 36
Max Q Clear Time (g_c+I1), s	4.9	6.3		18.6		4.6		16.8
Green Ext Time (p_c), s	0.0	0.9		9.1		1.1		9.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	222	34	9	222	3	14	10	7	1	13	21
Future Volume (veh/h)	13	222	34	9	222	3	14	10	7	1	13	21
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	14	241	37	10	241	3	15	11	8	1	14	23
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	578	799	123	548	929	12	282	203	129	49	229	356
Arrive On Green	0.51	0.51	0.51	0.51	0.51	0.51	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1131	1578	242	1097	1836	23	622	580	370	8	656	1017
Grp Volume(v), veh/h	14	0	278	10	0	244	34	0	0	38	0	0
Grp Sat Flow(s),veh/h/ln	1131	0	1820	1097	0	1859	1571	0	0	1681	0	0
Q Serve(g_s), s	0.6	0.0	7.1	0.4	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.5	0.0	7.1	7.6	0.0	6.0	1.0	0.0	0.0	1.2	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.01	0.44		0.24	0.03		0.61
Lane Grp Cap(c), veh/h	578	0	921	548	0	941	615	0	0	634	0	0
V/C Ratio(X)	0.02	0.00	0.30	0.02	0.00	0.26	0.06	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	578	0	921	548	0	941	615	0	0	634	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.1	0.0	11.5	13.7	0.0	11.2	17.2	0.0	0.0	17.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.8	0.1	0.0	0.7	0.2	0.0	0.0	0.2	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(95%),veh/ln	0.3	0.0	6.8	0.3	0.0	5.8	0.9	0.0	0.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	13.2	0.0	12.4	13.8	0.0	11.9	17.4	0.0	0.0	17.5	0.0	0.0
LnGrp LOS	B		B	B		B	B			B		
Approach Vol, veh/h		292			254			34			38	
Approach Delay, s/veh		12.4			12.0			17.4			17.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.0		34.0		46.0		34.0
Change Period (Y+Rc), s		5.5		6.0		5.5		6.0
Max Green Setting (Gmax), s		40.5		28.0		40.5		28.0
Max Q Clear Time (g_c+I1), s		9.1		3.2		9.6		3.0
Green Ext Time (p_c), s		5.4		0.5		5.3		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	525	17	8	492	11	16	11	23	8	19	17
Future Volume (veh/h)	14	525	17	8	492	11	16	11	23	8	19	17
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	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	15	571	18	9	535	12	17	12	25	9	21	18
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	385	965	30	533	975	22	189	141	234	121	267	200
Arrive On Green	1.00	1.00	1.00	0.54	0.54	0.54	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	856	1796	57	824	1815	41	407	444	733	211	836	628
Grp Volume(v), veh/h	15	0	589	9	0	547	54	0	0	48	0	0
Grp Sat Flow(s),veh/h/ln	856	0	1853	824	0	1856	1584	0	0	1675	0	0
Q Serve(g_s), s	0.5	0.0	0.0	0.4	0.0	15.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.0	0.0	0.0	0.4	0.0	15.5	1.8	0.0	0.0	1.5	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.02	0.31		0.46	0.19		0.37
Lane Grp Cap(c), veh/h	385	0	996	533	0	997	564	0	0	587	0	0
V/C Ratio(X)	0.04	0.00	0.59	0.02	0.00	0.55	0.10	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	385	0	996	533	0	997	564	0	0	587	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)	0.71	0.00	0.71	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.9	0.0	0.0	8.7	0.0	12.1	19.2	0.0	0.0	19.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	1.8	0.1	0.0	2.2	0.3	0.0	0.0	0.3	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(95%),veh/ln	0.2	0.0	0.9	0.2	0.0	13.3	1.6	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	3.0	0.0	1.8	8.7	0.0	14.3	19.5	0.0	0.0	19.4	0.0	0.0
LnGrp LOS	A		A	A		B	B			B		
Approach Vol, veh/h		604			556			54			48	
Approach Delay, s/veh		1.9			14.2			19.5			19.4	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		31.0		49.0		31.0		49.0
Change Period (Y+Rc), s		5.5		6.0		5.5		6.0
Max Green Setting (Gmax), s		25.5		43.0		25.5		43.0
Max Q Clear Time (g_c+I1), s		3.8		18.0		3.5		17.5
Green Ext Time (p_c), s		0.7		12.1		0.7		12.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.7
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	526	28	15	511	33	28
Future Volume (veh/h)	526	28	15	511	33	28
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1900
Adj Flow Rate, veh/h	572	30	16	555	36	30
Adj No. of Lanes	1	0	1	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	873	46	491	927	317	264
Arrive On Green	1.00	1.00	1.00	1.00	0.35	0.35
Sat Flow, veh/h	1754	92	814	1863	905	754
Grp Volume(v), veh/h	0	602	16	555	67	0
Grp Sat Flow(s),veh/h/ln	0	1847	814	1863	1684	0
Q Serve(g_s), s	0.0	0.4	0.0	0.3	2.2	0.0
Cycle Q Clear(g_c), s	0.0	0.4	0.4	0.3	2.2	0.0
Prop In Lane		0.05	1.00		0.54	0.45
Lane Grp Cap(c), veh/h	0	919	491	927	590	0
V/C Ratio(X)	0.00	0.66	0.03	0.60	0.11	0.00
Avail Cap(c_a), veh/h	0	919	491	927	590	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	0.68	0.82	0.82	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.1	0.1	0.1	17.6	0.0
Incr Delay (d2), s/veh	0.0	2.5	0.1	2.3	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	1.3	0.0	1.2	1.9	0.0
LnGrp Delay(d),s/veh	0.0	2.6	0.2	2.4	18.0	0.0
LnGrp LOS		A	A	A	B	
Approach Vol, veh/h	602			571	67	
Approach Delay, s/veh	2.6			2.4	18.0	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		45.8				45.8		34.2
Change Period (Y+Rc), s		6.0				6.0		6.2
Max Green Setting (Gmax), s		39.8				39.8		28.0
Max Q Clear Time (g_c+I1), s		2.4				2.4		4.2
Green Ext Time (p_c), s		15.5				15.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	3.3
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	525	15	18	534	9	9	14	31	6	10	26
Future Volume (veh/h)	17	525	15	18	534	9	9	14	31	6	10	26
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	18	571	16	20	580	10	10	15	34	7	11	28
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	504	906	25	505	917	16	114	172	317	104	163	335
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	823	1803	51	825	1826	31	181	510	940	154	484	992
Grp Volume(v), veh/h	18	0	587	20	0	590	59	0	0	46	0	0
Grp Sat Flow(s),veh/h/ln	823	0	1854	825	0	1857	1631	0	0	1629	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	1.5	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.02	0.17		0.58	0.15		0.61
Lane Grp Cap(c), veh/h	504	0	932	505	0	933	603	0	0	602	0	0
V/C Ratio(X)	0.04	0.00	0.63	0.04	0.00	0.63	0.10	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	504	0	932	505	0	933	603	0	0	602	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.00	0.91	0.82	0.00	0.82	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	18.2	0.0	0.0	18.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	2.9	0.1	0.0	2.7	0.3	0.0	0.0	0.2	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(95%),veh/ln	0.0	0.0	1.4	0.0	0.0	1.2	1.7	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	0.1	0.0	2.9	0.1	0.0	2.7	18.5	0.0	0.0	18.3	0.0	0.0
LnGrp LOS	A		A	A		A	B			B		
Approach Vol, veh/h		605			610			59			46	
Approach Delay, s/veh		2.9			2.6			18.5			18.3	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.2		33.8		46.2		33.8
Change Period (Y+Rc), s		6.0		* 6.8		6.0		* 6.8
Max Green Setting (Gmax), s		40.2		* 27		40.2		* 27
Max Q Clear Time (g_c+I1), s		2.0		3.5		2.0		3.9
Green Ext Time (p_c), s		16.3		0.8		16.3		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	4.0
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	522	20	12	535	29	28	53	1	20	54	186
Future Volume (veh/h)	193	522	20	12	535	29	28	53	1	20	54	186
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	210	567	22	13	582	32	30	58	1	22	59	202
Adj No. of Lanes	1	1	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	580	1135	965	451	1517	83	178	412	7	358	84	286
Arrive On Green	0.09	0.61	0.61	0.89	0.89	0.89	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1774	1863	1583	824	3412	187	1114	1826	31	1338	370	1268
Grp Volume(v), veh/h	210	567	22	13	302	312	30	0	59	22	0	261
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	824	1770	1830	1114	0	1857	1338	0	1639
Q Serve(g_s), s	4.8	13.7	0.4	0.2	2.3	2.3	2.0	0.0	2.0	1.1	0.0	11.7
Cycle Q Clear(g_c), s	4.8	13.7	0.4	0.7	2.3	2.3	13.8	0.0	2.0	3.1	0.0	11.7
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.02	1.00		0.77
Lane Grp Cap(c), veh/h	580	1135	965	451	787	814	178	0	419	358	0	370
V/C Ratio(X)	0.36	0.50	0.02	0.03	0.38	0.38	0.17	0.00	0.14	0.06	0.00	0.71
Avail Cap(c_a), veh/h	702	1135	965	451	787	814	303	0	627	504	0	549
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	1.00	1.00	0.68	0.68	0.68	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.1	8.8	6.2	2.5	2.6	2.6	34.9	0.0	24.8	26.0	0.0	28.5
Incr Delay (d2), s/veh	0.4	1.6	0.0	0.1	1.0	0.9	0.6	0.0	0.2	0.1	0.0	3.5
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(95%),veh/ln	4.2	11.9	0.4	0.1	2.2	2.2	1.2	0.0	1.9	0.7	0.0	9.6
LnGrp Delay(d),s/veh	9.4	10.3	6.2	2.6	3.5	3.5	35.5	0.0	25.0	26.1	0.0	32.0
LnGrp LOS	A	B	A	A	A	A	D		C	C		C
Approach Vol, veh/h		799			627			89			283	
Approach Delay, s/veh		10.0			3.5			28.5			31.6	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		55.0		25.0	13.2	41.8		25.0
Change Period (Y+Rc), s		* 6.2		7.0	* 6.2	* 6.2		* 7
Max Green Setting (Gmax), s		* 40		26.8	* 13	* 21		* 27
Max Q Clear Time (g_c+I1), s		15.7		13.7	6.8	4.3		15.8
Green Ext Time (p_c), s		12.3		2.5	0.3	9.9		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	40	11	14	28	26	13	612	39	43	526	26
Future Volume (veh/h)	26	40	11	14	28	26	13	612	39	43	526	26
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	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	28	43	12	15	30	28	14	665	42	47	572	28
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	84	20	73	67	54	712	1324	84	545	1345	66
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.76	0.76	0.76	1.00	1.00	1.00
Sat Flow, veh/h	442	1024	248	228	826	656	815	1734	110	738	1761	86
Grp Volume(v), veh/h	83	0	0	73	0	0	14	0	707	47	0	600
Grp Sat Flow(s),veh/h/ln	1714	0	0	1709	0	0	815	0	1843	738	0	1848
Q Serve(g_s), s	0.4	0.0	0.0	0.0	0.0	0.0	0.3	0.0	11.8	1.1	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.0	3.2	0.0	0.0	0.3	0.0	11.8	12.8	0.0	0.0
Prop In Lane	0.34		0.14	0.21		0.38	1.00		0.06	1.00		0.05
Lane Grp Cap(c), veh/h	200	0	0	194	0	0	712	0	1407	545	0	1410
V/C Ratio(X)	0.41	0.00	0.00	0.38	0.00	0.00	0.02	0.00	0.50	0.09	0.00	0.43
Avail Cap(c_a), veh/h	638	0	0	636	0	0	712	0	1407	545	0	1410
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.90	0.00	0.90
Uniform Delay (d), s/veh	35.3	0.0	0.0	35.2	0.0	0.0	2.3	0.0	3.6	1.2	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.0	1.7	0.0	0.0	0.1	0.0	1.3	0.3	0.0	0.9
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(95%),veh/ln	3.3	0.0	0.0	2.9	0.0	0.0	0.2	0.0	10.5	0.4	0.0	0.6
LnGrp Delay(d),s/veh	37.3	0.0	0.0	36.9	0.0	0.0	2.3	0.0	4.9	1.5	0.0	0.9
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		83			73			721			647	
Approach Delay, s/veh		37.3			36.9			4.9			0.9	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		66.8		13.2		66.8		13.2
Change Period (Y+Rc), s		* 5.7		* 6.7		* 5.7		* 6.7
Max Green Setting (Gmax), s		* 39		* 28		* 39		* 28
Max Q Clear Time (g_c+I1), s		13.8		5.5		14.8		5.2
Green Ext Time (p_c), s		15.4		1.2		14.9		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	6.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	55	43	18	44	46	29	611	47	41	551	11
Future Volume (veh/h)	5	55	43	18	44	46	29	611	47	41	551	11
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	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	5	60	47	20	48	50	32	664	51	45	599	12
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	51	108	81	73	89	80	675	1238	95	621	1319	26
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	32	967	722	179	801	721	807	1708	131	733	1820	36
Grp Volume(v), veh/h	112	0	0	118	0	0	32	0	715	45	0	611
Grp Sat Flow(s),veh/h/ln	1721	0	0	1701	0	0	807	0	1840	733	0	1856
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.9	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.04		0.42	0.17		0.42	1.00		0.07	1.00		0.02
Lane Grp Cap(c), veh/h	239	0	0	242	0	0	675	0	1333	621	0	1345
V/C Ratio(X)	0.47	0.00	0.00	0.49	0.00	0.00	0.05	0.00	0.54	0.07	0.00	0.45
Avail Cap(c_a), veh/h	656	0	0	644	0	0	675	0	1333	621	0	1345
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.86	0.00	0.86	0.92	0.00	0.92
Uniform Delay (d), s/veh	33.8	0.0	0.0	33.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.0	2.2	0.0	0.0	0.1	0.0	1.3	0.2	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	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.4	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.9	0.1	0.0	0.7
LnGrp Delay(d),s/veh	35.8	0.0	0.0	36.0	0.0	0.0	0.1	0.0	1.3	0.2	0.0	1.0
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		112			118			747			656	
Approach Delay, s/veh		35.8			36.0			1.3			1.0	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		64.0		16.0		64.0		16.0
Change Period (Y+Rc), s		6.0		7.1		6.0		* 7.1
Max Green Setting (Gmax), s		38.4		28.5		38.4		* 29
Max Q Clear Time (g_c+I1), s		2.0		6.9		2.0		7.1
Green Ext Time (p_c), s		19.5		1.9		19.5		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	6.0
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	38	35	19	34	29	19	631	18	21	544	21
Future Volume (veh/h)	15	38	35	19	34	29	19	631	18	21	544	21
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	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	16	41	38	21	37	32	21	686	20	23	591	23
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	69	79	64	81	78	57	647	1430	42	677	1414	55
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	1.00	1.00	1.00	0.79	0.79	0.79
Sat Flow, veh/h	178	844	682	268	833	607	805	1801	53	739	1781	69
Grp Volume(v), veh/h	95	0	0	90	0	0	21	0	706	23	0	614
Grp Sat Flow(s),veh/h/ln	1705	0	0	1708	0	0	805	0	1853	739	0	1851
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.5	0.0	8.2
Cycle Q Clear(g_c), s	4.1	0.0	0.0	3.8	0.0	0.0	8.5	0.0	0.0	0.5	0.0	8.2
Prop In Lane	0.17		0.40	0.23		0.36	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	212	0	0	215	0	0	647	0	1472	677	0	1469
V/C Ratio(X)	0.45	0.00	0.00	0.42	0.00	0.00	0.03	0.00	0.48	0.03	0.00	0.42
Avail Cap(c_a), veh/h	642	0	0	637	0	0	647	0	1472	677	0	1469
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.85	0.00	0.85	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.8	0.0	0.0	34.6	0.0	0.0	0.5	0.0	0.0	1.8	0.0	2.5
Incr Delay (d2), s/veh	2.1	0.0	0.0	1.8	0.0	0.0	0.1	0.0	1.0	0.1	0.0	0.9
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(95%),veh/ln	3.8	0.0	0.0	3.6	0.0	0.0	0.1	0.0	0.7	0.2	0.0	7.9
LnGrp Delay(d),s/veh	36.9	0.0	0.0	36.5	0.0	0.0	0.6	0.0	1.0	1.8	0.0	3.4
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		95			90			727			637	
Approach Delay, s/veh		36.9			36.5			0.9			3.4	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		68.0		12.0		68.0		12.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		42.5		28.5		42.5		28.5
Max Q Clear Time (g_c+I1), s		10.5		6.1		10.2		5.8
Green Ext Time (p_c), s		17.6		1.5		17.7		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	6.2
HCM 2010 LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	24.5
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	703	299	744	642
Demand Flow Rate, veh/h	710	305	752	648
Vehicles Circulating, veh/h	475	954	531	457
Vehicles Exiting, veh/h	630	257	448	802
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	17.2	29.4	17.3	38.6
Approach LOS	C	D	C	E

Lane	Left	Bypass	Left	Left	Right	Bypass	Left
Designated Moves	LT	R	LTR	L	TR	R	LTR
Assumed Moves	LT	R	LTR	L	TR	R	LTR
RT Channelized		Yield				Yield	
Lane Util	1.000		1.000	0.287	0.713		1.000
Critical Headway, s	5.193		5.193	5.193	5.193		5.193
Entry Flow, veh/h	504	206	305	195	485	72	648
Cap Entry Lane, veh/h	703	722	435	664	664	874	715
Entry HV Adj Factor	0.990	0.990	0.981	0.990	0.990	0.990	0.991
Flow Entry, veh/h	499	204	299	193	480	71	642
Cap Entry, veh/h	695	715	427	658	658	865	709
V/C Ratio	0.717	0.285	0.701	0.293	0.730	0.082	0.906
Control Delay, s/veh	20.8	8.5	29.4	9.2	22.5	4.9	38.6
LOS	C	A	D	A	C	A	E
95th %tile Queue, veh	6	1	5	1	6	0	12

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	48	19	27	41	53	23	686	26	32	532	34
Future Volume (veh/h)	73	48	19	27	41	53	23	686	26	32	532	34
Number	1	6	16	5	2	12	3	8	18	7	4	14
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	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	79	52	21	29	45	58	25	746	28	35	578	37
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	244	99	216	71	91	547	1252	47	428	1307	1111
Arrive On Green	0.05	0.19	0.19	0.10	0.10	0.10	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	1774	1263	510	1322	740	954	804	1784	67	694	1863	1583
Grp Volume(v), veh/h	79	0	73	29	0	103	25	0	774	35	578	37
Grp Sat Flow(s),veh/h/ln	1774	0	1773	1322	0	1694	804	0	1851	694	1863	1583
Q Serve(g_s), s	3.1	0.0	2.8	1.6	0.0	4.7	1.1	0.0	17.1	2.2	10.7	0.6
Cycle Q Clear(g_c), s	3.1	0.0	2.8	1.6	0.0	4.7	11.8	0.0	17.1	19.3	10.7	0.6
Prop In Lane	1.00		0.29	1.00		0.56	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	231	0	342	216	0	162	547	0	1299	428	1307	1111
V/C Ratio(X)	0.34	0.00	0.21	0.13	0.00	0.64	0.05	0.00	0.60	0.08	0.44	0.03
Avail Cap(c_a), veh/h	279	0	793	516	0	546	547	0	1299	428	1307	1111
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.9	0.0	27.2	33.5	0.0	34.8	7.7	0.0	6.1	11.1	5.2	3.6
Incr Delay (d2), s/veh	0.9	0.0	0.3	0.3	0.0	4.1	0.2	0.0	2.0	0.4	1.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	0.0	2.5	1.1	0.0	4.3	0.5	0.0	14.3	0.8	9.8	0.5
LnGrp Delay(d),s/veh	29.8	0.0	27.5	33.7	0.0	39.0	7.9	0.0	8.1	11.4	6.2	3.7
LnGrp LOS	C		C	C		D	A		A	B	A	A
Approach Vol, veh/h		152			132			799			650	
Approach Delay, s/veh		28.7			37.8			8.1			6.4	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	7.8	11.8		60.3		19.7		60.3
Change Period (Y+Rc), s	3.6	* 4.2		* 4.2		* 4.2		* 4.2
Max Green Setting (Gmax), s	6.4	* 26		* 36		* 36		* 36
Max Q Clear Time (g_c+I1), s	5.1	6.7		21.3		4.8		19.1
Green Ext Time (p_c), s	0.0	1.0		8.8		1.2		9.6

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	238	36	10	238	3	15	11	8	1	14	23
Future Volume (veh/h)	14	238	36	10	238	3	15	11	8	1	14	23
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	15	259	39	11	259	3	16	12	9	1	15	25
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	563	801	121	531	930	11	277	204	134	48	227	358
Arrive On Green	0.51	0.51	0.51	0.51	0.51	0.51	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1113	1582	238	1077	1838	21	607	582	382	7	649	1024
Grp Volume(v), veh/h	15	0	298	11	0	262	37	0	0	41	0	0
Grp Sat Flow(s),veh/h/ln	1113	0	1821	1077	0	1859	1572	0	0	1680	0	0
Q Serve(g_s), s	0.6	0.0	7.7	0.5	0.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.1	0.0	7.7	8.2	0.0	6.5	1.1	0.0	0.0	1.3	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.01	0.43		0.24	0.02		0.61
Lane Grp Cap(c), veh/h	563	0	922	531	0	941	615	0	0	634	0	0
V/C Ratio(X)	0.03	0.00	0.32	0.02	0.00	0.28	0.06	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	563	0	922	531	0	941	615	0	0	634	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.4	0.0	11.7	14.1	0.0	11.4	17.3	0.0	0.0	17.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.9	0.1	0.0	0.7	0.2	0.0	0.0	0.2	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(95%),veh/ln	0.4	0.0	7.4	0.3	0.0	6.2	1.0	0.0	0.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	13.5	0.0	12.6	14.2	0.0	12.1	17.4	0.0	0.0	17.5	0.0	0.0
LnGrp LOS	B		B	B		B	B			B		
Approach Vol, veh/h		313			273			37			41	
Approach Delay, s/veh		12.6			12.2			17.4			17.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.0		34.0		46.0		34.0
Change Period (Y+Rc), s		5.5		6.0		5.5		6.0
Max Green Setting (Gmax), s		40.5		28.0		40.5		28.0
Max Q Clear Time (g_c+I1), s		9.7		3.3		10.2		3.1
Green Ext Time (p_c), s		5.8		0.5		5.8		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	13.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	564	18	9	528	12	17	12	25	9	20	18
Future Volume (veh/h)	15	564	18	9	528	12	17	12	25	9	20	18
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	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	16	613	20	10	574	13	18	13	27	10	22	20
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	964	31	515	975	22	186	143	235	123	258	205
Arrive On Green	1.00	1.00	1.00	0.54	0.54	0.54	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	825	1794	59	791	1814	41	399	447	738	218	809	642
Grp Volume(v), veh/h	16	0	633	10	0	587	58	0	0	52	0	0
Grp Sat Flow(s),veh/h/ln	825	0	1852	791	0	1855	1585	0	0	1669	0	0
Q Serve(g_s), s	0.6	0.0	0.0	0.5	0.0	17.1	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	17.8	0.0	0.0	0.5	0.0	17.1	1.9	0.0	0.0	1.7	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.02	0.31		0.47	0.19		0.38
Lane Grp Cap(c), veh/h	357	0	996	515	0	997	564	0	0	586	0	0
V/C Ratio(X)	0.04	0.00	0.64	0.02	0.00	0.59	0.10	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	357	0	996	515	0	997	564	0	0	586	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)	0.67	0.00	0.67	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.5	0.0	0.0	8.7	0.0	12.5	19.2	0.0	0.0	19.1	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	2.1	0.1	0.0	2.5	0.4	0.0	0.0	0.3	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(95%),veh/ln	0.3	0.0	1.0	0.2	0.0	14.4	1.7	0.0	0.0	1.5	0.0	0.0
LnGrp Delay(d),s/veh	3.7	0.0	2.1	8.7	0.0	15.1	19.6	0.0	0.0	19.4	0.0	0.0
LnGrp LOS	A		A	A		B	B			B		
Approach Vol, veh/h		649			597			58			52	
Approach Delay, s/veh		2.1			15.0			19.6			19.4	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		31.0		49.0		31.0		49.0
Change Period (Y+Rc), s		5.5		6.0		5.5		6.0
Max Green Setting (Gmax), s		25.5		43.0		25.5		43.0
Max Q Clear Time (g_c+I1), s		3.9		19.8		3.7		19.1
Green Ext Time (p_c), s		0.7		12.6		0.7		12.8

Intersection Summary	
HCM 2010 Ctrl Delay	9.2
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	565	30	16	549	35	30
Future Volume (veh/h)	565	30	16	549	35	30
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1900
Adj Flow Rate, veh/h	614	33	17	597	38	33
Adj No. of Lanes	1	0	1	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	894	48	488	950	300	260
Arrive On Green	1.00	1.00	1.00	1.00	0.34	0.34
Sat Flow, veh/h	1752	94	781	1863	888	771
Grp Volume(v), veh/h	0	647	17	597	72	0
Grp Sat Flow(s),veh/h/ln	0	1846	781	1863	1682	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	2.4	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	2.4	0.0
Prop In Lane		0.05	1.00		0.53	0.46
Lane Grp Cap(c), veh/h	0	942	488	950	568	0
V/C Ratio(X)	0.00	0.69	0.03	0.63	0.13	0.00
Avail Cap(c_a), veh/h	0	942	488	950	568	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	0.62	0.78	0.78	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	18.3	0.0
Incr Delay (d2), s/veh	0.0	2.5	0.1	2.5	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	1.2	0.0	1.2	2.1	0.0
LnGrp Delay(d),s/veh	0.0	2.5	0.1	2.5	18.8	0.0
LnGrp LOS		A	A	A	B	
Approach Vol, veh/h	647			614	72	
Approach Delay, s/veh	2.5			2.4	18.8	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		46.8				46.8		33.2
Change Period (Y+Rc), s		6.0				6.0		6.2
Max Green Setting (Gmax), s		40.8				40.8		27.0
Max Q Clear Time (g_c+I1), s		2.0				2.0		4.4
Green Ext Time (p_c), s		17.5				17.5		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	3.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	564	16	19	573	10	10	15	33	6	11	28
Future Volume (veh/h)	18	564	16	19	573	10	10	15	33	6	11	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	613	17	21	623	11	11	16	36	7	12	30
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	487	906	25	489	917	16	117	172	314	99	166	337
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	790	1804	50	793	1825	32	189	509	931	140	493	1000
Grp Volume(v), veh/h	20	0	630	21	0	634	63	0	0	49	0	0
Grp Sat Flow(s),veh/h/ln	790	0	1854	793	0	1857	1629	0	0	1633	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	1.6	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.02	0.17		0.57	0.14		0.61
Lane Grp Cap(c), veh/h	487	0	932	489	0	933	603	0	0	602	0	0
V/C Ratio(X)	0.04	0.00	0.68	0.04	0.00	0.68	0.10	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	487	0	932	489	0	933	603	0	0	602	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.00	0.89	0.79	0.00	0.79	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	18.2	0.0	0.0	18.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	3.5	0.1	0.0	3.2	0.3	0.0	0.0	0.3	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(95%),veh/ln	0.0	0.0	1.6	0.0	0.0	1.5	1.8	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	0.1	0.0	3.5	0.1	0.0	3.2	18.6	0.0	0.0	18.3	0.0	0.0
LnGrp LOS	A		A	A		A	B			B		
Approach Vol, veh/h		650			655			63			49	
Approach Delay, s/veh		3.4			3.1			18.6			18.3	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.2		33.8		46.2		33.8
Change Period (Y+Rc), s		6.0		* 6.8		6.0		* 6.8
Max Green Setting (Gmax), s		40.2		* 27		40.2		* 27
Max Q Clear Time (g_c+I1), s		2.0		3.6		2.0		4.0
Green Ext Time (p_c), s		18.1		0.8		18.1		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	4.4
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	560	21	13	574	31	30	57	1	21	58	200
Future Volume (veh/h)	207	560	21	13	574	31	30	57	1	21	58	200
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	225	609	23	14	624	34	33	62	1	23	63	217
Adj No. of Lanes	1	1	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	551	1110	943	406	1447	79	180	437	7	373	88	304
Arrive On Green	0.09	0.60	0.60	0.85	0.85	0.85	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	1863	1583	792	3414	186	1095	1828	29	1334	369	1270
Grp Volume(v), veh/h	225	609	23	14	323	335	33	0	63	23	0	280
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	792	1770	1830	1095	0	1858	1334	0	1639
Q Serve(g_s), s	5.3	15.7	0.5	0.3	3.5	3.5	2.3	0.0	2.1	1.1	0.0	12.5
Cycle Q Clear(g_c), s	5.3	15.7	0.5	2.3	3.5	3.5	14.8	0.0	2.1	3.2	0.0	12.5
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.02	1.00		0.77
Lane Grp Cap(c), veh/h	551	1110	943	406	750	776	180	0	444	373	0	392
V/C Ratio(X)	0.41	0.55	0.02	0.03	0.43	0.43	0.18	0.00	0.14	0.06	0.00	0.71
Avail Cap(c_a), veh/h	661	1110	943	406	750	776	288	0	627	501	0	549
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	1.00	1.00	0.61	0.61	0.61	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.8	9.7	6.6	3.9	3.8	3.8	34.7	0.0	24.0	25.2	0.0	27.9
Incr Delay (d2), s/veh	0.5	2.0	0.0	0.1	1.1	1.1	0.7	0.0	0.2	0.1	0.0	3.6
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(95%),veh/ln	4.6	13.3	0.4	0.1	3.3	3.4	1.3	0.0	2.0	0.8	0.0	10.1
LnGrp Delay(d),s/veh	10.3	11.7	6.7	4.0	4.9	4.9	35.4	0.0	24.2	25.3	0.0	31.5
LnGrp LOS	B	B	A	A	A	A	D		C	C		C
Approach Vol, veh/h		857			672			96			303	
Approach Delay, s/veh		11.2			4.8			28.0			31.0	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		53.9		26.1	13.8	40.1		26.1
Change Period (Y+Rc), s		* 6.2		7.0	* 6.2	* 6.2		* 7
Max Green Setting (Gmax), s		* 40		26.8	* 13	* 21		* 27
Max Q Clear Time (g_c+I1), s		17.7		14.5	7.3	5.5		16.8
Green Ext Time (p_c), s		12.6		2.6	0.3	10.0		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX M: CRASH ANALYSIS

Study Area

- - (-) From // to //

Study Area

	Number
Total	**150**

CRASH_SEVERITY	Number	%
Injury Crash	**13**	8.7%
Property Damage Crash	**137**	91.3%
Grand Total	**150**	**100.0%**

TRAFFIC_CRASH_YEAR	Number	%
2013	**43**	28.7%
2014	**53**	35.3%
2015	**54**	36.0%
Grand Total	**150**	**100.0%**

DAY_OF_WEEK	Number	%
Wednesday	**33**	22.0%
Monday	**28**	18.7%
Tuesday	**25**	16.7%
Friday	**24**	16.0%
Thursday	**20**	13.3%
Saturday	**12**	8.0%
Sunday	**8**	5.3%
Grand Total	**150**	**100.0%**

HOUR_OF_DAY	Number	%
1	**2**	1.3%
3	**1**	0.7%
5	**1**	0.7%
6	**2**	1.3%
7	**5**	3.3%
8	**4**	2.7%
9	**12**	8.0%
10	**8**	5.3%
11	**10**	6.7%
12	**9**	6.0%
13	**11**	7.3%
14	**18**	12.0%
15	**12**	8.0%
16	**16**	10.7%
17	**12**	8.0%
18	**6**	4.0%
19	**5**	3.3%
20	**2**	1.3%
21	**6**	4.0%
22	**2**	1.3%
23	**6**	4.0%
Grand Total	**150**	**100.0%**

TYPE_OF_CRASH	Number	%
Rear End	**37**	24.7%
Parked Vehicle	**31**	20.7%
Angle	**27**	18.0%
Backing	**25**	16.7%
Sideswipe - Passing	**18**	12.0%
Fixed Object	**8**	5.3%
Left Turn	**3**	2.0%
Sideswipe - Meeting	**1**	0.7%
Grand Total	**150**	**100.0%**

Study Area

- - (-) From // to //

Study area

WEATHER_CONDITION	Number	%
Clear	**77**	51.3%
Cloudy	**47**	31.3%
Rain	**22**	14.7%
Snow	**4**	2.7%
Grand Total	**150**	**100.0%**

ROAD_CONDITION	Number	%
Road - Dry	**106**	70.7%
Road - Wet	**36**	24.0%
Road - Ice	**4**	2.7%
Road - Snow	**4**	2.7%
Grand Total	**150**	**100.0%**

LIGHT_CONDITION	Number	%
Daylight	**114**	76.0%
Dark - Lighted	**23**	15.3%
Light Not Stated	**7**	4.7%
Dusk	**3**	2.0%
Dawn	**2**	1.3%
Dark - No Lights	**1**	0.7%
Grand Total	**150**	**100.0%**

NUMBER_OF_VEHICLES	Number	%
(blank)	**150**	100.0%
Grand Total	**150**	**100.0%**

LOCATION	Number	%
Not An Intersection	**80**	53.3%
Traffic Circle/Roundabout	**32**	21.3%
Four-Way Intersection	**27**	18.0%
T-Intersection	**7**	4.7%
Driveway/Alley Access	**4**	2.7%
Grand Total	**150**	**100.0%**

CRASH_MONTH_NBR	Number	%
1	**15**	10.0%
2	**11**	7.3%
3	**6**	4.0%
4	**15**	10.0%
5	**12**	8.0%
6	**14**	9.3%
7	**17**	11.3%
8	**16**	10.7%
9	**8**	5.3%
10	**18**	12.0%
11	**8**	5.3%
12	**10**	6.7%
Grand Total	**150**	**100.0%**

ROAD_CONTOUR	Number	%
Straight - Level	**129**	86.0%
Curve - Level	**13**	8.7%
Straight - Grade	**6**	4.0%
Curve - Grade	**2**	1.3%
Grand Total	**150**	**100.0%**

SPECIAL_AREA	Number	%
Unknown or Not in Work Zone	**150**	100.0%
Grand Total	**150**	**100.0%**

ANIMAL_TYPE	Number	%
Animal Not Stated	**150**	100.0%
Grand Total	**150**	**100.0%**

Study Area

- - (-) From // to //

Study Area

ACTION1	Number	%
Straight Ahead	**78**	52.0%
Backing	**25**	16.7%
Changing Lanes	**13**	8.7%
Entering Traffic Lane	**7**	4.7%
Making Left Turn	**6**	4.0%
Unknown	**5**	3.3%
Parked	**4**	2.7%
Negotiating A Curve	**4**	2.7%
Making Right Turn	**3**	2.0%
Overtaking/Passing	**2**	1.3%
Leaving Traffic Lane	**1**	0.7%
Driverless	**1**	0.7%
Making U-Turn	**1**	0.7%
Grand Total	**150**	**100.0%**

CONTRIBUTING_FACTOR1	Number	%
Followed Too Closely/ACDA	**42**	28.0%
Failure To Control	**25**	16.7%
Improper Backing	**24**	16.0%
Failure To Yield	**15**	10.0%
Improper Lane Change/Passing/Offroad	**15**	10.0%
Ran Red Light	**11**	7.3%
Other Improper Action	**4**	2.7%
Unknown	**4**	2.7%
Improper Turn	**3**	2.0%
Improper Start From Parked Position	**2**	1.3%
None	**2**	1.3%
None Non-Motorist	**1**	0.7%
Stopped Or Parked Illegally	**1**	0.7%
Swerving To Avoid	**1**	0.7%
Grand Total	**150**	**100.0%**

	Number	%
Total	**150**	**100.0%**

TRAFFIC_CONTROL1	Number	%
Pavement Markings	**44**	29.3%
No Controls	**43**	28.7%
Traffic Signal	**36**	24.0%
Yield Sign	**24**	16.0%
Traffic Flashers	**1**	0.7%
Not Reported	**1**	0.7%
Stop Sign	**1**	0.7%
Grand Total	**150**	**100.0%**

DRIVER_ALCOHOL1	Number	%
None	**129**	86.0%
0	**18**	12.0%
Yes - Alcohol Suspected	**3**	2.0%
Grand Total	**150**	**100.0%**

DRIVER_DRUGS1	Number	%
(blank)	**150**	100.0%
Grand Total	**150**	**100.0%**

Study Area

- - (-) From // to //

Study Area

DIRECTION_FROM1	Number	%
West	**45**	30.0%
South	**40**	26.7%
North	**37**	24.7%
East	**23**	15.3%
Northeast	**2**	1.3%
Unknown	**1**	0.7%
Southwest	**1**	0.7%
Northwest	**1**	0.7%
Grand Total	**150**	**100.0%**

DIRECTION_TO1	Number	%
North	**41**	27.3%
East	**40**	26.7%
South	**34**	22.7%
West	**24**	16.0%
Unknown	**8**	5.3%
Southwest	**2**	1.3%
Southeast	**1**	0.7%
Grand Total	**150**	**100.0%**

POSTED_SPEED1	Number	%
Posted Speed 21-25	**140**	93.3%
Posted Speed 31-35	**9**	6.0%
Posted Speed Not Stated	**1**	0.7%
Grand Total	**150**	**100.0%**

ESTIMATED_SPEED1	Number	%
Unit Speed 20 and Under	**104**	69.3%
Unit Speed 21-25	**22**	14.7%
Unit Speed Not Stated	**15**	10.0%
Unit Speed 26-30	**6**	4.0%
Unit Speed 56-60	**1**	0.7%
Unit Speed 31-35	**1**	0.7%
Unit Speed 36-40	**1**	0.7%
Grand Total	**150**	**100.0%**

VEHICLE_TYPE1	Number	%
Mid Size	**30**	20.0%
Sport Utility Vehicle	**29**	19.3%
Pickup	**21**	14.0%
Compact	**16**	10.7%
Full Size	**15**	10.0%
Minivan	**11**	7.3%
Unknown Or Hit/Skip	**9**	6.0%
Sub-Compact	**7**	4.7%
Tractor/Semi-Trailer	**5**	3.3%
Van	**2**	1.3%
Single Unit Truck/Trailer	**1**	0.7%
Other Med/Heavy Vehicle	**1**	0.7%
Single Unit Truck Or Van 2 Axle, 6 Tires	**1**	0.7%
Bus (16+ Seats, Inc Driver)	**1**	0.7%
Other Passenger Vehicle	**1**	0.7%
Grand Total	**150**	**100.0%**

VEHICLE_TYPE2	Number	%
Mid Size	**33**	22.0%
Pickup	**33**	22.0%
Sport Utility Vehicle	**24**	16.0%
Full Size	**21**	14.0%
Compact	**17**	11.3%
	8	5.3%
Minivan	**7**	4.7%
Van	**3**	2.0%
Sub-Compact	**1**	0.7%
Other Passenger Vehicle	**1**	0.7%
Bus (16+ Seats, Inc Driver)	**1**	0.7%
Motorcycle	**1**	0.7%
Grand Total	**150**	**100.0%**

Study Area

- - (-) From // to //

Study Area

ACTION2	Number	%
Straight Ahead	**53**	35.3%
Parked	**43**	28.7%
Slowing Or Stopped In Traffic	**38**	25.3%
	8	5.3%
Making Left Turn	**2**	1.3%
Negotiating A Curve	**2**	1.3%
Making Right Turn	**1**	0.7%
Entering Traffic Lane	**1**	0.7%
Changing Lanes	**1**	0.7%
Other Motorist Action	**1**	0.7%
Grand Total	**150**	**100.0%**

CONTRIBUTING_FACTOR2	Number	%
None	**127**	84.7%
	8	5.3%
Stopped Or Parked Illegally	**7**	4.7%
Unknown	**2**	1.3%
Failure To Control	**2**	1.3%
Failure To Yield	**1**	0.7%
Followed To Closely/ACDA	**1**	0.7%
None Non-Motorist	**1**	0.7%
Other Improper Action	**1**	0.7%
Grand Total	**150**	**100.0%**

DIRECTION_FROM2	Number	%
South	**37**	24.7%
North	**36**	24.0%
West	**28**	18.7%
East	**25**	16.7%
	8	5.3%
Southwest	**4**	2.7%
Northeast	**4**	2.7%
Northwest	**3**	2.0%
Southeast	**3**	2.0%
Unknown	**2**	1.3%
Grand Total	**150**	**100.0%**

DIRECTION_TO2	Number	%
North	**36**	24.0%
South	**35**	23.3%
West	**27**	18.0%
East	**26**	17.3%
	8	5.3%
Northeast	**4**	2.7%
Southwest	**4**	2.7%
Unknown	**4**	2.7%
Southeast	**3**	2.0%
Northwest	**3**	2.0%
Grand Total	**150**	**100.0%**

DRIVER_ALCOHOL2	Number	%
None	**99**	66.0%
0	**43**	28.7%
	8	5.3%
Grand Total	**150**	**100.0%**

DRIVER_DRUGS2	Number	%
(blank)	**150**	100.0%
Grand Total	**150**	**100.0%**

Study Area

- - (-) From // to //

Study Area

SEVERITY	CRASH_SEVERITY	
TRAFFIC_CRASH_YEAR	Property Damage Crash	Injury Crash
2013	38	5
2014	49	4
2015	50	4
Grand Total	**137**	**13**

TRAFFIC_CRASH_YEAR	Fatalities	Incapacitating Injuries
2013	0	0
2014	0	0
2015	0	0
Grand Total	**0**	**0**

TRAFFIC_CRASH_YEAR	INJ_TYPE2_SERIOUS_VISIBLE	INJ_TYPE3_MINOR_VISIBLE	INJ_TYPE4_NO_VISIBLE
2013	0	2	4
2014	0	1	3
2015	0	2	3
Grand Total	**0**	**5**	**10**

- - (-) From // to //

East Main Street

	Number
Total	**12**

CRASH_SEVERITY	Number	%
Injury Crash	**1**	8.3%
Property Damage Crash	**11**	91.7%
Grand Total	**12**	**100.0%**

TRAFFIC_CRASH_YEAR	Number	%
2013	**5**	41.7%
2014	**1**	8.3%
2015	**6**	50.0%
Grand Total	**12**	**100.0%**

DAY_OF_WEEK	Number	%
Tuesday	**4**	33.3%
Friday	**3**	25.0%
Monday	**2**	16.7%
Wednesday	**2**	16.7%
Saturday	**1**	8.3%
Grand Total	**12**	**100.0%**

HOUR_OF_DAY	Number	%
9	**2**	16.7%
12	**1**	8.3%
13	**1**	8.3%
14	**3**	25.0%
15	**1**	8.3%
16	**1**	8.3%
18	**1**	8.3%
20	**1**	8.3%
21	**1**	8.3%
Grand Total	**12**	**100.0%**

TYPE_OF_CRASH	Number	%
Backing	**4**	33.3%
Rear End	**3**	25.0%
Angle	**2**	16.7%
Sideswipe - Passing	**2**	16.7%
Parked Vehicle	**1**	8.3%
Grand Total	**12**	**100.0%**

- - (-) From // to //

East Main Street

WEATHER_CONDITION	Number	%
Clear	**6**	50.0%
Cloudy	**4**	33.3%
Rain	**2**	16.7%
Grand Total	**12**	**100.0%**

ROAD_CONDITION	Number	%
Road - Dry	**8**	66.7%
Road - Wet	**4**	33.3%
Grand Total	**12**	**100.0%**

LIGHT_CONDITION	Number	%
Daylight	**9**	75.0%
Dark - Lighted	**3**	25.0%
Grand Total	**12**	**100.0%**

NUMBER_OF_VEHICLES	Number	%
(blank)	**12**	100.0%
Grand Total	**12**	**100.0%**

LOCATION	Number	%
Not An Intersection	**9**	75.0%
Four-Way Intersection	**3**	25.0%
Grand Total	**12**	**100.0%**

CRASH_MONTH_NBR	Number	%
2	**1**	8.3%
4	**1**	8.3%
6	**2**	16.7%
7	**1**	8.3%
8	**1**	8.3%
9	**1**	8.3%
10	**2**	16.7%
11	**2**	16.7%
12	**1**	8.3%
Grand Total	**12**	**100.0%**

ROAD_CONTOUR	Number	%
Straight - Level	**12**	100.0%
Grand Total	**12**	**100.0%**

SPECIAL_AREA	Number	%
Unknown or Not in Work Zone	**12**	100.0%
Grand Total	**12**	**100.0%**

ANIMAL_TYPE	Number	%
Animal Not Stated	**12**	100.0%
Grand Total	**12**	**100.0%**

- - (-) From // to //

East Main Street

ACTION1	Number	%
Straight Ahead	**6**	50.0%
Backing	**4**	33.3%
Changing Lanes	**2**	16.7%
Grand Total	**12**	**100.0%**

CONTRIBUTING_FACTOR1	Number	%
Improper Backing	**4**	33.3%
Followed Too Closely/ACDA	**3**	25.0%
Ran Red Light	**2**	16.7%
Improper Lane Change/Passing/Offroad	**2**	16.7%
Failure To Control	**1**	8.3%
Grand Total	**12**	**100.0%**

	Number	%
Total	**12**	**100.0%**

TRAFFIC_CONTROL1	Number	%
No Controls	**6**	50.0%
Traffic Signal	**4**	33.3%
Pavement Markings	**2**	16.7%
Grand Total	**12**	**100.0%**

DRIVER_ALCOHOL1	Number	%
None	**11**	91.7%
0	**1**	8.3%
Grand Total	**12**	**100.0%**

DRIVER_DRUGS1	Number	%
(blank)	**12**	100.0%
Grand Total	**12**	**100.0%**

- - (-) From // to //

East Main Street

DIRECTION_FROM1	Number	%
West	**6**	50.0%
North	**3**	25.0%
East	**2**	16.7%
South	**1**	8.3%
Grand Total	**12**	**100.0%**

DIRECTION_TO1	Number	%
East	**8**	66.7%
West	**2**	16.7%
North	**1**	8.3%
South	**1**	8.3%
Grand Total	**12**	**100.0%**

POSTED_SPEED1	Number	%
Posted Speed 21-25	**10**	83.3%
Posted Speed 31-35	**2**	16.7%
Grand Total	**12**	**100.0%**

ESTIMATED_SPEED1	Number	%
Unit Speed 20 and Under	**9**	75.0%
Unit Speed 21-25	**2**	16.7%
Unit Speed Not Stated	**1**	8.3%
Grand Total	**12**	**100.0%**

VEHICLE_TYPE1	Number	%
Sport Utility Vehicle	**5**	41.7%
Minivan	**2**	16.7%
Full Size	**2**	16.7%
Pickup	**1**	8.3%
Mid Size	**1**	8.3%
Unknown Or Hit/Skip	**1**	8.3%
Grand Total	**12**	**100.0%**

VEHICLE_TYPE2	Number	%
Mid Size	**3**	25.0%
Full Size	**3**	25.0%
Compact	**2**	16.7%
Pickup	**2**	16.7%
Bus (16+ Seats, Inc Driver)	**1**	8.3%
Minivan	**1**	8.3%
Grand Total	**12**	**100.0%**

- - (-) From // to //

East Main Street

ACTION2	Number	%
Straight Ahead	**5**	41.7%
Parked	**4**	33.3%
Slowing Or Stopped In Traffic	**3**	25.0%
Grand Total	**12**	**100.0%**

CONTRIBUTING_FACTOR2	Number	%
None	**11**	91.7%
Stopped Or Parked Illegally	**1**	8.3%
Grand Total	**12**	**100.0%**

DIRECTION_FROM2	Number	%
East	**5**	41.7%
West	**3**	25.0%
South	**2**	16.7%
Southeast	**1**	8.3%
North	**1**	8.3%
Grand Total	**12**	**100.0%**

DIRECTION_TO2	Number	%
West	**5**	41.7%
East	**3**	25.0%
North	**2**	16.7%
Northwest	**1**	8.3%
South	**1**	8.3%
Grand Total	**12**	**100.0%**

DRIVER_ALCOHOL2	Number	%
None	**8**	66.7%
0	**4**	33.3%
Grand Total	**12**	**100.0%**

DRIVER_DRUGS2	Number	%
(blank)	**12**	100.0%
Grand Total	**12**	**100.0%**

- - (-) From // to //

East Main Street

SEVERITY	CRASH_SEVERITY	
TRAFFIC_CRASH_YEAR	Property Damage Crash	Injury Crash
2013	4	1
2014	1	0
2015	6	0
Grand Total	**11**	**1**

TRAFFIC_CRASH_YEAR	Fatalities	Incapacitating Injuries
2013	0	0
2014	0	0
2015	0	0
Grand Total	**0**	**0**

TRAFFIC_CRASH_YEAR	INJ_TYPE2_SERIOUS_VISIBLE	INJ_TYPE3_MINOR_VISIBLE	INJ_TYPE4_NO_VISIBLE
2013	0	0	2
2014	0	0	0
2015	0	0	0
Grand Total	**0**	**0**	**2**

- - (-) From // to //

West Main Street

	Number
Total	**41**

CRASH_SEVERITY	Number	%
Injury Crash	**2**	4.9%
Property Damage Crash	**39**	95.1%
Grand Total	**41**	**100.0%**

TRAFFIC_CRASH_YEAR	Number	%
2013	**12**	29.3%
2014	**14**	34.1%
2015	**15**	36.6%
Grand Total	**41**	**100.0%**

DAY_OF_WEEK	Number	%
Monday	**9**	22.0%
Wednesday	**9**	22.0%
Tuesday	**6**	14.6%
Friday	**6**	14.6%
Thursday	**6**	14.6%
Saturday	**3**	7.3%
Sunday	**2**	4.9%
Grand Total	**41**	**100.0%**

HOUR_OF_DAY	Number	%
3	**1**	2.4%
7	**2**	4.9%
8	**3**	7.3%
9	**4**	9.8%
10	**4**	9.8%
11	**1**	2.4%
12	**4**	9.8%
13	**2**	4.9%
14	**2**	4.9%
15	**3**	7.3%
16	**5**	12.2%
17	**2**	4.9%
18	**2**	4.9%
19	**3**	7.3%
21	**2**	4.9%
23	**1**	2.4%
Grand Total	**41**	**100.0%**

TYPE_OF_CRASH	Number	%
Parked Vehicle	**14**	34.1%
Rear End	**9**	22.0%
Backing	**6**	14.6%
Angle	**6**	14.6%
Sideswipe - Passing	**4**	9.8%
Fixed Object	**1**	2.4%
Left Turn	**1**	2.4%
Grand Total	**41**	**100.0%**

- - (-) From // to //

West Main Street

WEATHER_CONDITION	Number	%
Clear	**23**	56.1%
Cloudy	**15**	36.6%
Rain	**3**	7.3%
Grand Total	**41**	**100.0%**

ROAD_CONDITION	Number	%
Road - Dry	**31**	75.6%
Road - Wet	**8**	19.5%
Road - Ice	**2**	4.9%
Grand Total	**41**	**100.0%**

LIGHT_CONDITION	Number	%
Daylight	**34**	82.9%
Dark - Lighted	**5**	12.2%
Light Not Stated	**1**	2.4%
Dark - No Lights	**1**	2.4%
Grand Total	**41**	**100.0%**

NUMBER_OF_VEHICLES	Number	%
(blank)	**41**	100.0%
Grand Total	**41**	**100.0%**

LOCATION	Number	%
Not An Intersection	**26**	63.4%
T-Intersection	**7**	17.1%
Four-Way Intersection	**6**	14.6%
Driveway/Alley Access	**2**	4.9%
Grand Total	**41**	**100.0%**

CRASH_MONTH_NBR	Number	%
1	**6**	14.6%
2	**4**	9.8%
3	**2**	4.9%
4	**5**	12.2%
5	**3**	7.3%
6	**1**	2.4%
7	**5**	12.2%
8	**2**	4.9%
9	**3**	7.3%
10	**5**	12.2%
11	**2**	4.9%
12	**3**	7.3%
Grand Total	**41**	**100.0%**

ROAD_CONTOUR	Number	%
Straight - Level	**41**	100.0%
Grand Total	**41**	**100.0%**

SPECIAL_AREA	Number	%
Unknown or Not in Work Zone	**41**	100.0%
Grand Total	**41**	**100.0%**

ANIMAL_TYPE	Number	%
Animal Not Stated	**41**	100.0%
Grand Total	**41**	**100.0%**

- - (-) From // to //

West Main Street

ACTION1	Number	%
Straight Ahead	**26**	63.4%
Backing	**6**	14.6%
Entering Traffic Lane	**2**	4.9%
Changing Lanes	**2**	4.9%
Unknown	**1**	2.4%
Making Right Turn	**1**	2.4%
Parked	**1**	2.4%
Making Left Turn	**1**	2.4%
Making U-Turn	**1**	2.4%
Grand Total	**41**	**100.0%**

CONTRIBUTING_FACTOR1	Number	%
Followed Too Closely/ACDA	**11**	26.8%
Failure To Control	**9**	22.0%
Improper Backing	**6**	14.6%
Ran Red Light	**3**	7.3%
Improper Lane Change/Passing/Offroad	**3**	7.3%
Improper Turn	**2**	4.9%
Failure To Yield	**2**	4.9%
Unknown	**2**	4.9%
Swerving To Avoid	**1**	2.4%
Improper Start From Parked Position	**1**	2.4%
Stopped Or Parked Illegally	**1**	2.4%
Grand Total	**41**	**100.0%**

	Number	%
Total	**41**	**100.0%**

TRAFFIC_CONTROL1	Number	%
Pavement Markings	**15**	36.6%
No Controls	**13**	31.7%
Traffic Signal	**12**	29.3%
Stop Sign	**1**	2.4%
Grand Total	**41**	**100.0%**

DRIVER_ALCOHOL1	Number	%
None	**37**	90.2%
0	**4**	9.8%
Grand Total	**41**	**100.0%**

DRIVER_DRUGS1	Number	%
(blank)	**41**	100.0%
Grand Total	**41**	**100.0%**

- - (-) From // to //

West Main Street

DIRECTION_FROM1	Number	%
West	**22**	53.7%
East	**13**	31.7%
North	**4**	9.8%
South	**1**	2.4%
Northwest	**1**	2.4%
Grand Total	**41**	**100.0%**

DIRECTION_TO1	Number	%
East	**19**	46.3%
West	**12**	29.3%
South	**5**	12.2%
North	**2**	4.9%
Unknown	**2**	4.9%
Southeast	**1**	2.4%
Grand Total	**41**	**100.0%**

POSTED_SPEED1	Number	%
Posted Speed 21-25	**41**	100.0%
Grand Total	**41**	**100.0%**

ESTIMATED_SPEED1	Number	%
Unit Speed 20 and Under	**28**	68.3%
Unit Speed 21-25	**7**	17.1%
Unit Speed 26-30	**3**	7.3%
Unit Speed Not Stated	**3**	7.3%
Grand Total	**41**	**100.0%**

VEHICLE_TYPE1	Number	%
Mid Size	**11**	26.8%
Pickup	**9**	22.0%
Sport Utility Vehicle	**6**	14.6%
Compact	**5**	12.2%
Minivan	**4**	9.8%
Full Size	**2**	4.9%
Unknown Or Hit/Skip	**2**	4.9%
Sub-Compact	**1**	2.4%
Van	**1**	2.4%
Grand Total	**41**	**100.0%**

VEHICLE_TYPE2	Number	%
Pickup	**16**	39.0%
Mid Size	**6**	14.6%
Compact	**6**	14.6%
Sport Utility Vehicle	**6**	14.6%
Full Size	**3**	7.3%
Van	**2**	4.9%
Minivan	**1**	2.4%
	1	2.4%
Grand Total	**41**	**100.0%**

- - (-) From // to //

West Main Street

ACTION2	Number	%
Parked	**16**	39.0%
Straight Ahead	**13**	31.7%
Slowing Or Stopped In Traffic	**9**	22.0%
Making Left Turn	**2**	4.9%
	1	2.4%
Grand Total	**41**	**100.0%**

CONTRIBUTING_FACTOR2	Number	%
None	**32**	78.0%
Stopped Or Parked Illegally	**5**	12.2%
Followed To Closely/ACDA	**1**	2.4%
	1	2.4%
Failure To Control	**1**	2.4%
Unknown	**1**	2.4%
Grand Total	**41**	**100.0%**

DIRECTION_FROM2	Number	%
West	**10**	24.4%
North	**10**	24.4%
East	**9**	22.0%
South	**4**	9.8%
Northwest	**3**	7.3%
Unknown	**2**	4.9%
Southeast	**2**	4.9%
	1	2.4%
Grand Total	**41**	**100.0%**

DIRECTION_TO2	Number	%
East	**10**	24.4%
West	**10**	24.4%
South	**9**	22.0%
North	**3**	7.3%
Unknown	**3**	7.3%
Southeast	**3**	7.3%
Northwest	**2**	4.9%
	1	2.4%
Grand Total	**41**	**100.0%**

DRIVER_ALCOHOL2	Number	%
None	**24**	58.5%
0	**16**	39.0%
	1	2.4%
Grand Total	**41**	**100.0%**

DRIVER_DRUGS2	Number	%
(blank)	**41**	100.0%
Grand Total	**41**	**100.0%**

- - (-) From // to //

West Main Street

SEVERITY	CRASH_SEVERITY	
TRAFFIC_CRASH_YEAR	Property Damage Crash	Injury Crash
2013	12	0
2014	14	0
2015	13	2
Grand Total	**39**	**2**

TRAFFIC_CRASH_YEAR	Fatalities	Incapacitating Injuries
2013	0	0
2014	0	0
2015	0	0
Grand Total	**0**	**0**

TRAFFIC_CRASH_YEAR	INJ_TYPE2_SERIOUS_VISIBLE	INJ_TYPE3_MINOR_VISIBLE	INJ_TYPE4_NO_VISIBLE
2013	0	0	0
2014	0	0	0
2015	0	2	1
Grand Total	**0**	**2**	**1**

- - (-) From // to //

North Market Street

	Number
Total	**7**

CRASH_SEVERITY	Number	%
Injury Crash	**1**	14.3%
Property Damage Crash	**6**	85.7%
Grand Total	**7**	**100.0%**

TRAFFIC_CRASH_YEAR	Number	%
2013	**3**	42.9%
2014	**2**	28.6%
2015	**2**	28.6%
Grand Total	**7**	**100.0%**

DAY_OF_WEEK	Number	%
Wednesday	**3**	42.9%
Sunday	**2**	28.6%
Friday	**1**	14.3%
Saturday	**1**	14.3%
Grand Total	**7**	**100.0%**

HOUR_OF_DAY	Number	%
9	**1**	14.3%
11	**2**	28.6%
12	**1**	14.3%
17	**1**	14.3%
18	**1**	14.3%
21	**1**	14.3%
Grand Total	**7**	**100.0%**

TYPE_OF_CRASH	Number	%
Backing	**3**	42.9%
Sideswipe - Passing	**2**	28.6%
Parked Vehicle	**1**	14.3%
Angle	**1**	14.3%
Grand Total	**7**	**100.0%**

- - (-) From // to //

North Market Street

WEATHER_CONDITION	Number	%
Clear	**4**	57.1%
Cloudy	**2**	28.6%
Rain	**1**	14.3%
Grand Total	**7**	**100.0%**

ROAD_CONDITION	Number	%
Road - Dry	**4**	57.1%
Road - Wet	**2**	28.6%
Road - Snow	**1**	14.3%
Grand Total	**7**	**100.0%**

LIGHT_CONDITION	Number	%
Daylight	**5**	71.4%
Dark - Lighted	**2**	28.6%
Grand Total	**7**	**100.0%**

NUMBER_OF_VEHICLES	Number	%
(blank)	**7**	100.0%
Grand Total	**7**	**100.0%**

LOCATION	Number	%
Not An Intersection	**7**	100.0%
Grand Total	**7**	**100.0%**

CRASH_MONTH_NBR	Number	%
1	**1**	14.3%
2	**1**	14.3%
5	**1**	14.3%
6	**3**	42.9%
7	**1**	14.3%
Grand Total	**7**	**100.0%**

ROAD_CONTOUR	Number	%
Straight - Level	**7**	100.0%
Grand Total	**7**	**100.0%**

SPECIAL_AREA	Number	%
Unknown or Not in Work Zone	**7**	100.0%
Grand Total	**7**	**100.0%**

ANIMAL_TYPE	Number	%
Animal Not Stated	**7**	100.0%
Grand Total	**7**	**100.0%**

- - (-) From // to //

North Market Street

ACTION1	Number	%
Backing	**3**	42.9%
Changing Lanes	**3**	42.9%
Entering Traffic Lane	**1**	14.3%
Grand Total	**7**	**100.0%**

CONTRIBUTING_FACTOR1	Number	%
Improper Backing	**3**	42.9%
Improper Lane Change/Passing/Offroad	**3**	42.9%
Improper Start From Parked Position	**1**	14.3%
Grand Total	**7**	**100.0%**

	Number	%
Total	**7**	**100.0%**

TRAFFIC_CONTROL1	Number	%
No Controls	**4**	57.1%
Pavement Markings	**3**	42.9%
Grand Total	**7**	**100.0%**

DRIVER_ALCOHOL1	Number	%
None	**7**	100.0%
Grand Total	**7**	**100.0%**

DRIVER_DRUGS1	Number	%
(blank)	**7**	100.0%
Grand Total	**7**	**100.0%**

- - (-) From // to //

North Market Street

DIRECTION_FROM1	Number	%
South	**4**	57.1%
North	**2**	28.6%
West	**1**	14.3%
Grand Total	**7**	**100.0%**

DIRECTION_TO1	Number	%
North	**4**	57.1%
South	**3**	42.9%
Grand Total	**7**	**100.0%**

POSTED_SPEED1	Number	%
Posted Speed 21-25	**7**	100.0%
Grand Total	**7**	**100.0%**

ESTIMATED_SPEED1	Number	%
Unit Speed 20 and Under	**6**	85.7%
Unit Speed 21-25	**1**	14.3%
Grand Total	**7**	**100.0%**

VEHICLE_TYPE1	Number	%
Mid Size	**2**	28.6%
Sport Utility Vehicle	**2**	28.6%
Full Size	**1**	14.3%
Other Med/Heavy Vehicle	**1**	14.3%
Compact	**1**	14.3%
Grand Total	**7**	**100.0%**

VEHICLE_TYPE2	Number	%
Pickup	**2**	28.6%
Full Size	**2**	28.6%
Minivan	**1**	14.3%
Mid Size	**1**	14.3%
Sport Utility Vehicle	**1**	14.3%
Grand Total	**7**	**100.0%**

- - (-) From // to //

North Market Street

ACTION2	Number	%
Straight Ahead	**4**	57.1%
Parked	**3**	42.9%
Grand Total	**7**	**100.0%**

CONTRIBUTING_FACTOR2	Number	%
None	**7**	100.0%
Grand Total	**7**	**100.0%**

DIRECTION_FROM2	Number	%
South	**4**	57.1%
North	**3**	42.9%
Grand Total	**7**	**100.0%**

DIRECTION_TO2	Number	%
North	**4**	57.1%
South	**3**	42.9%
Grand Total	**7**	**100.0%**

DRIVER_ALCOHOL2	Number	%
None	**4**	57.1%
0	**3**	42.9%
Grand Total	**7**	**100.0%**

DRIVER_DRUGS2	Number	%
(blank)	**7**	100.0%
Grand Total	**7**	**100.0%**

- - (-) From // to //

North Market Street

SEVERITY	CRASH_SEVERITY	
TRAFFIC_CRASH_YEAR	Property Damage Crash	Injury Crash
2013	2	1
2014	2	0
2015	2	0
Grand Total	**6**	**1**

TRAFFIC_CRASH_YEAR	Fatalities	Incapacitating Injuries
2013	0	0
2014	0	0
2015	0	0
Grand Total	**0**	**0**

TRAFFIC_CRASH_YEAR	INJ_TYPE2_SERIOUS_VISIBLE	INJ_TYPE3_MINOR_VISIBLE	INJ_TYPE4_NO_VISIBLE
2013	0	0	1
2014	0	0	0
2015	0	0	0
Grand Total	**0**	**0**	**1**

- - (-) From // to //

South Market Street

	Number
Total	**55**

CRASH_SEVERITY	Number	%
Injury Crash	**6**	10.9%
Property Damage Crash	**49**	89.1%
Grand Total	**55**	**100.0%**

TRAFFIC_CRASH_YEAR	Number	%
2013	**13**	23.6%
2014	**19**	34.5%
2015	**23**	41.8%
Grand Total	**55**	**100.0%**

DAY_OF_WEEK	Number	%
Friday	**12**	21.8%
Tuesday	**11**	20.0%
Wednesday	**10**	18.2%
Thursday	**8**	14.5%
Saturday	**6**	10.9%
Monday	**5**	9.1%
Sunday	**3**	5.5%
Grand Total	**55**	**100.0%**

HOUR_OF_DAY	Number	%
1	**1**	1.8%
7	**2**	3.6%
8	**1**	1.8%
9	**3**	5.5%
10	**4**	7.3%
11	**5**	9.1%
12	**1**	1.8%
13	**4**	7.3%
14	**11**	20.0%
15	**4**	7.3%
16	**9**	16.4%
17	**4**	7.3%
18	**2**	3.6%
19	**1**	1.8%
21	**1**	1.8%
23	**2**	3.6%
Grand Total	**55**	**100.0%**

TYPE_OF_CRASH	Number	%
Parked Vehicle	**13**	23.6%
Rear End	**12**	21.8%
Backing	**10**	18.2%
Angle	**10**	18.2%
Sideswipe - Passing	**7**	12.7%
Left Turn	**2**	3.6%
Fixed Object	**1**	1.8%
Grand Total	**55**	**100.0%**

- - (-) From // to //

South Market Street

WEATHER_CONDITION	Number	%
Clear	**30**	54.5%
Cloudy	**15**	27.3%
Rain	**9**	16.4%
Snow	**1**	1.8%
Grand Total	**55**	**100.0%**

ROAD_CONDITION	Number	%
Road - Dry	**45**	81.8%
Road - Wet	**9**	16.4%
Road - Snow	**1**	1.8%
Grand Total	**55**	**100.0%**

LIGHT_CONDITION	Number	%
Daylight	**48**	87.3%
Dark - Lighted	**4**	7.3%
Light Not Stated	**2**	3.6%
Dusk	**1**	1.8%
Grand Total	**55**	**100.0%**

NUMBER_OF_VEHICLES	Number	%
(blank)	**55**	100.0%
Grand Total	**55**	**100.0%**

LOCATION	Number	%
Not An Intersection	**35**	63.6%
Four-Way Intersection	**18**	32.7%
Driveway/Alley Access	**2**	3.6%
Grand Total	**55**	**100.0%**

CRASH_MONTH_NBR	Number	%
1	**4**	7.3%
2	**4**	7.3%
3	**3**	5.5%
4	**6**	10.9%
5	**6**	10.9%
6	**3**	5.5%
7	**6**	10.9%
8	**6**	10.9%
9	**3**	5.5%
10	**7**	12.7%
11	**2**	3.6%
12	**5**	9.1%
Grand Total	**55**	**100.0%**

ROAD_CONTOUR	Number	%
Straight - Level	**49**	89.1%
Straight - Grade	**6**	10.9%
Grand Total	**55**	**100.0%**

SPECIAL_AREA	Number	%
Unknown or Not in Work Zone	**55**	100.0%
Grand Total	**55**	**100.0%**

ANIMAL_TYPE	Number	%
Animal Not Stated	**55**	100.0%
Grand Total	**55**	**100.0%**

- - (-) From // to //

South Market Street

ACTION1	Number	%
Straight Ahead	**25**	45.5%
Backing	**10**	18.2%
Changing Lanes	**5**	9.1%
Making Left Turn	**5**	9.1%
Parked	**3**	5.5%
Overtaking/Passing	**2**	3.6%
Leaving Traffic Lane	**1**	1.8%
Unknown	**1**	1.8%
Making Right Turn	**1**	1.8%
Entering Traffic Lane	**1**	1.8%
Driverless	**1**	1.8%
Grand Total	**55**	**100.0%**

CONTRIBUTING_FACTOR1	Number	%
Followed Too Closely/ACDA	**15**	27.3%
Improper Backing	**10**	18.2%
Failure To Control	**8**	14.5%
Improper Lane Change/Passing/Offroad	**6**	10.9%
Ran Red Light	**6**	10.9%
Other Improper Action	**4**	7.3%
Failure To Yield	**3**	5.5%
Unknown	**1**	1.8%
Improper Turn	**1**	1.8%
None	**1**	1.8%
Grand Total	**55**	**100.0%**

	Number	%
Total	**55**	**100.0%**

TRAFFIC_CONTROL1	Number	%
No Controls	**19**	34.5%
Pavement Markings	**17**	30.9%
Traffic Signal	**17**	30.9%
Not Reported	**1**	1.8%
Traffic Flashers	**1**	1.8%
Grand Total	**55**	**100.0%**

DRIVER_ALCOHOL1	Number	%
None	**46**	83.6%
0	**8**	14.5%
Yes - Alcohol Suspected	**1**	1.8%
Grand Total	**55**	**100.0%**

DRIVER_DRUGS1	Number	%
(blank)	**55**	100.0%
Grand Total	**55**	**100.0%**

- - (-) From // to //

South Market Street

DIRECTION_FROM1	Number	%
South	**20**	36.4%
North	**19**	34.5%
West	**8**	14.5%
East	**5**	9.1%
Northeast	**2**	3.6%
Southwest	**1**	1.8%
Grand Total	**55**	**100.0%**

DIRECTION_TO1	Number	%
North	**21**	38.2%
South	**16**	29.1%
East	**7**	12.7%
West	**6**	10.9%
Unknown	**3**	5.5%
Southwest	**2**	3.6%
Grand Total	**55**	**100.0%**

POSTED_SPEED1	Number	%
Posted Speed 21-25	**48**	87.3%
Posted Speed 31-35	**7**	12.7%
Grand Total	**55**	**100.0%**

ESTIMATED_SPEED1	Number	%
Unit Speed 20 and Under	**35**	63.6%
Unit Speed 21-25	**9**	16.4%
Unit Speed Not Stated	**7**	12.7%
Unit Speed 26-30	**2**	3.6%
Unit Speed 31-35	**1**	1.8%
Unit Speed 56-60	**1**	1.8%
Grand Total	**55**	**100.0%**

VEHICLE_TYPE1	Number	%
Sport Utility Vehicle	**10**	18.2%
Pickup	**9**	16.4%
Mid Size	**9**	16.4%
Compact	**8**	14.5%
Sub-Compact	**5**	9.1%
Full Size	**5**	9.1%
Minivan	**3**	5.5%
Unknown Or Hit/Skip	**2**	3.6%
Single Unit Truck Or Van 2 Axle, 6 Tires	**1**	1.8%
Other Passenger Vehicle	**1**	1.8%
Van	**1**	1.8%
Single Unit Truck/Trailer	**1**	1.8%
Grand Total	**55**	**100.0%**

VEHICLE_TYPE2	Number	%
Mid Size	**15**	27.3%
Pickup	**11**	20.0%
Sport Utility Vehicle	**10**	18.2%
Full Size	**10**	18.2%
Compact	**5**	9.1%
Minivan	**1**	1.8%
	1	1.8%
Motorcycle	**1**	1.8%
Other Passenger Vehicle	**1**	1.8%
Grand Total	**55**	**100.0%**

- - (-) From // to //

South Market Street

ACTION2	Number	%
Straight Ahead	**20**	36.4%
Parked	**18**	32.7%
Slowing Or Stopped In Traffic	**13**	23.6%
Making Right Turn	**1**	1.8%
	1	1.8%
Other Motorist Action	**1**	1.8%
Changing Lanes	**1**	1.8%
Grand Total	**55**	**100.0%**

CONTRIBUTING_FACTOR2	Number	%
None	**50**	90.9%
	1	1.8%
None Non-Motorist	**1**	1.8%
Stopped Or Parked Illegally	**1**	1.8%
Failure To Control	**1**	1.8%
Other Improper Action	**1**	1.8%
Grand Total	**55**	**100.0%**

DIRECTION_FROM2	Number	%
North	**17**	30.9%
South	**16**	29.1%
East	**8**	14.5%
West	**5**	9.1%
Southwest	**4**	7.3%
Northeast	**4**	7.3%
	1	1.8%
Grand Total	**55**	**100.0%**

DIRECTION_TO2	Number	%
South	**17**	30.9%
North	**16**	29.1%
West	**8**	14.5%
Southwest	**4**	7.3%
East	**4**	7.3%
Northeast	**4**	7.3%
Unknown	**1**	1.8%
	1	1.8%
Grand Total	**55**	**100.0%**

DRIVER_ALCOHOL2	Number	%
None	**36**	65.5%
0	**18**	32.7%
	1	1.8%
Grand Total	**55**	**100.0%**

DRIVER_DRUGS2	Number	%
(blank)	**55**	100.0%
Grand Total	**55**	**100.0%**

- - (-) From // to //

South Market Street

SEVERITY	CRASH_SEVERITY	
TRAFFIC_CRASH_YEAR	Property Damage Crash	Injury Crash
2013	11	2
2014	16	3
2015	22	1
Grand Total	49	6

TRAFFIC_CRASH_YEAR	Fatalities	Incapacitating Injuries
2013	0	0
2014	0	0
2015	0	0
Grand Total	0	0

TRAFFIC_CRASH_YEAR	INJ_TYPE2_SERIOUS_VISIBLE	INJ_TYPE3_MINOR_VISIBLE	INJ_TYPE4_NO_VISIBLE
2013	0	2	0
2014	0	1	2
2015	0	0	1
Grand Total	0	3	3