

TECHNICAL MEMORANDUM

TRAFFIC STUDY OF STREET CLOSURES AND CAMPUS EXPANSION

June 28, 2010

Prepared for:
SHAWNEE STATE UNIVERSITY
Portsmouth, Ohio

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INTRODUCTION

Per the request of Shawnee State University (SSU), Burgess & Niple (B&N) has completed an analysis of the traffic operational impacts of closing 3rd Street (between Gay Street and Waller Street) to vehicular traffic, and other campus growth and expansion concepts (Campus Master Plan) including the closure of 2nd Street (between Waller Street and Union Street). The primary intent of the proposed closure of 3rd Street is to enhance pedestrian safety on the Shawnee State University Campus. The current design of 3rd Street, widened 20 years ago, encourages relatively high vehicular traffic speeds in a corridor that also serves a large number of pedestrians per day, which is not conducive to a pedestrian friendly campus environment that is needed to ensure the continued success of SSU's ability to attract new students to the Portsmouth area. With the continued expansion of campus to the north, it is important to minimize vehicular/pedestrian conflicts in the "heart" of the existing and future SSU campus. The current campus master plan identifies 4th Street as (more or less) the northern edge of the core campus area, making 4th Street the "new gateway" to campus, in lieu of 3rd Street.

The primary focus of this analysis is to evaluate the potential traffic capacity and operational impacts on 4th Street as a result of changes in traffic patterns due to the proposed 3rd Street closure and future campus expansion. Traffic operational analysis was carried out for the morning and afternoon peak hours of travel for three different scenarios:

1. Existing street network with estimated fall/winter semester student enrollment rates
2. 3rd Street closed to vehicular traffic (between Gay Street and Waller Street) with estimated fall/winter semester student enrollment rates
3. University Master Plan build-out street network (includes an estimated 40 percent increase in student enrollment)

SUMMARY OF FINDINGS AND CONCLUSIONS

The analysis herein shows that the changes in traffic patterns and volumes that result from scenarios 2 and 3 above do not result in any severe detrimental impacts to traffic operations. The only potential traffic capacity and operational deficiency identified is the operation of the 4th Street / Gay Street intersection, for both scenarios 2 and 3. It was determined that westbound 4th Street traffic may experience unacceptable delays while entering or crossing Gay Street. An apparent effective solution to this potential problem is to install a traffic signal at this intersection. All or part of the signal at 3rd Street and the existing SSU main entrance could be relocated to the Gay Street / 4th Street intersection, since that section of 3rd Street would be closed to vehicular traffic.

The only other potential concern is the "offset" in the north-south geometry at the intersection of Waller Street and 4th Street in combination with increased traffic could potentially cause some operational problems. The campus master plan realigns northbound Waller Street at this intersection to rectify this potential problem. However, if problems occur in the interim condition, dashed pavement markings can be placed through the intersection to help guide north-

south traffic through the intersection, or signal phasing modifications could be considered that would provide separate signal phases for northbound and southbound traffic movements.

In summary, the local street network has the capacity to handle the increase in traffic resulting from the closure of 3rd Street (between Gay Street and Waller Street) and 2nd Street (between Waller Street and Union Street). As noted above, the two potential problems on 4th Street at its intersections with Gay Street and Waller Street can be remedied in a relatively simple manner. With the fixes implemented for these two intersections, traffic operations in the study area will be acceptable in both short term (scenario 2) and long term (scenario3).

2010 TRAFFIC VOLUMES

To establish current traffic volumes and patterns in the study area, the following traffic count data was collected (see appendix for raw count data):

- 24-hour mechanical tube counts (May 24 – May 28)
 - 3rd Street between Gay Street and Bond Street
 - 3rd Street between Union Street and Glover Street
 - 4th Street between Gay Street and Bond Street
 - 4th Street between Union Street and Glover Street
 - Access Road to the University Parking from Front Street
- AM and PM peak-hour manual turning movement counts (May 24 – May 28, 7am-9am and 4pm-6pm)
 - 3rd Street and US 23/Chillicothe Street
 - 3rd Street and Stinton Street
 - 3rd Street and Waller Street
 - 4th Street and Stinton Street
 - 4th Street and Waller Street
 - 4th Street and Offnere Street
 - 3rd Street and Offnere Street

Traffic counts for the intersections of Gay Street with 3rd Street and 4th Street were collected in December of 2006 as part of a traffic safety study prepared for the Ohio Department of Transportation (see appendix for count data). These counts were mathematically adjusted to match the volumes of the counts taken in May 2010 as part of this study.

Since counts were taken during SSU's summer session, the volumes were increased by an appropriate factor, based on SSU enrollment data, to estimate traffic volumes that would be present during a fall or winter semester, for analysis purposes. The peak hours that were chosen for analysis, represent the hours during which the greatest number of local citizens commute to and from school, work, and other daily destinations. These peak hours are 7:30 to 8:30 a.m. and 4:30 to 5:30 p.m. Figures 1 & 2 illustrate the 2010 traffic volumes used for analysis.

3rd Street Closed between Gay and Waller 2010: Traffic Volumes

To estimate the traffic volume that will exist on 4th Street due to the closure of 3rd Street the following assumptions were made:

- The same parking lots (as used today) will remain the main parking facilities for commuters
- Commuter traffic will access the primary parking facilities from Waller Street
- Commuting traffic to the University that currently uses eastbound 3rd Street will instead use eastbound 4th Street and turn right on Waller Street
- Commuting traffic to the University that currently uses westbound 3rd Street will still use westbound 3rd Street and turn left at Waller Street

Campus Master Plan Build-out: Traffic Volumes

Appendix B illustrates the assumed campus layout and street network for this scenario. The campus master plan assumes a 40-percent increase in student enrollment at SSU. The campus master plan also provides revised and additional parking facilities (see Figure 5) for commuters to the campus. The following assumptions were made to estimate traffic volumes for this future scenario:

- No other significant traffic growth (unrelated to SSU) will occur on the streets within the study area over the master plan time frame
- 75-percent of the commuting traffic to SSU will use 4th Street to access SSU parking areas in the following distribution:
 - 40-percent park in lots K&L of the master plan
 - 20-percent in lot B of the master plan and
 - 15-percent in lot A of the master plan
- 20-percent of the commuting traffic will park in lot E
- 5-percent of the commuting traffic will park in lots G & H via Front Street

See Figures 5 & 6 for a graphic of these parking/traffic distributions.

TRAFFIC OPERATIONS ANALYSIS

Based on the estimated traffic volumes for each scenario, traffic operational parameters were calculated using the *Synchro 7* traffic analysis software, which is an industry accepted tool for evaluating traffic operations at signalized and unsignalized intersections. Copies of the *Synchro* software output files for each scenario analyzed can be found in the appendices of this memorandum.

Analysis summaries presented herein include the level of service (LOS), average delay, volume-to-capacity ratios (v/c) and 95th percentile queue lengths for each intersection in the study area for the three different scenarios modeled. LOS is a qualitative description of the average delay that is estimated for vehicles at the intersection, and serves as the primary measure of operational acceptability. The “grading” system for LOS is similar to a typical school grade system where A is the best and F is considered “failing.” For an urban area such as this (within a built-up area of a city) a LOS of “D” or better for all approaches is a typically desirable at public street intersections if possible. Also, keeping all intersection approach volume-to-capacity ratios below 1.0 is considered important, so that the intersection operates under its capacity. The following tables show the delay thresholds for stop sign controlled and signalized intersections. The thresholds for each intersection type are different because research has shown that drivers expect, and are generally more willing to accept, delay while waiting a traffic signal than at a stop sign.

Level of Service Criteria for Unsignalized Intersections (Highway Capacity Manual)

Level of Service	Control delay per vehicle in seconds
A	≤ 10
B	>10 and ≤ 15
C	>15 and ≤ 25
D	>25 and ≤ 35
E	>35 and ≤ 50
F	>50

Level of Service Criteria for Signalized Intersections (Highway Capacity Manual)

Level of Service	Controlled delay per vehicle in seconds	Description
A	< 10	Most vehicles do not stop.
B	10 - 20	Good progression; more vehicles stop than at LOS A.
C	20 - 35	The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	35 - 55	Many vehicles stop, and the proportion of vehicles not stopping declines. Occasionally, all vehicles on an approach will not clear the intersection during the green.
E	55 - 80	Considered the limit of acceptable delay. Frequently, all vehicles on an approach will not clear the intersection during the green.
F	> 80	Considered unacceptable to most drivers.

Traffic Operational Analysis of Scenario 1: Existing Street Network and 2010 Volumes

The following table contains the results of the analysis for the existing street network assuming fall or winter SSU semester is in session (see Figures 1 and 2 for analysis volumes).

Operational Analysis Results – Existing Street Network/2010 Volumes

Baseline Existing			AM Peak				PM Peak			
Intersection	Control	Movement	Delay (s)	LOS	v/c	95th Queue (# Veh)	Delay (s)	LOS	v/c	95th Queue (# veh)
US 23 and 2nd Street	Signalized	EBLT	24	C	0.01	< 1	24.4	C	0.05	< 1
		EBT	36.7	D	0.61	5	36.6	D	0.62	6
		EBRT	0.4	B	0.1	< 1	7.6	A	0.33	2
		NBLT, NBT	3.9	A	0.1	1	4.2	A	0.08	1
		NBRT	1.2	A	0.32	1	1.2	A	0.26	< 1
		SBT, SBRT	2.5	A	0.06	< 1	3.9	A	0.18	2
		Overall	9.5	A	-	-	9.2	A	-	-
Gay Street and 4th Street	Stop	EBLT	10.7	B	0.01	< 1	11.3	B	0.08	< 1
		EBT	11.9	B	0.09	< 1	12.1	B	0.13	< 1
		WBT	11.7	B	0.15	< 1	11.6	B	0.16	< 1
		WBRT	11.7	B	0.15	< 1	11.6	B	0.16	< 1
		Overall	3.9	-	-	-	5	-	-	-
3rd Street & Stinton Street	Signalized	EBT	15.7	B	0.44	3	22.5	C	0.62	6
		EBRT	4.6	A	0.38	1	5.2	A	0.13	< 1
		WBLT	11.5	B	0.07	< 1	16	B	0.16	1
		WBT	13.8	B	0.31	2	20.8	C	0.56	5
		NBLT, NBRT	4.4	A	0.05	< 1	5.9	A	0.1	1
		Overall	10.5	B	-	-	18.1	B	-	-
4th Street & Stinton Street	Stop	SBLT, SBRT	8.9	A	0.01	< 1	9.2	A	0.03	< 1
		Overall	1.2	-	-	-	1.2	-	-	-
3rd Street & Waller Street	Stop	NBLT,NBT,NBRT	19.1	C	0.19	< 1	25.2	D	0.6	4
		SBLT,SBT,SBRT	23.1	C	0.5	3	14.5	B	0.25	< 1
		Overall	9.6	-	-	-	9.6	-	-	-
4th Street & Waller Street	Signalized	EBLT,EBT,EBRT	23.1	C	0.14	1	29.9	C	0.44	3
		WBLT,WBT,WBRT	19.9	B	0.54	3	23.3	C	0.31	2
		NBLT,NBT,NBRT	2.5	A	0.05	< 1	2.5	A	0.12	1
		SBLT,SBT,SBRT	2.9	A	0.16	2	2.4	A	0.1	1
		Overall	9.5	A	-	-	10.9	B	-	-
2nd Street & Waller Street	Stop	WBLT,WBT,WBRT	10.8	B	0.18	< 1	10.6	B	0.09	< 1
		Overall	5.1	-	-	-	2	-	-	-
3rd Street & Offnere Street	Stop	EBLT,EBT,EBRT	13.4	B	0.22	< 1	17.7	C	0.48	3
		WBLT,WBT,WBRT	13.1	B	0.18	< 1	12.8	B	0.12	< 1
		Overall	5.5	-	-	-	8.2	-	-	-
4th Street & Offnere Street	Signalized	EBLT,EBT,EBRT	29.5	C	0.32	2	32.3	C	0.5	3
		WBLT,WBT,WBRT	32.8	C	0.29	2	21.7	C	0.2	1
		NBLT,NBT,NBRT	1.7	A	0.08	< 1	2.7	A	0.16	2
		SBLT,SBT,SBRT	1.9	A	0.18	2	2.7	A	0.2	2
		Overall	6.8	A	-	-	8.1	A	-	-

*EBLT - Eastbound Left Turn, EBT - Eastbound Through, EBRT - Eastbound Rightturn

*WBLT - Westbound Left Turn, WBT - Westbound Through, WBRT - Westbound Rightturn

*NBLT - Northbound Left Turn, NBT - Northbound Through, NBRT - Northbound Rightturn

*SBLT - Southbound Left Turn, SBT - Southbound Through, SBRT - Southbound Rightturn

With the existing street network, all intersection approaches and movements operate at LOS D or better for 2010 traffic. The calculated volume-to-capacity ratios (v/c) indicate that no approach is operating even close to its capacity and there are no unacceptably long average queue lengths to be reported from the analysis.

Traffic Operational Analysis of Scenario 2: 3rd Street Closed between Gay and Waller

Figures 3 and 4 illustrate the estimated fall/winter semester traffic volumes under this scenario. The following table illustrates the respective analysis results:

Operational Analysis Results – 3rd Street Closed/2010 Volumes

3rd Street Closed-Do Nothing			AM Peak				PM Peak			
Intersection	Control	Movement	Delay (s)	LOS	v/c	95th Queue (# Veh)	Delay (s)	LOS	v/c	95th Queue (# Veh)
US 23 and 2nd Street	Signalized	EBLT	19.2	B	0.01	< 1	22.6	C	0.05	< 1
		EBT	29.4	C	0.57	4	33.9	C	0.61	5
		EBRT	8.9	A	0.1	< 1	7.3	A	0.32	2
		NBLT, NBT	4.1	A	0.1	1	4.3	A	0.09	1
		NBRT	1.3	A	0.33	1	1.2	A	0.26	< 1
		SBT, SBRT	2.6	A	0.06	< 1	4	A	0.18	2
		Overall	8	A	-	-	8.8	A	-	-
Gay Street and 4th Street	Stop	EBLT	17.5	C	0.02	< 1	46.6	E	0.36	1
		EBT	17.2	C	0.16	< 1	17.7	C	0.21	< 1
		WBT	25.9	D	0.65	5	52.4	F	0.92	11
		WBRT	25.9	D	0.65	5	52.4	F	0.92	11
		Overall	8.4	-	-	-	21.2	-	-	-
4th Street & Stinton Street	Stop	SBLT, SBRT	14.4	B	0.08	< 1	16	C	0.09	< 1
		Overall	0.7	-	-	-	0.7	-	-	-
3rd Street & Waller Street	Stop	WBLT, WBRT	11.2	B	0.1	< 1	12.8	B	0.44	< 1
		Overall	15.2	-	-	-	11.9	-	-	-
4th Street & Waller Street	Signalized	EBLT,EBT,EBRT	9.7	A	0.63	5	14.9	B	0.64	9
		WBLT,WBT,WBRT	6.8	A	0.38	3	9.5	A	0.23	3
		NBLT,NBT,NBRT	10.1	B	0.16	1	17.5	B	0.58	7
		SBLT,SBT,SBRT	10.9	B	0.33	2	8.4	A	0.21	2
		Overall	9	A	-	-	13.9	B	-	-
2nd Street & Waller Street	Stop	WBLT,WBRT	10.8	B	0.18	< 1	10.6	B	0.09	< 1
		Overall	5.1	-	-	-	2	-	-	-
3rd Street & Offnere Street	Stop	EBLT,EBT,EBRT	11	B	0.22	< 1	13.6	B	0.14	< 1
		WBLT,WBT,WBRT	11.4	B	0.18	< 1	10	B	0.08	< 1
		Overall	4.2	-	-	-	8.2	-	-	-
4th Street & Offnere Street	Signalized	EBLT,EBT,EBRT	23.1	C	0.55	3	30.3	C	0.73	6
		WBLT,WBT,WBRT	19.1	B	0.16	1	12.3	B	0.1	1
		NBLT,NBT,NBRT	3.4	A	0.12	1	7.1	A	0.18	3
		SBLT,SBT,SBRT	3.1	A	0.22	2	6	A	0.27	4
		Overall	8.8	A	-	-	15.3	A	-	-

*EBLT - Eastbound Left Turn, EBT - Eastbound Through, EBRT - Eastbound Rightturn

*WBLT - Westbound Left Turn, WBT - Westbound Through, WBRT - Westbound Rightturn

*NBLT - Northbound Left Turn, NBT - Northbound Through, NBRT - Northbound Rightturn

*SBLT - Southbound Left Turn, SBT - Southbound Through, SBRT - Southbound Rightturn

These results indicate that there is one expected deficiency, the intersection of Gay Street (US 23 northbound) and 4th Street, where LOS F was estimated to occur for westbound traffic and a LOS of E was estimated for the eastbound left turn movement. It should be noted that the calculated average delay for westbound is only 2.4 second per vehicle above what is considered LOS F, the volume-to-capacity ratio is still less than 1.0, and the calculated 95th percentile queue length is only approximately 10-11 vehicles, which is not a severe deficiency. However, these deficiencies should be considered and addressed, if possible, as part of the street closure

implementation, or at least monitored closely after the street closure and addressed later if the problem is deemed to be significant.

An effective solution to improve operations at the intersection of Gay Street and 4th Street to an acceptable level of service would be to install a traffic signal. A traffic signal warrant analysis prepared per the requirements of *Ohio Manual of Uniform Traffic Control Devices*, indicates that the installation of traffic signal would be justified based on estimated traffic volumes (see appendix for warrant analysis). There is the potential that all or parts of the existing traffic signal at 3rd Street and the main entrance to SSU could be relocated to this intersection, since that signal will be no longer needed if that section of 3rd Street is closed to vehicular traffic. The most important factor to investigate to determine the feasibility of this concept is the availability of right-of-way on the corners of that intersection (for signal pole/controller placement). The following table shows the resultant traffic operations at this intersection for this scenario if a traffic signal were installed.

Operational Analysis Results – 4th Street & Gay Street (Signalized-3rd Street Closed)

Campus Master Plan-US 23 & 4th Signal			AM Peak				PM Peak			
Intersection	Control	Movement	Delay (s)	LOS	v/c	95th Queue	Delay (s)	LOS	v/c	95th Queue
Gay Street and 4th Street	Signalized	EBLT	7	A	0.02	< 1	8.6	A	0.15	< 1
		EBT	7.2	A	0.09	1	7.3	A	0.1	1
		WBT, WBRT	11.6	B	0.56	5	12	B	0.59	6
		NBLT, NBT, NBRT	5.3	A	0.51	2	5.5	A	0.52	3
		Overall	7.6	A	-	-	8	A	-	-

*EBLT - Eastbound Left Turn, EBT - Eastbound Through, EBRT - Eastbound Rightturn

*WBLT - Westbound Left Turn, WBT - Westbound Through, WBRT - Westbound Rightturn

*NBLT - Northbound Left Turn, NBT - Northbound Through, NBRT - Northbound Rightturn

*SBLT - Southbound Left Turn, SBT - Southbound Through, SBRT - Southbound Rightturn

One other area that deserves close observation will be at the intersection of 4th and Waller Streets. While the traffic operations are predicted to be more than acceptable, the “offset” nature of the north-south alignments at that intersection in combination with increased traffic volumes should be observed after the closure. Should problems incur, dashed pavement markings should be installed to help guide traffic through the misaligned intersection, or modified signal phasing could be implemented that provides separate signal phases for northbound and southbound movements.

Traffic Operational Analysis of Scenario 3: Campus Master Plan Build-Out

Figures 7 and 8 illustrate the estimated fall/winter semester traffic volumes under the Campus Master Plan Build-out scenario. The following table illustrates the respective analysis results:

Operational Analysis Results – Campus Master Plan

Campus Master Plan-Do Nothing			AM Peak				PM Peak			
Intersection	Control	Movement	Delay (s)	LOS	v/c	95th Queue (# Veh)	Delay (s)	LOS	v/c	95th Queue (# Veh)
US 23 and 2nd Street	Signalized	EBLT	24.8	C	0.01	< 1	21.2	C	0.05	< 1
		EBT	38	D	0.62	5	33.2	C	0.64	6
		EBRT	10.7	B	0.11	< 1	6.7	A	0.3	1
		NBLT, NBT	4.3	A	0.18	2	5	A	0.12	1
		NBRT	1.2	A	0.18	1	1.3	A	0.27	1
		SBT, SBRT	2	A	0.32	< 1	4.4	A	0.2	2
		Overall	9.1	A	-	-	9.3	A	-	-
Gay Street and 4th Street	Stop	EBLT	32.3	D	0.04	< 1	76.4	F	0.5	2
		EBT	17.5	C	0.19	< 1	18.7	C	0.23	< 1
		WBT	50.1	F	0.9	10	64.8	F	0.97	12
		WBRT	50.1	F	0.9	10	64.8	F	0.97	12
		Overall	18.8	-	-	-	26.5	-	-	-
4th Street & Stinton Street	Stop	SBLT, SBRT	12	B	0.02	< 1	13.6	B	0.06	< 1
		Overall	0.6	-	-	-	0.7	-	-	-
4th Street & Waller Street	Signalized	EBLT,EBT,EBRT	5.9	A	0.44	3	16.3	B	0.69	10
		WBLT,WBT,WBRT	12.8	B	0.74	9	10.2	B	0.35	5
		NBLT,NBT,NBRT	11	B	0.21	2	17.4	B	0.65	8
		SBLT,SBT,SBRT	16.7	B	0.45	4	6.8	A	0.26	2
		Overall	11.2	B	-	-	14.2	B	-	-
3rd Street & Offnere Street	Stop	WBLT,WBT,WBRT	9.6	A	0.11	< 1	8.9	A	0.07	< 1
		Overall	3.1	-	-	-	4.3	-	-	-
4th Street & Offnere Street	Signalized	EBLT,EBT,EBRT	34.7	C	0.68	5	28.3	C	0.82	10
		WBLT,WBT,WBRT	23.8	C	0.14	2	7.5	A	0.06	< 1
		NBLT,NBT,NBRT	5.5	A	0.31	3	14.3	B	0.19	3
		SBLT,SBT,SBRT	1.4	A	0.24	1	9.8	A	0.35	5
		Overall	11.7	B	-	-	19.8	B	-	-

*EBLT - Eastbound Left Turn, EBT - Eastbound Through, EBRT - Eastbound Rightturn

*WBLT - Westbound Left Turn, WBT - Westbound Through, WBRT - Westbound Rightturn

*NBLT - Northbound Left Turn, NBT - Northbound Through, NBRT - Northbound Rightturn

*SBLT - Southbound Left Turn, SBT - Southbound Through, SBRT - Southbound Rightturn

As with the Scenario 2, only the intersection of Gay Street (US 23 northbound) and 4th Street results in traffic operational deficiencies. The deficient condition is again not severe (v/c still below 1.0) for this scenario, but the deficiency should be addressed if possible. Installing a traffic signal at this intersection also appears to provide an adequate solution for this scenario as illustrated by the following table:

Operational Analysis Results – 4th Street & Gay Street (Signalized-Campus Master Plan)

Third Street Closed-US 23 & 4th Signal			AM Peak				PM Peak			
Intersection	Control	Movement	Delay (s)	LOS	v/c	95th Queue	Delay (s)	LOS	v/c	95th Queue
Gay Street and 4th Street	Signalized	EBLT	7.6	A	0.01	< 1	8.2	A	0.15	< 1
		EBT	7.8	A	0.08	< 1	7.1	A	0.1	1
		WBT, WBRT	11	B	0.48	4	11.4	B	0.57	6
		NBLT, NBT, NBRT	4.2	A	0.47	2	5.5	A	0.51	2
		Overall	6.3	A	-	-	7.8	A	-	-

*EBLT - Eastbound Left Turn, EBT - Eastbound Through, EBRT - Eastbound Rightturn

*WBLT - Westbound Left Turn, WBT - Westbound Through, WBRT - Westbound Rightturn

*NBLT - Northbound Left Turn, NBT - Northbound Through, NBRT - Northbound Rightturn

*SBLT - Southbound Left Turn, SBT - Southbound Through, SBRT - Southbound Rightturn

Figure 1 – 2010 Traffic Volumes: AM Peak Hour

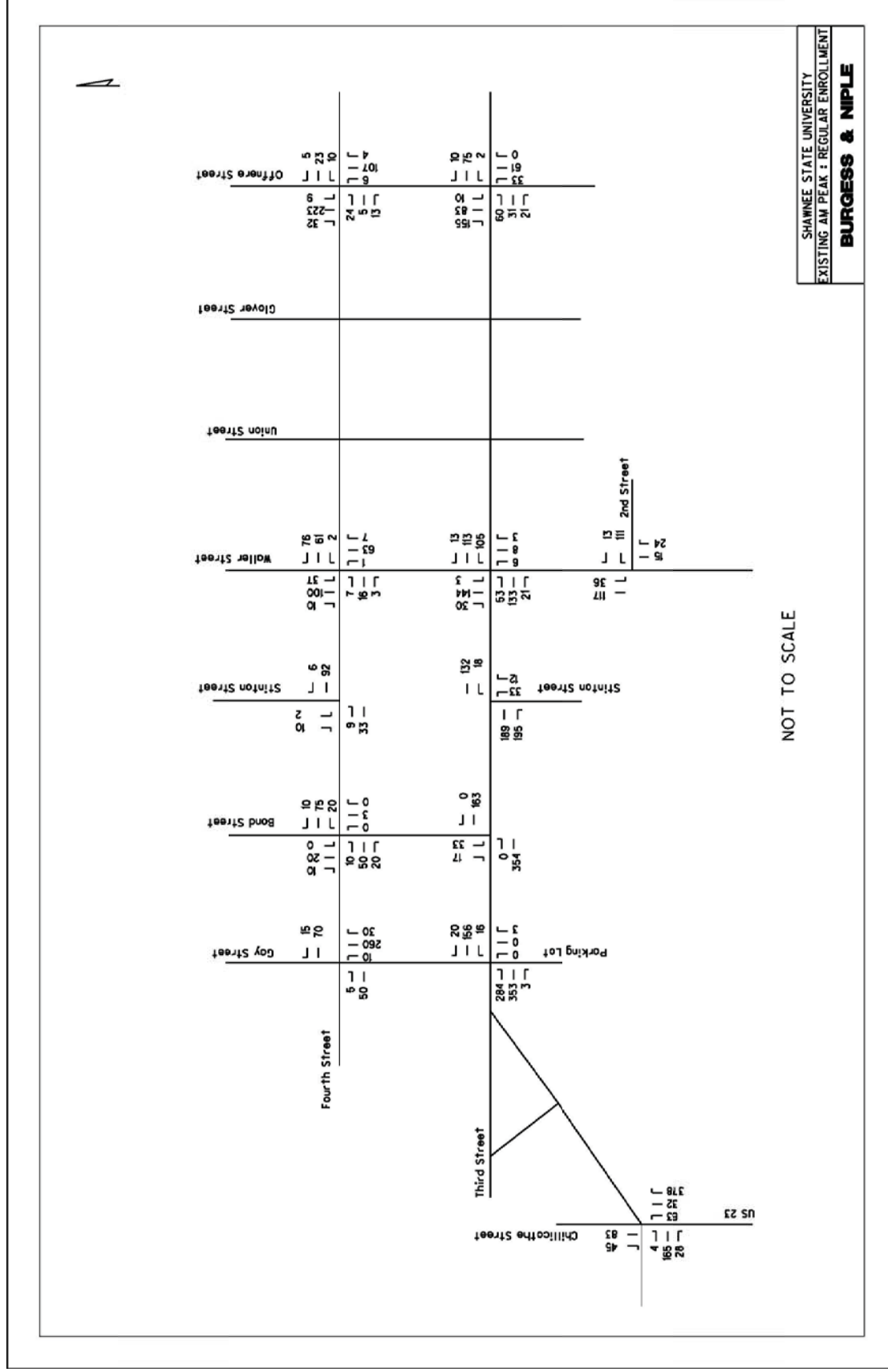


Figure 2 – 2010 Traffic Volumes: PM Peak Hour

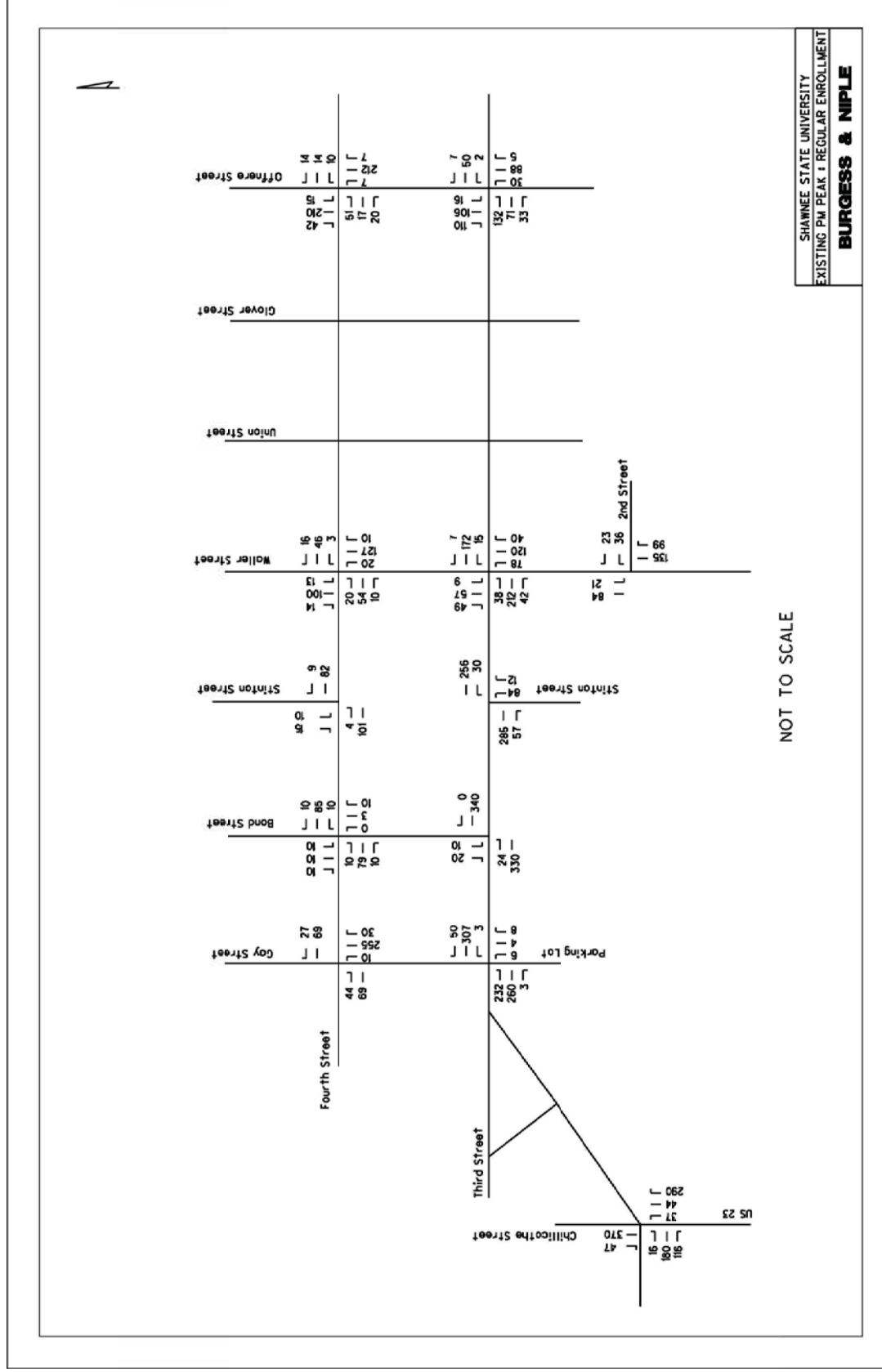


Figure 3: 2010 Traffic Volumes: AM Peak (3rd Street Closure)

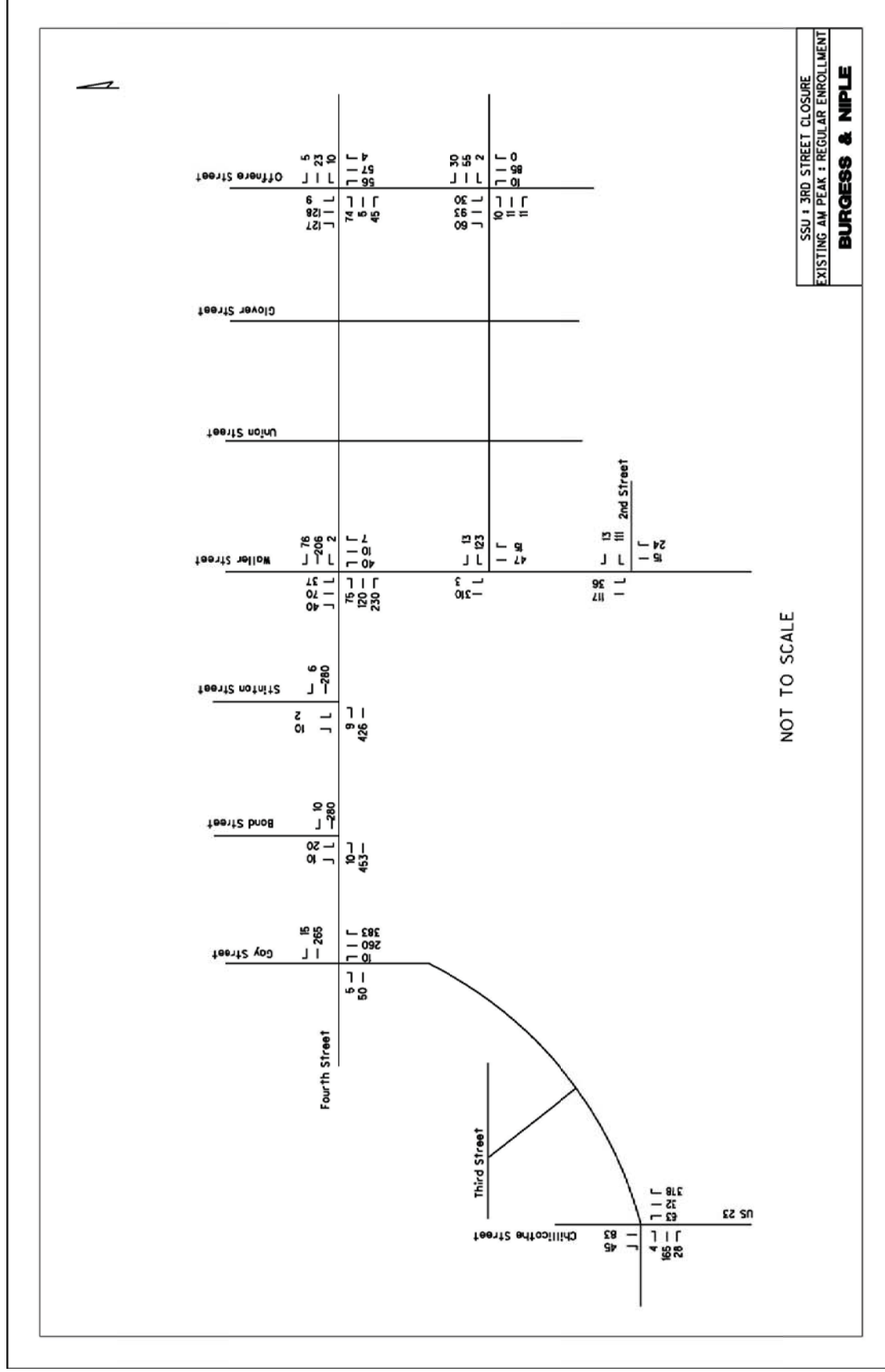


Figure 4: 2010 Traffic Volumes: PM Peak (3rd Street Closure)

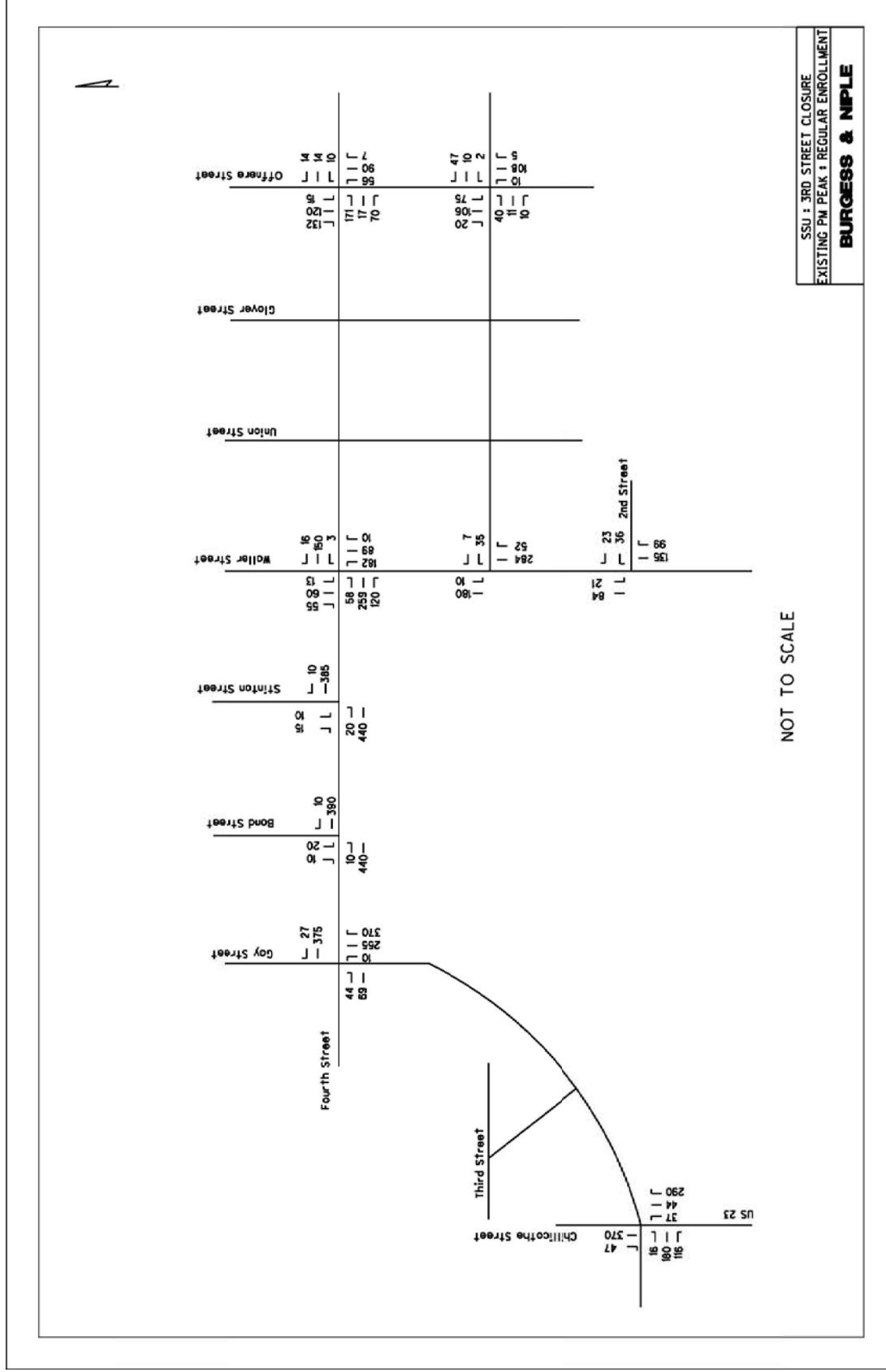


Figure 5: Campus Master Plan (Commuter Parking Availability)

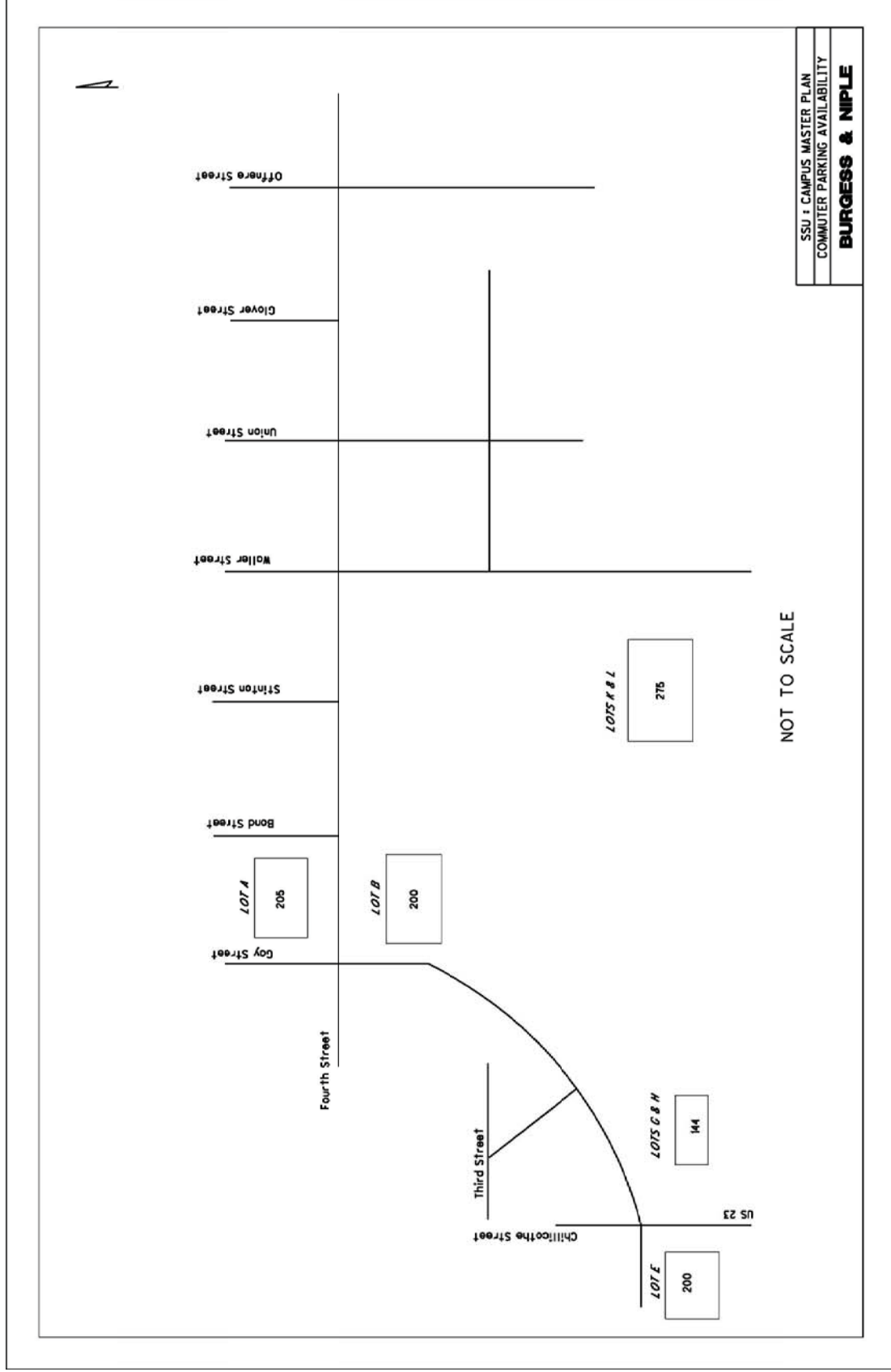
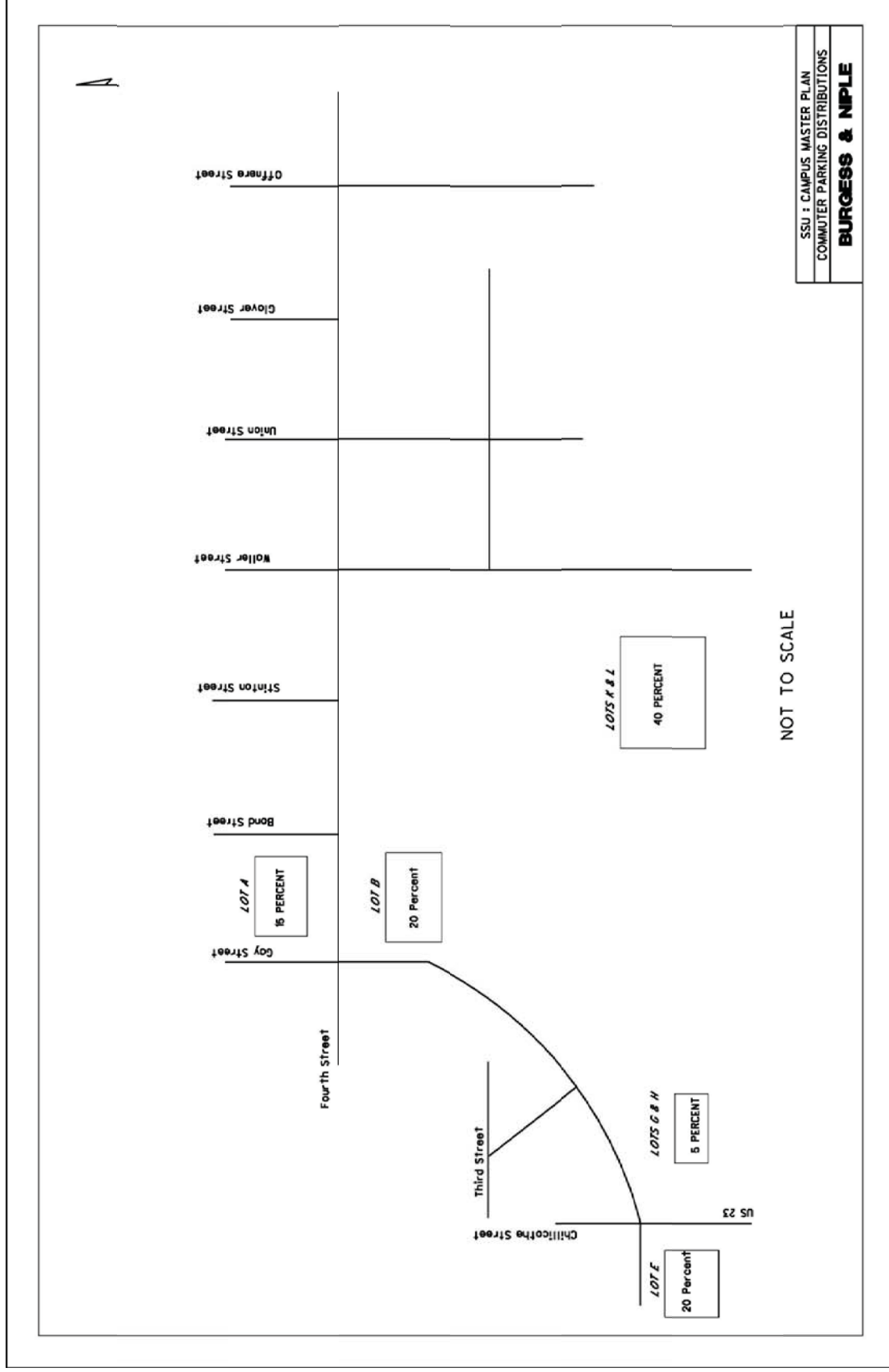
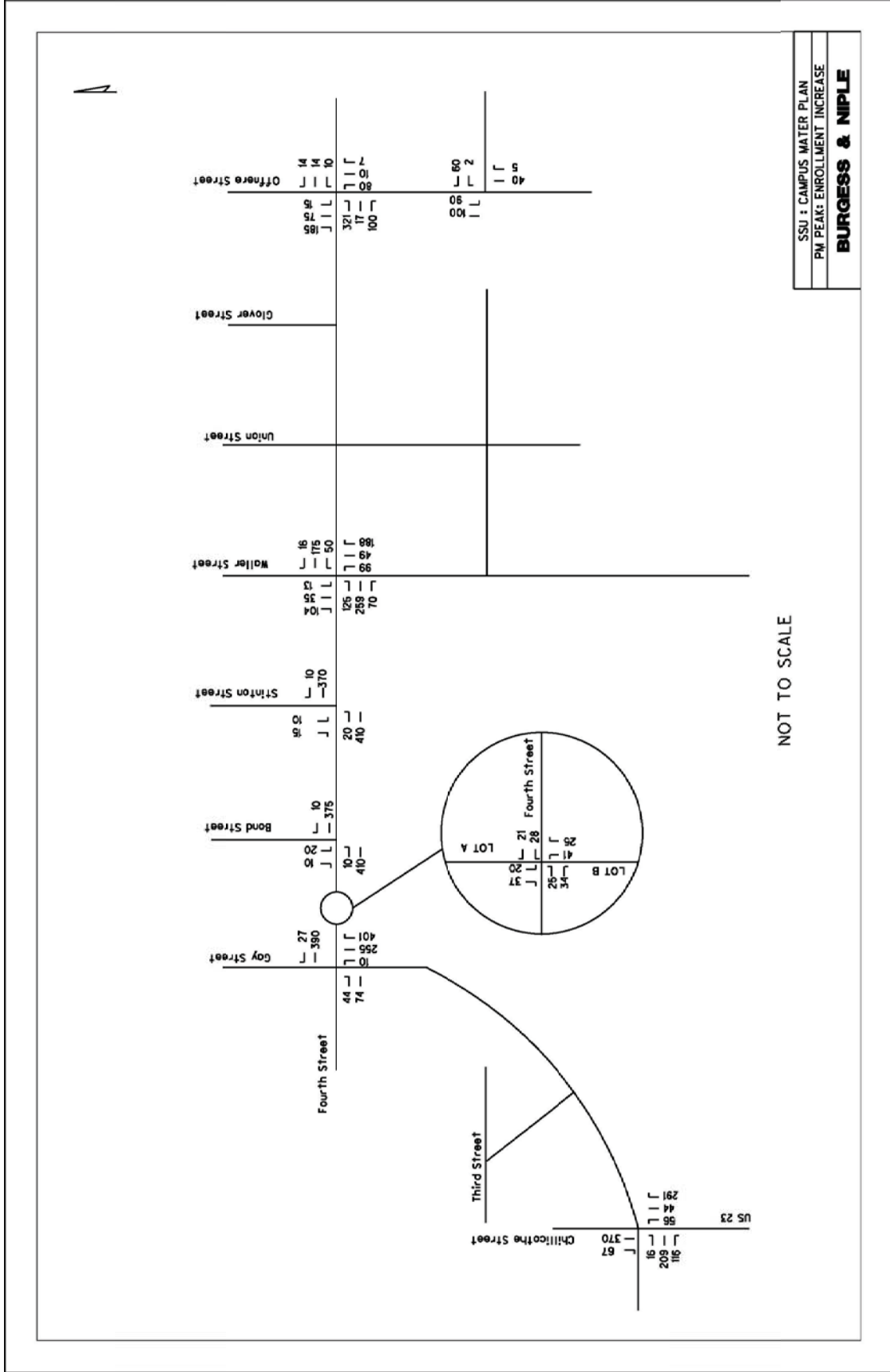


Figure 6: Campus Master Plan (Commuter Parking Distribution)



Map of the campus master plan showing streets (Fourth, Third, Bond, Stinson, Waller, Clover, Union, Offshore), lots (LOT A, LOT B), and enrollment increases. A circular inset shows a detailed view of the intersection of Fourth Street and Bond Street. A north arrow is in the top right corner.

Figure 8: Traffic Volumes: Campus Master Plan PM Peak



Appendix A

Traffic Counts

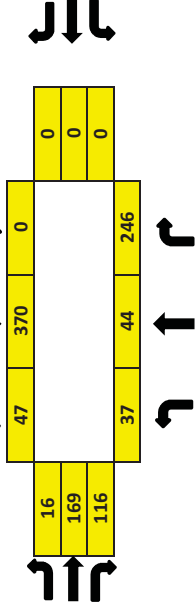
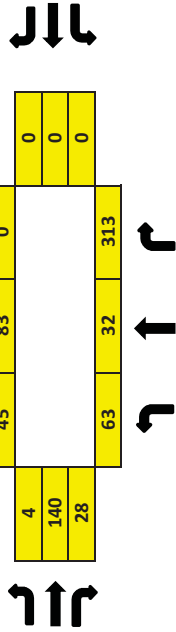
US 23 & 2nd Street

Start Time	Southbound				Westbound				Northbound				Eastbound			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM	0	15	5	0	0	0	0	0	7	3	39	0	0	10	4	0
7:15 AM	0	25	6	1	0	0	0	0	14	5	77	0	0	24	2	0
7:30 AM	0	15	13	0	0	0	0	0	8	4	70	0	0	29	4	0
7:45 AM	0	11	12	2	0	0	0	0	18	9	114	0	3	43	5	0
Total	0	66	36	3	0	0	0	0	47	21	300	0	3	106	15	0
8:00 AM	0	29	12	0	0	0	0	0	20	9	65	0	1	26	9	1
8:15 AM	0	28	8	0	0	0	0	0	17	10	64	0	0	42	10	0
8:30 AM	0	34	9	2	0	0	0	0	8	13	52	0	2	26	8	0
8:45 AM	0	28	12	0	0	0	0	0	16	8	61	0	3	42	13	0
Total	0	119	41	2	0	0	0	0	61	40	242	0	6	136	40	1
Grand Total	0	185	77	5	0	0	0	0	108	61	542	0	9	242	55	1

Start Time	Southbound				Westbound				Northbound				Eastbound			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM	0	78	12	0	0	0	0	0	14	12	84	0	8	64	27	0
4:15 PM	0	64	11	3	0	0	0	0	8	14	62	0	6	62	29	0
4:30 PM	0	80	11	0	0	0	0	0	8	11	52	0	8	50	25	0
4:45 PM	0	102	13	0	0	0	0	0	8	14	67	0	3	39	36	0
Total	0	324	47	3	0	0	0	0	38	51	265	0	25	215	117	0
5:00 PM	0	106	12	0	0	0	0	0	18	9	59	0	3	52	34	0
5:15 PM	0	82	11	0	0	0	0	0	3	10	68	0	2	28	21	0
5:30 PM	0	96	9	0	0	0	0	0	7	16	67	0	1	30	22	0
5:45 PM	0	53	4	3	0	0	0	0	10	6	66	0	3	42	15	0
Total	0	337	36	3	0	0	0	0	38	41	260	0	9	152	92	0
Grand Total	0	661	83	6	0	0	0	0	76	92	525	0	34	367	209	0

7:30 AM - 8:30 AM

4:30 PM - 5:30 PM



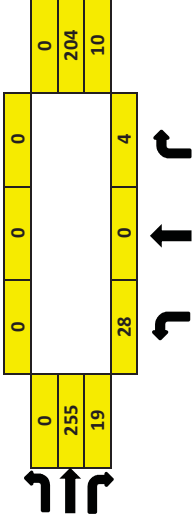
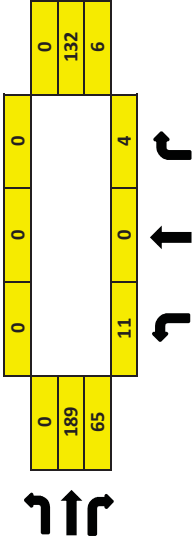
3rd Street & Stinton Street

Start Time	Southbound				Westbound				Northbound				Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
7:00 AM	0	0	0	1	0	29	0	0	0	0	0	0	0	19	2	0	51
7:15 AM	0	0	0	0	0	15	0	0	0	0	0	0	0	32	7	0	54
7:30 AM	0	0	0	0	2	32	0	0	1	0	1	1	0	50	21	3	110
7:45 AM	0	0	0	7	2	46	0	0	3	0	3	3	0	65	27	1	154
Total	0	0	0	8	4	122	0	0	4	0	4	4	0	166	57	4	369
8:00 AM	0	0	0	3	0	29	0	0	3	0	0	0	0	45	9	1	90
8:15 AM	0	0	0	2	2	25	0	0	4	0	0	0	0	29	8	0	70
8:30 AM	0	0	0	3	0	23	0	0	1	0	1	1	0	32	13	2	75
8:45 AM	0	0	0	0	1	42	0	0	1	0	1	1	0	44	13	0	102
Total	0	0	0	8	3	119	0	0	9	0	2	2	0	150	43	3	337
Grand Total	0	0	0	16	7	241	0	0	13	0	6	6	0	316	100	7	706

Start Time	Southbound				Westbound				Northbound				Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
4:00 PM	0	0	0	2	2	47	0	0	10	0	3	0	0	52	12	1	129
4:15 PM	0	0	0	2	2	49	0	0	5	0	0	0	0	58	6	4	126
4:30 PM	0	0	0	1	6	50	0	0	4	0	1	1	0	76	6	1	145
4:45 PM	0	0	0	2	2	48	0	0	6	0	2	0	0	49	7	1	117
Total	0	0	0	7	12	194	0	0	25	0	6	0	0	235	31	7	517
5:00 PM	0	0	0	2	2	52	0	0	5	0	1	1	0	73	2	1	138
5:15 PM	0	0	0	1	0	54	0	0	13	0	0	0	0	57	4	1	130
5:30 PM	0	0	0	2	0	42	0	0	1	0	1	1	0	47	4	1	98
5:45 PM	0	0	0	1	0	36	0	0	7	0	0	0	0	49	2	1	96
Total	0	0	0	6	2	184	0	0	26	0	2	2	0	226	12	4	462
Grand Total	0	0	0	13	14	378	0	0	51	0	8	8	0	461	43	11	979

7:30 AM - 8:30 AM

4:30 PM - 5:30 PM



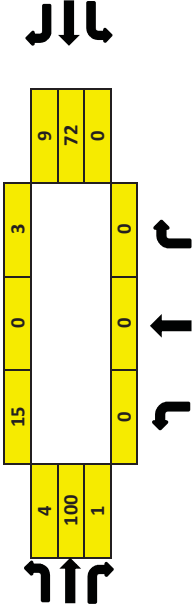
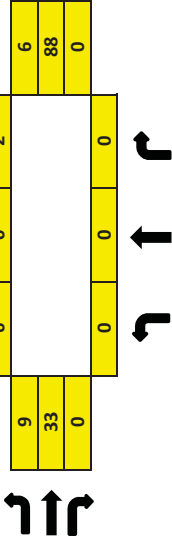
4th Street & Stinton Street

Start Time	Southbound				Westbound				Northbound				Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
7:00 AM	0	0	2	0	0	5	1	0	0	0	0	0	2	1	0	0	11
7:15 AM	1	0	0	0	0	8	1	0	0	0	0	0	2	7	0	0	19
7:30 AM	0	0	0	0	0	16	1	3	0	0	0	0	2	6	0	2	30
7:45 AM	0	0	2	0	0	33	3	11	0	0	0	0	2	12	0	0	63
Total	1	0	4	0	0	62	6	14	0	0	0	0	8	26	0	2	123
8:00 AM	1	0	2	0	0	22	2	0	0	0	0	0	4	9	0	0	40
8:15 AM	1	0	2	1	0	17	0	0	0	0	0	0	1	6	0	0	28
8:30 AM	1	0	3	0	0	13	2	3	0	0	0	0	0	14	0	0	36
8:45 AM	0	0	5	4	0	16	1	0	0	0	0	0	1	11	0	0	38
Total	3	0	12	5	0	68	5	3	0	0	0	0	6	40	0	0	142
Grand Total	4	0	16	5	0	130	11	17	0	0	0	0	14	66	0	2	265

Start Time	Southbound				Westbound				Northbound				Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
4:00 PM	2	0	1	0	0	18	2	1	0	0	0	0	3	22	0	1	50
4:15 PM	1	0	1	0	0	13	0	0	0	0	0	0	0	14	0	3	32
4:30 PM	0	0	2	0	0	20	1	0	0	0	0	0	0	29	0	0	52
4:45 PM	2	0	9	0	0	18	4	1	0	0	0	0	1	21	0	0	56
Total	5	0	13	0	0	69	7	2	0	0	0	0	4	86	0	4	190
5:00 PM	1	0	3	0	0	21	4	1	0	0	0	0	2	26	0	0	58
5:15 PM	0	0	1	0	0	13	0	1	0	0	0	0	1	24	1	0	41
5:30 PM	2	0	3	0	0	11	1	0	0	0	0	0	1	16	0	0	34
5:45 PM	1	0	1	0	0	3	0	1	0	0	0	0	2	8	0	0	16
Total	4	0	8	0	0	48	5	3	0	0	0	0	6	74	1	0	149
Grand Total	9	0	21	0	0	117	12	5	0	0	0	0	10	160	1	4	339

7:30 AM - 8:30 AM

4:30 PM - 5:30 PM



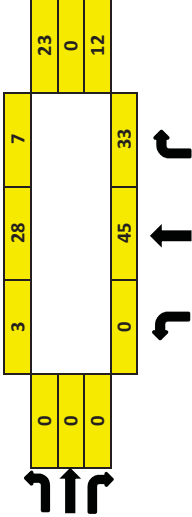
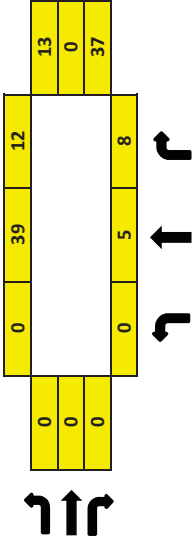
2nd Street & Waller Street

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		
7:00 AM	5	2	0	0	0	4	0	0	1	0	0	0	0	1	0	0	0	0	0	0	13
7:15 AM	4	5	0	2	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
7:30 AM	4	9	0	0	0	14	0	0	1	0	0	0	0	1	0	0	0	0	0	0	29
7:45 AM	4	16	0	1	0	10	0	0	6	0	0	1	1	1	1	0	0	0	0	0	40
Total	17	32	0	3	0	36	0	0	8	0	0	1	1	3	1	0	0	0	0	0	101
8:00 AM	3	10	0	0	0	10	0	0	4	0	0	0	3	2	10	0	0	0	0	0	44
8:15 AM	1	4	0	0	0	3	0	0	2	1	0	1	4	1	0	0	0	0	0	0	17
8:30 AM	0	5	0	0	0	7	0	0	1	0	0	0	2	1	0	0	0	0	0	0	16
8:45 AM	3	8	0	0	0	11	0	0	3	0	0	0	3	2	0	0	0	0	0	0	30
Total	7	27	0	2	0	31	0	0	10	1	0	0	9	9	11	0	0	0	0	0	107
Grand Total	24	59	0	5	0	67	0	0	18	1	0	0	10	12	12	0	0	0	0	0	208

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		
4:00 PM	4	4	0	0	0	6	0	0	10	0	0	14	3	0	0	0	0	0	0	0	41
4:15 PM	9	11	0	0	0	1	0	4	0	0	0	12	8	0	0	0	0	0	0	0	45
4:30 PM	4	9	0	0	0	4	0	0	1	0	0	7	3	0	0	0	0	0	0	0	28
4:45 PM	0	3	3	0	0	5	0	9	0	0	0	12	5	0	0	0	0	0	0	0	37
Total	17	27	3	0	0	16	0	24	0	0	0	45	19	0	0	0	0	0	0	0	151
5:00 PM	2	5	0	1	0	3	0	5	0	2	0	20	16	0	0	0	0	0	0	0	54
5:15 PM	1	11	0	0	0	0	0	8	0	0	0	6	9	0	0	0	0	0	0	0	35
5:30 PM	5	4	0	1	0	4	0	1	0	0	0	3	3	0	0	0	0	0	0	0	21
5:45 PM	9	6	0	0	0	5	0	6	0	0	0	3	4	1	0	0	0	0	0	0	34
Total	17	26	0	2	0	12	0	20	0	2	0	32	32	1	0	0	0	0	0	0	144
Grand Total	34	53	3	2	0	28	0	44	0	2	0	77	51	1	0	0	0	0	0	0	295

7:30 AM - 8:30 AM

4:30 PM - 5:30 PM



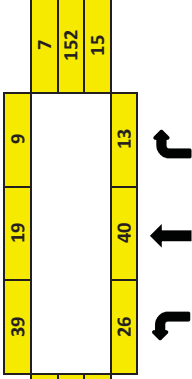
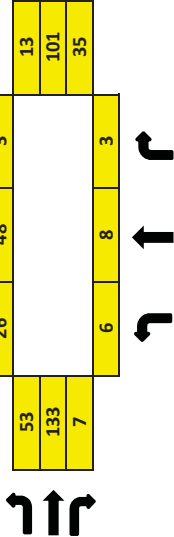
3rd Street & Waller Street

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		
7:00 AM	0	3	5	0		2	22	0	0		0	0	0	0		6	10	3	0		51
7:15 AM	1	7	2	0		3	13	0	1		0	3	0	1		14	17	1	0		63
7:30 AM	1	14	9	1		7	24	7	0		0	1	0	0		16	35	1	1		117
7:45 AM	0	16	11	1		15	31	1	0		3	2	1	0		24	39	2	0		146
Total	2	40	27	2		27	90	8	1		3	6	1	1		60	101	7	1		377
8:00 AM	1	13	3	0		11	29	4	0		2	2	2	0		7	35	3	0		112
8:15 AM	1	5	3	0		2	17	1	0		1	3	0	0		6	24	1	0		64
8:30 AM	0	7	3	1		8	20	3	0		1	0	1	2		9	20	3	1		79
8:45 AM	0	9	5	0		12	34	1	0		6	1	1	1		10	28	4	0		112
Total	2	34	14	1		33	100	9	0		10	6	4	3		32	107	11	1		367
Grand Total	4	74	41	3		60	190	17	1		13	12	5	4		92	208	18	2		744

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		
4:00 PM	3	4	10	0		1	37	1	0		3	18	3	0		9	40	3	0		132
4:15 PM	1	6	5	0		0	40	2	0		3	6	3	0		14	48	3	0		131
4:30 PM	2	5	12	0		5	45	1	0		5	7	2	0		14	56	4	0		158
4:45 PM	2	6	6	0		1	36	3	0		8	14	4	1		4	42	2	0		129
Total	8	21	33	0		7	158	7	0		19	45	12	1		41	186	12	0		550
5:00 PM	3	4	10	0		7	30	1	0		8	11	6	0		11	58	6	0		155
5:15 PM	2	4	11	0		2	41	2	0		5	8	1	0		9	46	2	0		133
5:30 PM	4	9	14	2		2	24	1	0		4	8	1	0		9	32	4	0		114
5:45 PM	2	9	9	0		8	31	1	0		3	6	4	1		9	35	2	0		120
Total	11	26	44	2		19	126	5	0		20	33	12	1		38	171	14	0		522
Grand Total	19	47	77	2		26	284	12	0		39	78	24	2		79	357	26	0		1072

7:30 AM - 8:30 AM

4:30 PM - 5:30 PM



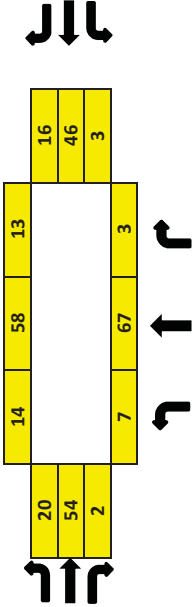
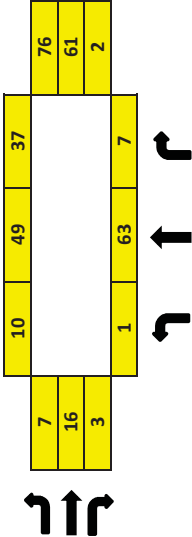
4th Street & Waller Street

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		
7:00 AM	1	11	4	0		0	3	0	0		1	5	0	0		0	4	0	0		29
7:15 AM	4	15	1	4		0	7	5	2		0	16	0	0		0	1	1	0		59
7:30 AM	15	15	1	0		0	10	14	3		1	20	3	0		4	4	0	0		91
7:45 AM	10	20	4	2		0	22	29	13		0	23	2	1		1	3	1	1		131
Total	30	61	10	6		0	42	48	18		2	64	5	1		5	12	1	1		310
8:00 AM	5	8	5	1		0	20	23	0		0	12	2	0		0	8	2	0		86
8:15 AM	7	6	0	0		2	9	10	2		0	8	0	0		2	1	0	0		47
8:30 AM	1	6	7	0		0	14	6	1		0	12	0	0		2	14	0	10		73
8:45 AM	2	19	3	3		2	17	5	7		1	11	0	0		0	11	3	0		84
Total	15	39	15	4		4	60	44	10		1	43	2	0		4	34	5	10		290
Grand Total	45	100	25	10		4	102	92	28		3	107	7	1		9	46	6	15		600

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		
4:00 PM	4	17	2	0		2	15	3	0		2	19	2	0		3	12	2	1		84
4:15 PM	4	13	2	0		0	19	5	2		2	20	0	0		2	10	4	0		83
4:30 PM	6	19	5	1		2	12	2	0		0	24	0	0		4	20	0	0		95
4:45 PM	2	12	6	0		0	14	5	1		2	13	1	0		4	16	1	9		86
Total	16	61	15	1		4	60	15	3		6	76	3	0		13	58	7	10		348
5:00 PM	5	12	1	0		0	10	7	0		3	20	1	0		8	14	1	1		83
5:15 PM	0	15	2	0		1	10	2	0		2	10	1	3		4	4	0	0		54
5:30 PM	7	9	2	0		0	10	0	0		2	9	1	0		0	6	2	0		48
5:45 PM	4	23	2	0		0	8	4	0		2	19	0	0		0	8	0	0		70
Total	16	59	7	0		1	38	13	0		9	58	3	3		12	32	3	1		255
Grand Total	32	120	22	1		5	98	28	3		15	134	6	3		25	90	10	11		603

7:30 AM - 8:30 AM

4:30 PM - 5:30 PM



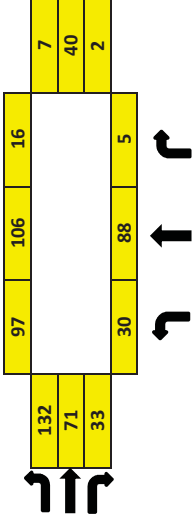
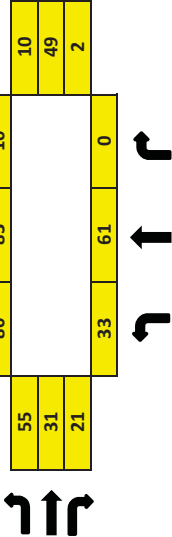
3rd Street & Offnere Street

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		
7:00 AM	0	13	9	0		0	8	0	1		7	4	0	0		3	5	2	0		52
7:15 AM	0	13	11	0		0	1	0	0		5	7	0	0		9	3	10	0		59
7:30 AM	2	25	31	1		0	11	6	2		11	15	0	2		11	10	4	0		131
7:45 AM	3	30	21	0		1	20	2	0		13	21	0	0		19	9	4	0		143
Total	5	81	72	1		1	40	8	3		36	47	0	2		42	27	20	0		385
8:00 AM	4	13	15	0		1	12	1	0		8	10	0	0		12	7	8	0		91
8:15 AM	1	15	13	1		0	6	1	1		1	15	0	0		13	5	5	0		76
8:30 AM	2	16	14	1		0	6	1	0		7	6	0	0		17	8	2	0		80
8:45 AM	1	12	17	0		0	13	4	2		2	12	0	0		13	3	5	0		84
Total	8	56	59	2		1	37	7	2		18	43	0	0		55	23	20	0		331
Grand Total	13	137	131	3		2	77	15	5		54	90	0	2		97	50	40	0		716

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		
4:00 PM	4	25	22	4		0	7	3	2		5	21	1	2		42	11	8	0		157
4:15 PM	5	26	25	0		0	7	0	2		3	18	0	0		30	13	5	2		136
4:30 PM	5	20	17	0		0	10	3	3		5	19	1	0		39	20	7	0		149
4:45 PM	0	28	36	0		0	11	1	0		7	16	2	1		24	18	4	0		148
Total	14	99	100	4		0	35	7	7		20	74	4	3		135	62	24	2		590
5:00 PM	6	26	21	8		0	6	1	10		9	32	1	0		36	16	7	0		179
5:15 PM	5	32	23	0		2	13	2	1		9	21	1	1		33	17	15	0		175
5:30 PM	2	29	22	0		1	10	2	0		8	22	2	0		26	10	11	0		145
5:45 PM	3	31	17	0		0	8	1	5		9	16	0	3		25	19	12	0		149
Total	16	118	83	8		3	37	6	16		35	91	4	4		120	62	45	0		648
Grand Total	30	217	183	12		3	72	13	23		55	165	8	7		255	124	69	2		1238

7:30 AM - 8:30 AM

4:30 PM - 5:30 PM



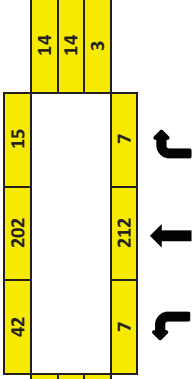
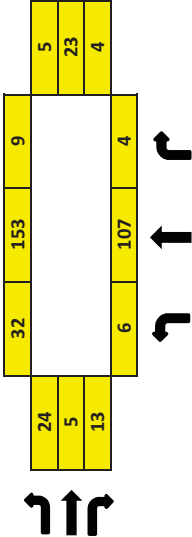
4th Street & Offnere Street

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		
7:00 AM	1	23	1	0		0	0	0	0		1	5	0	0		1	11	1	1		45
7:15 AM	0	22	7	0		0	0	0	0		0	18	0	0		1	1	1	1		51
7:30 AM	2	48	12	0		3	7	1	0		0	28	2	0		6	0	4	0		113
7:45 AM	1	46	1	0		1	10	2	0		1	32	2	0		8	1	5	0		110
Total	4	139	21	0		4	17	3	0		2	83	4	0		16	13	11	2		319
8:00 AM	5	31	13	1		0	4	2	0		2	24	0	0		6	2	2	0		92
8:15 AM	1	28	6	1		0	2	0	4		3	23	0	0		4	2	2	0		72
8:30 AM	4	26	8	0		0	8	0	0		1	24	1	0		4	3	5	0		84
8:45 AM	1	29	10	1		0	1	0	0		3	28	0	3		4	2	3	1		86
Total	11	114	37	3		0	15	2	0		9	99	1	3		18	9	12	1		334
Grand Total	15	253	58	3		4	32	5	0		11	182	5	3		34	22	23	3		653

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		
4:00 PM	1	50	10	0		0	3	2	0		2	64	0	2		15	10	5	1		165
4:15 PM	0	47	8	4		3	7	0	3		3	45	2	3		11	3	3	0		142
4:30 PM	2	50	12	4		0	2	3	0		3	55	1	0		18	6	5	1		162
4:45 PM	4	53	15	3		1	5	4	0		1	40	3	0		10	3	5	0		147
Total	7	200	45	11		4	17	9	3		9	204	6	5		54	22	18	2		616
5:00 PM	6	48	5	8		0	5	2	0		1	66	2	6		14	6	4	4		177
5:15 PM	3	51	10	9		2	2	5	2		2	51	1	1		9	2	6	1		157
5:30 PM	3	45	5	3		2	0	2	1		3	45	3	3		10	4	7	1		137
5:45 PM	3	46	6	4		1	3	2	2		2	36	2	3		5	5	4	0		124
Total	15	190	26	24		5	10	11	5		8	198	8	13		38	17	21	6		595
Grand Total	22	390	71	35		9	27	20	8		17	402	14	18		92	39	39	8		1211

7:30 AM - 8:30 AM

4:30 PM - 5:30 PM



Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 33333333
Station ID:
3rd St West of Bond St

Start Time	24-May-10 Mon	EB		Hour Totals		WB+EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		*	58			*	119				
12:15		*	52			*	104				
12:30		*	64			*	116				
12:45		*	72	0	246	*	114	0	453	0	699
01:00		*	64			*	130				
01:15		*	50			*	118				
01:30		*	64			*	134				
01:45		*	56	0	234	*	114	0	496	0	730
02:00		*	78			*	140				
02:15		*	63			*	114				
02:30		*	56			*	112				
02:45		*	54	0	251	*	114	0	480	0	731
03:00		*	62			*	136				
03:15		*	54			*	117				
03:30		*	70			*	141				
03:45		*	76	0	262	*	140	0	534	0	796
04:00		*	61			*	120				
04:15		*	70			*	124				
04:30		*	86			*	152				
04:45		*	53	0	270	*	113	0	509	0	779
05:00		*	75			*	134				
05:15		*	52			*	126				
05:30		*	52			*	98				
05:45		*	48	0	227	*	88	0	446	0	673
06:00		*	42			*	79				
06:15		*	44			*	74				
06:30		*	31			*	72				
06:45		*	44	0	161	*	71	0	296	0	457
07:00		*	30			*	56				
07:15		*	29			*	61				
07:30		*	26			*	52				
07:45		*	33	0	118	*	66	0	235	0	353
08:00		*	36			*	76				
08:15		*	22			*	46				
08:30		*	25			*	64				
08:45		*	30	0	113	*	68	0	254	0	367
09:00		*	32			*	52				
09:15		*	35			*	72				
09:30		*	31			*	44				
09:45		*	19	0	117	*	33	0	201	0	318
10:00		*	22			*	36				
10:15		*	11			*	22				
10:30		*	14			*	25				
10:45		*	13	0	60	*	23	0	106	0	166
11:00		*	15			*	23				
11:15		40	6			104	12				
11:30		69	4			114	10				
11:45		58	8	167	33	120	15	338	60	505	93
Total		167	2092			338	4070			505	6162
Percent		7.4%	92.6%			7.7%	92.3%			7.6%	92.4%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 33333333
Station ID:
3rd St West of Bond St

Start Time	25-May-10 Tue	EB		Hour Totals		WB+EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		8	76			15	147				
12:15		5	62			11	120				
12:30		3	57			12	114				
12:45		3	42	19	237	6	100	44	481	63	718
01:00		1	62			5	115				
01:15		8	48			11	100				
01:30		1	56			5	110				
01:45		4	77	14	243	7	142	28	467	42	710
02:00		1	60			4	132				
02:15		2	60			5	104				
02:30		3	58			5	105				
02:45		2	53	8	231	3	111	17	452	25	683
03:00		0	62			1	132				
03:15		3	64			3	117				
03:30		0	67			0	134				
03:45		1	61	4	254	1	128	5	511	9	765
04:00		2	74			6	134				
04:15		4	61			6	118				
04:30		4	86			7	135				
04:45		2	69	12	290	3	137	22	524	34	814
05:00		6	69			8	138				
05:15		3	74			8	140				
05:30		6	61			13	124				
05:45		10	66	25	270	20	112	49	514	74	784
06:00		5	55			13	93				
06:15		15	42			23	84				
06:30		19	36			41	80				
06:45		24	39	63	172	38	78	115	335	178	507
07:00		20	40			46	76				
07:15		54	22			66	60				
07:30		69	40			106	71				
07:45		90	22	233	124	148	78	366	285	599	409
08:00		45	34			82	68				
08:15		50	40			78	66				
08:30		58	35			88	76				
08:45		44	25	197	134	78	52	326	262	523	396
09:00		46	20			68	64				
09:15		48	25			66	50				
09:30		66	22			100	47				
09:45		70	22	230	89	108	40	342	201	572	290
10:00		49	28			77	44				
10:15		37	18			69	36				
10:30		44	9			69	19				
10:45		46	14	176	69	78	25	293	124	469	193
11:00		65	14			100	20				
11:15		50	12			88	22				
11:30		55	6			108	22				
11:45		66	13	236	45	114	20	410	84	646	129
Total		1217	2158			2017	4240			3234	6398
Percent		36.1%	63.9%			32.2%	67.8%			33.6%	66.4%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 33333333
Station ID:
3rd St West of Bond St

Start Time	26-May-10 Wed	EB		Hour Totals		WB+EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		6	52			14	113				
12:15		7	52			12	104				
12:30		7	52			9	106				
12:45		6	62	26	218	12	124	47	447	73	665
01:00		2	68			4	102				
01:15		6	66			11	116				
01:30		1	58			4	112				
01:45		2	70	11	262	7	128	26	458	37	720
02:00		1	64			4	127				
02:15		5	74			11	128				
02:30		4	68			7	120				
02:45		3	60	13	266	5	124	27	499	40	765
03:00		0	59			3	125				
03:15		2	57			4	109				
03:30		4	56			4	114				
03:45		2	75	8	247	2	154	13	502	21	749
04:00		3	74			3	148				
04:15		2	76			5	130				
04:30		2	76			5	133				
04:45		2	56	9	282	3	113	16	524	25	806
05:00		2	55			3	130				
05:15		5	57			7	117				
05:30		5	64			11	116				
05:45		6	57	18	233	16	114	37	477	55	710
06:00		9	59			16	99				
06:15		10	43			16	84				
06:30		23	51			51	87				
06:45		20	57	62	210	34	100	117	370	179	580
07:00		19	39			38	86				
07:15		40	35			62	68				
07:30		51	42			78	75				
07:45		91	34	201	150	128	76	306	305	507	455
08:00		52	32			80	75				
08:15		41	43			72	65				
08:30		38	27			64	60				
08:45		48	30	179	132	91	61	307	261	486	393
09:00		44	28			78	54				
09:15		54	26			82	68				
09:30		64	20			108	43				
09:45		80	26	242	100	128	41	396	206	638	306
10:00		52	23			87	48				
10:15		48	25			81	44				
10:30		34	11			76	22				
10:45		64	14	198	73	106	29	350	143	548	216
11:00		45	16			98	23				
11:15		52	12			101	20				
11:30		65	7			115	18				
11:45		72	6	234	41	125	19	439	80	673	121
Total		1201	2214			2081	4272			3282	6486
Percent		35.2%	64.8%			32.8%	67.2%			33.6%	66.4%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 33333333
Station ID:
3rd St West of Bond St

Start Time	27-May-10 Thu	EB		Hour Totals		WB+EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		12	67			28	129				
12:15		10	65			20	126				
12:30		6	68			13	124				
12:45		6	76	34	276	10	125	71	504	105	780
01:00		6	61			11	122				
01:15		2	46			6	112				
01:30		4	51			4	99				
01:45		3	66	15	224	9	124	30	457	45	681
02:00		2	70			6	136				
02:15		1	72			5	118				
02:30		4	60			6	124				
02:45		3	65	10	267	4	106	21	484	31	751
03:00		1	60			5	119				
03:15		0	50			2	116				
03:30		2	58			4	118				
03:45		4	81	7	249	4	144	15	497	22	746
04:00		3	86			6	166				
04:15		1	64			2	127				
04:30		4	73			5	132				
04:45		6	56	14	279	9	115	22	540	36	819
05:00		4	67			8	145				
05:15		3	78			6	120				
05:30		2	46			9	95				
05:45		7	64	16	255	14	110	37	470	53	725
06:00		12	62			20	99				
06:15		9	56			19	96				
06:30		17	34			37	74				
06:45		25	32	63	184	35	67	111	336	174	520
07:00		11	48			27	84				
07:15		36	40			49	76				
07:30		60	37			86	78				
07:45		101	36	208	161	134	78	296	316	504	477
08:00		53	45			102	88				
08:15		31	28			60	70				
08:30		54	30			80	64				
08:45		55	32	193	135	94	71	336	293	529	428
09:00		52	28			88	57				
09:15		42	22			78	46				
09:30		65	24			102	48				
09:45		78	24	237	98	128	45	396	196	633	294
10:00		44	16			79	48				
10:15		53	15			92	29				
10:30		44	16			80	32				
10:45		44	18	185	65	80	39	331	148	516	213
11:00		67	15			120	28				
11:15		59	14			95	36				
11:30		56	7			106	21				
11:45		60	12	242	48	121	21	442	106	684	154
Total		1224	2241			2108	4347			3332	6588
Percent		35.3%	64.7%			32.7%	67.3%			33.6%	66.4%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 33333333
Station ID:
3rd St West of Bond St

Start Time	28-May-10 Fri	EB		Hour Totals		WB+EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		14	72			26	114				
12:15		6	70			10	130				
12:30		4	72			12	116				
12:45		5	65	29	279	12	121	60	481	89	760
01:00		3	70			7	137				
01:15		2	61			4	106				
01:30		4	60			5	121				
01:45		0	*	9	191	4	*	20	364	29	555
02:00		3	*			6	*				
02:15		6	*			10	*				
02:30		4	*			8	*				
02:45		2	*	15	0	6	*	30	0	45	0
03:00		1	*			5	*				
03:15		2	*			2	*				
03:30		1	*			4	*				
03:45		4	*	8	0	6	*	17	0	25	0
04:00		2	*			3	*				
04:15		0	*			3	*				
04:30		2	*			3	*				
04:45		4	*	8	0	4	*	13	0	21	0
05:00		4	*			6	*				
05:15		1	*			4	*				
05:30		6	*			18	*				
05:45		6	*	17	0	12	*	40	0	57	0
06:00		9	*			18	*				
06:15		13	*			16	*				
06:30		14	*			30	*				
06:45		23	*	59	0	36	*	100	0	159	0
07:00		24	*			44	*				
07:15		34	*			55	*				
07:30		48	*			71	*				
07:45		61	*	167	0	102	*	272	0	439	0
08:00		52	*			83	*				
08:15		32	*			53	*				
08:30		38	*			64	*				
08:45		42	*	164	0	86	*	286	0	450	0
09:00		42	*			69	*				
09:15		41	*			79	*				
09:30		46	*			74	*				
09:45		47	*	176	0	85	*	307	0	483	0
10:00		44	*			79	*				
10:15		40	*			78	*				
10:30		47	*			96	*				
10:45		46	*	177	0	80	*	333	0	510	0
11:00		59	*			112	*				
11:15		46	*			76	*				
11:30		62	*			106	*				
11:45		63	*	230	0	115	*	409	0	639	0
Total		1059	470			1887	845			2946	1315
Percent		69.3%	30.7%			69.1%	30.9%			69.1%	30.9%
Grand Total		4868	9175			8431	17774			13299	26949
Percent		34.7%	65.3%			32.2%	67.8%			33.0%	67.0%
ADT		ADT 9,773		AADT 9,773							

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 11111111
Station ID:
3rd St West of Glover St

Start Time	24-May-10 Mon	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		*	58			*	42				
12:15		*	32			*	44				
12:30		*	42			*	46				
12:45		*	45	0	177	*	40	0	172	0	349
01:00		*	46			*	40				
01:15		*	36			*	42				
01:30		*	48			*	53				
01:45		*	48	0	178	*	34	0	169	0	347
02:00		*	66			*	50				
02:15		*	49			*	40				
02:30		*	44			*	40				
02:45		*	48	0	207	*	56	0	186	0	393
03:00		*	48			*	54				
03:15		*	48			*	51				
03:30		*	58			*	52				
03:45		*	56	0	210	*	50	0	207	0	417
04:00		*	46			*	42				
04:15		*	50			*	54				
04:30		*	62			*	52				
04:45		*	46	0	204	*	42	0	190	0	394
05:00		*	65			*	52				
05:15		*	46			*	49				
05:30		*	34			*	36				
05:45		*	44	0	189	*	38	0	175	0	364
06:00		*	34			*	33				
06:15		*	33			*	25				
06:30		*	30			*	26				
06:45		*	36	0	133	*	21	0	105	0	238
07:00		*	23			*	18				
07:15		*	26			*	16				
07:30		*	23			*	28				
07:45		*	23	0	95	*	33	0	95	0	190
08:00		*	29			*	32				
08:15		*	29			*	28				
08:30		*	20			*	28				
08:45		*	23	0	101	*	32	0	120	0	221
09:00		*	26			*	15				
09:15		*	33			*	26				
09:30		*	24			*	19				
09:45		*	19	0	102	*	13	0	73	0	175
10:00		30	22			39	13				
10:15		34	13			29	9				
10:30		35	17			34	7				
10:45		38	10	137	62	32	8	134	37	271	99
11:00		36	11			34	6				
11:15		39	5			36	8				
11:30		44	6			36	6				
11:45		46	5	165	27	56	7	162	27	327	54
Total		302	1685			296	1556			598	3241
Percent		15.2%	84.8%			16.0%	84.0%			15.6%	84.4%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 11111111
Station ID:
3rd St West of Glover St

Start Time	25-May-10 Tue	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		8	60			6	42				
12:15		6	44			6	39				
12:30		2	47			8	44				
12:45		4	38	20	189	4	39	24	164	44	353
01:00		1	42			3	40				
01:15		5	30			4	50				
01:30		1	46			4	44				
01:45		4	51	11	169	2	42	13	176	24	345
02:00		1	57			3	46				
02:15		1	44			3	33				
02:30		3	40			2	44				
02:45		1	48	6	189	2	44	10	167	16	356
03:00		1	48			1	44				
03:15		3	50			1	45				
03:30		0	49			0	70				
03:45		1	46	5	193	0	60	2	219	7	412
04:00		2	64			4	38				
04:15		3	50			1	45				
04:30		1	74			2	46				
04:45		2	55	8	243	3	64	10	193	18	436
05:00		2	58			2	44				
05:15		6	63			6	51				
05:30		2	55			5	50				
05:45		11	57	21	233	8	46	21	191	42	424
06:00		7	44			8	30				
06:15		11	40			8	32				
06:30		13	30			16	36				
06:45		21	32	52	146	16	34	48	132	100	278
07:00		12	34			27	26				
07:15		26	22			20	24				
07:30		28	28			51	28				
07:45		32	26	98	110	58	30	156	108	254	218
08:00		28	35			44	33				
08:15		31	26			26	22				
08:30		32	36			28	31				
08:45		24	21	115	118	44	20	142	106	257	224
09:00		21	16			29	24				
09:15		26	26			24	20				
09:30		34	22			46	25				
09:45		25	20	106	84	49	18	148	87	254	171
10:00		40	30			16	14				
10:15		30	17			31	19				
10:30		35	12			21	9				
10:45		44	11	149	70	26	4	94	46	243	116
11:00		49	10			37	5				
11:15		45	13			37	12				
11:30		48	8			47	14				
11:45		44	14	186	45	46	10	167	41	353	86
Total		777	1789			835	1630			1612	3419
Percent		30.3%	69.7%			33.9%	66.1%			32.0%	68.0%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 11111111
Station ID:
3rd St West of Glover St

Start Time	26-May-10 Wed	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		8	54			10	26				
12:15		8	42			6	39				
12:30		7	46			2	46				
12:45		10	47	33	189	6	64	24	175	57	364
01:00		2	48			1	34				
01:15		5	52			5	38				
01:30		1	38			3	43				
01:45		1	51	9	189	4	42	13	157	22	346
02:00		1	46			1	38				
02:15		5	58			4	37				
02:30		3	58			2	52				
02:45		2	40	11	202	2	63	9	190	20	392
03:00		4	56			2	48				
03:15		1	42			0	40				
03:30		1	44			1	44				
03:45		2	56	8	198	0	51	3	183	11	381
04:00		0	70			0	46				
04:15		2	57			1	49				
04:30		1	52			1	44				
04:45		4	46	7	225	2	54	4	193	11	418
05:00		2	50			1	41				
05:15		4	47			3	46				
05:30		3	57			6	44				
05:45		7	54	16	208	9	47	19	178	35	386
06:00		6	44			7	23				
06:15		6	38			4	36				
06:30		18	40			22	34				
06:45		16	50	46	172	14	41	47	134	93	306
07:00		10	40			14	22				
07:15		22	30			19	23				
07:30		24	44			32	40				
07:45		42	30	98	144	60	22	125	107	223	251
08:00		26	32			42	38				
08:15		26	34			31	22				
08:30		30	20			30	26				
08:45		31	27	113	113	50	21	153	107	266	220
09:00		27	19			32	20				
09:15		30	20			30	36				
09:30		38	22			39	23				
09:45		40	24	135	85	56	18	157	97	292	182
10:00		28	22			38	19				
10:15		28	23			24	17				
10:30		31	12			36	10				
10:45		38	12	125	69	34	8	132	54	257	123
11:00		46	17			44	5				
11:15		40	12			34	8				
11:30		46	4			40	10				
11:45		45	5	177	38	38	6	156	29	333	67
Total		778	1832			842	1604			1620	3436
Percent		29.8%	70.2%			34.4%	65.6%			32.0%	68.0%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 11111111
Station ID:
3rd St West of Glover St

Start Time	27-May-10 Thu	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		10	56			14	35				
12:15		10	56			6	42				
12:30		4	42			7	54				
12:45		5	54	29	208	5	46	32	177	61	385
01:00		9	56			2	48				
01:15		1	40			4	58				
01:30		4	40			0	41				
01:45		0	52	14	188	8	48	14	195	28	383
02:00		2	64			2	46				
02:15		3	56			4	33				
02:30		1	44			1	47				
02:45		3	55	9	219	1	34	8	160	17	379
03:00		2	48			4	44				
03:15		1	32			2	48				
03:30		3	42			1	42				
03:45		2	61	8	183	0	44	7	178	15	361
04:00		3	66			1	58				
04:15		1	60			1	56				
04:30		3	48			0	36				
04:45		3	43	10	217	2	58	4	208	14	425
05:00		4	52			2	47				
05:15		4	64			2	52				
05:30		2	36			4	33				
05:45		6	53	16	205	9	40	17	172	33	377
06:00		8	53			6	40				
06:15		10	40			9	26				
06:30		15	28			18	35				
06:45		18	31	51	152	12	32	45	133	96	285
07:00		13	42			16	22				
07:15		18	36			15	24				
07:30		24	37			32	24				
07:45		33	30	88	145	58	26	121	96	209	241
08:00		30	38			48	31				
08:15		22	22			30	32				
08:30		33	38			20	24				
08:45		30	24	115	122	42	24	140	111	255	233
09:00		40	28			42	26				
09:15		30	20			43	17				
09:30		35	21			48	21				
09:45		40	15	145	84	82	19	215	83	360	167
10:00		30	19			40	16				
10:15		40	19			42	12				
10:30		41	12			36	18				
10:45		30	18	141	68	30	13	148	59	289	127
11:00		60	8			42	10				
11:15		44	14			37	18				
11:30		48	5			44	9				
11:45		49	9	201	36	47	6	170	43	371	79
Total		827	1827			921	1615			1748	3442
Percent		31.2%	68.8%			36.3%	63.7%			33.7%	66.3%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 11111111
Station ID:
3rd St West of Glover St

Start Time	28-May-10 Fri	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		12	58			8	40				
12:15		7	61			6	34				
12:30		5	55			10	40				
12:45		5	53	29	227	9	62	33	176	62	403
01:00		2	48			2	50				
01:15		3	48			1	40				
01:30		2	6			1	10				
01:45		0	*	7	102	5	*	9	100	16	202
02:00		3	*			4	*				
02:15		5	*			4	*				
02:30		2	*			3	*				
02:45		3	*	13	0	1	*	12	0	25	0
03:00		1	*			3	*				
03:15		1	*			0	*				
03:30		0	*			1	*				
03:45		5	*	7	0	1	*	5	0	12	0
04:00		1	*			1	*				
04:15		0	*			3	*				
04:30		1	*			1	*				
04:45		2	*	4	0	0	*	5	0	9	0
05:00		3	*			3	*				
05:15		2	*			1	*				
05:30		2	*			8	*				
05:45		6	*	13	0	3	*	15	0	28	0
06:00		6	*			7	*				
06:15		10	*			3	*				
06:30		6	*			13	*				
06:45		16	*	38	0	17	*	40	0	78	0
07:00		20	*			14	*				
07:15		22	*			17	*				
07:30		30	*			25	*				
07:45		24	*	96	0	42	*	98	0	194	0
08:00		30	*			44	*				
08:15		24	*			23	*				
08:30		27	*			28	*				
08:45		30	*	111	0	48	*	143	0	254	0
09:00		25	*			33	*				
09:15		32	*			30	*				
09:30		32	*			30	*				
09:45		35	*	124	0	38	*	131	0	255	0
10:00		32	*			35	*				
10:15		30	*			38	*				
10:30		27	*			36	*				
10:45		42	*	131	0	34	*	143	0	274	0
11:00		48	*			48	*				
11:15		42	*			30	*				
11:30		58	*			48	*				
11:45		43	*	191	0	40	*	166	0	357	0
Total		764	329			800	276			1564	605
Percent		69.9%	30.1%			74.3%	25.7%			72.1%	27.9%
Grand Total		3448	7462			3694	6681			7142	14143
Percent		31.6%	68.4%			35.6%	64.4%			33.6%	66.4%

ADT

ADT 5,092

AADT 5,092

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 44444
Station ID:
4th St West of Bond St

Start Time	24-May-10 Mon	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		*	28			*	28				
12:15		*	28			*	26				
12:30		*	16			*	26				
12:45		*	35	0	107	*	34	0	114	0	221
01:00		*	18			*	22				
01:15		*	26			*	28				
01:30		*	24			*	26				
01:45		*	24	0	92	*	29	0	105	0	197
02:00		*	15			*	23				
02:15		*	26			*	23				
02:30		*	40			*	22				
02:45		*	29	0	110	*	32	0	100	0	210
03:00		*	18			*	19				
03:15		*	26			*	20				
03:30		*	24			*	24				
03:45		*	24	0	92	*	22	0	85	0	177
04:00		*	26			*	20				
04:15		*	12			*	18				
04:30		*	22			*	20				
04:45		*	24	0	84	*	16	0	74	0	158
05:00		*	18			*	30				
05:15		*	12			*	19				
05:30		*	18			*	19				
05:45		*	11	0	59	*	12	0	80	0	139
06:00		*	7			*	10				
06:15		*	20			*	11				
06:30		*	10			*	12				
06:45		*	11	0	48	*	16	0	49	0	97
07:00		*	10			*	10				
07:15		*	12			*	7				
07:30		*	13			*	8				
07:45		*	10	0	45	*	6	0	31	0	76
08:00		*	14			*	12				
08:15		*	3			*	6				
08:30		*	8			*	11				
08:45		*	7	0	32	*	2	0	31	0	63
09:00		*	10			*	10				
09:15		*	6			*	9				
09:30		*	11			*	8				
09:45		*	9	0	36	*	8	0	35	0	71
10:00		*	8			*	6				
10:15		*	10			*	9				
10:30		*	4			*	2				
10:45		23	6	23	28	22	2	22	19	45	47
11:00		32	6			30	1				
11:15		29	6			24	6				
11:30		27	2			28	5				
11:45		24	4	112	18	18	6	100	18	212	36
Total		135	751			122	741			257	1492
Percent		15.2%	84.8%			14.1%	85.9%			14.7%	85.3%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 44444
Station ID:
4th St West of Bond St

Start Time	25-May-10 Tue	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		3	32			0	28				
12:15		1	26			1	28				
12:30		2	23			1	20				
12:45		2	26	8	107	2	31	4	107	12	214
01:00		4	31			3	18				
01:15		2	22			2	20				
01:30		1	31			0	24				
01:45		2	25	9	109	3	20	8	82	17	191
02:00		3	35			0	29				
02:15		2	16			0	20				
02:30		1	30			5	16				
02:45		0	29	6	110	2	26	7	91	13	201
03:00		1	32			0	27				
03:15		1	28			0	28				
03:30		2	30			1	21				
03:45		0	23	4	113	1	21	2	97	6	210
04:00		1	30			0	28				
04:15		0	27			0	16				
04:30		0	24			1	36				
04:45		1	26	2	107	2	22	3	102	5	209
05:00		1	24			0	27				
05:15		0	10			0	14				
05:30		0	11			0	12				
05:45		1	12	2	57	3	16	3	69	5	126
06:00		1	12			0	8				
06:15		1	10			0	16				
06:30		2	10			1	14				
06:45		2	7	6	39	3	20	4	58	10	97
07:00		8	12			6	8				
07:15		6	11			8	7				
07:30		10	20			12	16				
07:45		32	16	56	59	16	6	42	37	98	96
08:00		26	26			14	10				
08:15		15	18			8	12				
08:30		20	12			13	10				
08:45		18	8	79	64	14	11	49	43	128	107
09:00		24	10			14	8				
09:15		18	8			15	5				
09:30		23	4			21	3				
09:45		26	6	91	28	22	6	72	22	163	50
10:00		20	8			19	10				
10:15		19	6			20	3				
10:30		30	3			22	5				
10:45		22	1	91	18	19	7	80	25	171	43
11:00		28	5			30	2				
11:15		28	2			30	5				
11:30		32	5			18	4				
11:45		20	6	108	18	16	2	94	13	202	31
Total		462	829			368	746			830	1575
Percent		35.8%	64.2%			33.0%	67.0%			34.5%	65.5%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 44444
Station ID:
4th St West of Bond St

Start Time	26-May-10 Wed	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		6	22			5	25				
12:15		2	24			1	28				
12:30		3	26			0	30				
12:45		2	22	13	94	5	26	11	109	24	203
01:00		3	16			2	28				
01:15		3	23			2	20				
01:30		4	26			1	24				
01:45		4	18	14	83	4	22	9	94	23	177
02:00		2	28			0	27				
02:15		0	31			3	22				
02:30		0	32			1	24				
02:45		0	42	2	133	1	22	5	95	7	228
03:00		1	40			0	20				
03:15		0	26			0	28				
03:30		0	30			1	26				
03:45		1	27	2	123	0	38	1	112	3	235
04:00		0	24			1	29				
04:15		0	14			2	18				
04:30		1	21			0	26				
04:45		2	26	3	85	2	26	5	99	8	184
05:00		1	29			1	30				
05:15		0	12			1	18				
05:30		0	16			0	10				
05:45		0	10	1	67	0	12	2	70	3	137
06:00		0	12			0	10				
06:15		4	10			0	15				
06:30		2	16			1	11				
06:45		4	12	10	50	4	12	5	48	15	98
07:00		10	18			6	14				
07:15		6	9			7	8				
07:30		13	12			8	8				
07:45		28	11	57	50	12	10	33	40	90	90
08:00		24	13			8	11				
08:15		14	18			14	10				
08:30		15	8			16	10				
08:45		27	14	80	53	15	12	53	43	133	96
09:00		32	8			16	10				
09:15		24	7			20	10				
09:30		21	15			23	11				
09:45		22	6	99	36	18	11	77	42	176	78
10:00		22	6			22	6				
10:15		20	10			24	8				
10:30		21	4			17	4				
10:45		20	5	83	25	10	4	73	22	156	47
11:00		15	3			16	0				
11:15		25	7			14	2				
11:30		26	11			18	6				
11:45		36	5	102	26	24	5	72	13	174	39
Total		466	825			346	787			812	1612
Percent		36.1%	63.9%			30.5%	69.5%			33.5%	66.5%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 44444
Station ID:
4th St West of Bond St

Start Time	27-May-10 Thu	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		4	24			6	28				
12:15		8	24			6	22				
12:30		5	27			8	26				
12:45		6	20	23	95	6	20	26	96	49	191
01:00		4	20			8	24				
01:15		3	20			2	31				
01:30		1	26			1	30				
01:45		2	23	10	89	2	24	13	109	23	198
02:00		0	24			1	26				
02:15		2	17			4	24				
02:30		3	28			5	20				
02:45		4	32	9	101	3	24	13	94	22	195
03:00		2	32			0	28				
03:15		1	28			1	28				
03:30		2	38			1	24				
03:45		2	26	7	124	1	20	3	100	10	224
04:00		0	28			0	28				
04:15		1	18			0	28				
04:30		1	24			0	30				
04:45		0	24	2	94	1	24	1	110	3	204
05:00		2	26			1	43				
05:15		3	26			3	26				
05:30		2	14			0	14				
05:45		0	8	7	74	2	16	6	99	13	173
06:00		0	16			0	19				
06:15		2	9			3	14				
06:30		3	5			1	10				
06:45		6	17	11	47	5	2	9	45	20	92
07:00		6	14			3	16				
07:15		6	9			10	7				
07:30		10	10			10	6				
07:45		28	6	50	39	15	10	38	39	88	78
08:00		24	10			17	9				
08:15		19	7			14	12				
08:30		15	8			12	8				
08:45		28	4	86	29	28	4	71	33	157	62
09:00		35	8			19	6				
09:15		16	9			19	4				
09:30		25	4			16	10				
09:45		18	9	94	30	17	10	71	30	165	60
10:00		23	14			23	4				
10:15		24	8			20	5				
10:30		22	6			19	10				
10:45		18	8	87	36	10	5	72	24	159	60
11:00		24	8			30	4				
11:15		17	5			19	8				
11:30		26	4			21	7				
11:45		32	6	99	23	28	7	98	26	197	49
Total		485	781			421	805			906	1586
Percent		38.3%	61.7%			34.3%	65.7%			36.4%	63.6%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 44444
Station ID:
4th St West of Bond St

Start Time	28-May-10 Fri	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		9	25			10	23				
12:15		5	20			3	26				
12:30		5	20			1	18				
12:45		2	32	21	97	3	24	17	91	38	188
01:00		6	20			4	20				
01:15		5	6			5	10				
01:30		2	*			5	*				
01:45		6	*	19	26	5	*	19	30	38	56
02:00		4	*			5	*				
02:15		2	*			3	*				
02:30		2	*			8	*				
02:45		0	*	8	0	1	*	17	0	25	0
03:00		0	*			1	*				
03:15		0	*			1	*				
03:30		0	*			1	*				
03:45		0	*	0	0	1	*	4	0	4	0
04:00		1	*			0	*				
04:15		0	*			0	*				
04:30		0	*			0	*				
04:45		0	*	1	0	0	*	0	0	1	0
05:00		3	*			1	*				
05:15		2	*			4	*				
05:30		0	*			1	*				
05:45		1	*	6	0	1	*	7	0	13	0
06:00		2	*			0	*				
06:15		0	*			0	*				
06:30		3	*			2	*				
06:45		5	*	10	0	3	*	5	0	15	0
07:00		4	*			4	*				
07:15		5	*			6	*				
07:30		8	*			6	*				
07:45		26	*	43	0	8	*	24	0	67	0
08:00		18	*			11	*				
08:15		10	*			8	*				
08:30		16	*			10	*				
08:45		16	*	60	0	8	*	37	0	97	0
09:00		22	*			17	*				
09:15		18	*			16	*				
09:30		16	*			13	*				
09:45		20	*	76	0	17	*	63	0	139	0
10:00		17	*			21	*				
10:15		23	*			16	*				
10:30		20	*			20	*				
10:45		19	*	79	0	18	*	75	0	154	0
11:00		23	*			24	*				
11:15		20	*			22	*				
11:30		30	*			27	*				
11:45		18	*	91	0	24	*	97	0	188	0
Total		414	123			365	121			779	244
Percent		77.1%	22.9%			75.1%	24.9%			76.1%	23.9%
Grand Total		1962	3309			1622	3200			3584	6509
Percent		37.2%	62.8%			33.6%	66.4%			35.5%	64.5%
ADT		ADT 2,440		AADT 2,440							

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 22222222
Station ID:
4th St West of Glover St

Start Time	24-May-10 Mon	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		*	20			*	34				
12:15		*	16			*	18				
12:30		*	14			*	30				
12:45		*	16	0	66	*	19	0	101	0	167
01:00		*	13			*	22				
01:15		*	24			*	33				
01:30		*	18			*	24				
01:45		*	21	0	76	*	22	0	101	0	177
02:00		*	13			*	32				
02:15		*	21			*	35				
02:30		*	54			*	76				
02:45		*	32	0	120	*	56	0	199	0	319
03:00		*	16			*	34				
03:15		*	18			*	44				
03:30		*	14			*	23				
03:45		*	9	0	57	*	15	0	116	0	173
04:00		*	16			*	22				
04:15		*	16			*	24				
04:30		*	16			*	28				
04:45		*	12	0	60	*	22	0	96	0	156
05:00		*	6			*	28				
05:15		*	9			*	25				
05:30		*	10			*	21				
05:45		*	16	0	41	*	22	0	96	0	137
06:00		*	8			*	12				
06:15		*	14			*	15				
06:30		*	10			*	8				
06:45		*	12	0	44	*	18	0	53	0	97
07:00		*	6			*	15				
07:15		*	5			*	10				
07:30		*	10			*	6				
07:45		*	7	0	28	*	10	0	41	0	69
08:00		*	14			*	12				
08:15		*	6			*	10				
08:30		*	9			*	8				
08:45		*	14	0	43	*	11	0	41	0	84
09:00		*	6			*	8				
09:15		*	8			*	6				
09:30		*	6			*	3				
09:45		*	4	0	24	*	14	0	31	0	55
10:00		*	4			*	4				
10:15		*	14			*	12				
10:30		18	2			26	1				
10:45		24	4	42	24	27	5	53	22	95	46
11:00		24	7			32	3				
11:15		10	1			14	4				
11:30		24	1			36	5				
11:45		18	2	76	11	22	8	104	20	180	31
Total		118	594			157	917			275	1511
Percent		16.6%	83.4%			14.6%	85.4%			15.4%	84.6%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 22222222
Station ID:
4th St West of Glover St

Start Time	25-May-10 Tue	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		2	18			0	17				
12:15		1	12			2	17				
12:30		4	19			3	25				
12:45		2	24	9	73	3	32	8	91	17	164
01:00		2	22			1	22				
01:15		1	13			1	12				
01:30		0	20			1	19				
01:45		2	14	5	69	2	14	5	67	10	136
02:00		3	18			0	30				
02:15		2	24			0	31				
02:30		1	32			2	45				
02:45		0	40	6	114	2	63	4	169	10	283
03:00		1	28			0	44				
03:15		0	25			0	55				
03:30		3	14			1	22				
03:45		0	19	4	86	0	20	1	141	5	227
04:00		1	16			0	32				
04:15		1	20			2	32				
04:30		1	20			1	31				
04:45		2	21	5	77	3	22	6	117	11	194
05:00		1	14			0	24				
05:15		0	6			0	21				
05:30		1	8			2	22				
05:45		1	12	3	40	2	18	4	85	7	125
06:00		1	8			0	10				
06:15		1	15			2	18				
06:30		2	14			1	18				
06:45		4	16	8	53	1	16	4	62	12	115
07:00		6	15			10	8				
07:15		10	14			4	18				
07:30		24	15			16	22				
07:45		51	19	91	63	37	18	67	66	158	129
08:00		47	24			50	27				
08:15		18	14			16	20				
08:30		30	10			30	11				
08:45		22	8	117	56	19	14	115	72	232	128
09:00		20	12			20	10				
09:15		18	4			14	4				
09:30		15	8			18	10				
09:45		14	4	67	28	11	6	63	30	130	58
10:00		16	9			17	5				
10:15		7	3			12	4				
10:30		26	3			15	4				
10:45		14	3	63	18	21	7	65	20	128	38
11:00		14	6			21	5				
11:15		14	3			18	8				
11:30		19	2			18	3				
11:45		14	5	61	16	22	2	79	18	140	34
Total		439	693			421	938			860	1631
Percent		38.8%	61.2%			31.0%	69.0%			34.5%	65.5%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 22222222
Station ID:
4th St West of Glover St

Start Time	26-May-10 Wed	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		6	20			4	28				
12:15		1	20			2	34				
12:30		2	28			2	34				
12:45		2	26	11	94	4	26	12	122	23	216
01:00		2	21			2	34				
01:15		2	24			2	19				
01:30		4	18			1	13				
01:45		2	20	10	83	0	18	5	84	15	167
02:00		1	24			0	39				
02:15		0	34			1	40				
02:30		0	26			1	49				
02:45		0	54	1	138	2	70	4	198	5	336
03:00		0	24			0	36				
03:15		1	26			0	50				
03:30		0	24			0	29				
03:45		1	12	2	86	0	24	0	139	2	225
04:00		0	18			1	27				
04:15		0	16			1	22				
04:30		2	16			1	24				
04:45		2	18	4	68	4	20	7	93	11	161
05:00		2	17			0	36				
05:15		0	10			0	12				
05:30		0	12			0	13				
05:45		0	12	2	51	0	14	0	75	2	126
06:00		1	18			1	12				
06:15		3	6			0	18				
06:30		4	10			3	14				
06:45		8	10	16	44	7	15	11	59	27	103
07:00		4	5			4	6				
07:15		6	8			6	7				
07:30		30	10			25	12				
07:45		44	9	84	32	26	12	61	37	145	69
08:00		60	8			60	12				
08:15		20	6			29	17				
08:30		21	6			23	11				
08:45		30	7	131	27	22	10	134	50	265	77
09:00		22	6			14	8				
09:15		17	4			19	13				
09:30		16	12			15	12				
09:45		16	2	71	24	20	8	68	41	139	65
10:00		26	6			16	10				
10:15		8	6			16	3				
10:30		12	2			18	4				
10:45		14	8	60	22	9	3	59	20	119	42
11:00		15	8			20	6				
11:15		19	8			16	6				
11:30		14	6			15	3				
11:45		23	4	71	26	20	8	71	23	142	49
Total		463	695			432	941			895	1636
Percent		40.0%	60.0%			31.5%	68.5%			35.4%	64.6%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 22222222
Station ID:
4th St West of Glover St

Start Time	27-May-10 Thu	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		5	12			6	24				
12:15		5	16			3	16				
12:30		2	18			5	16				
12:45		4	19	16	65	0	20	14	76	30	141
01:00		2	22			6	28				
01:15		2	17			1	28				
01:30		1	16			0	27				
01:45		1	20	6	75	2	28	9	111	15	186
02:00		1	14			0	20				
02:15		2	12			5	16				
02:30		1	30			2	31				
02:45		0	36	4	92	0	51	7	118	11	210
03:00		3	24			3	30				
03:15		0	23			0	41				
03:30		2	28			1	48				
03:45		0	14	5	89	1	22	5	141	10	230
04:00		1	16			0	21				
04:15		0	12			1	22				
04:30		0	18			0	30				
04:45		2	18	3	64	4	23	5	96	8	160
05:00		3	14			3	46				
05:15		1	22			1	25				
05:30		3	13			0	22				
05:45		0	6	7	55	2	10	6	103	13	158
06:00		0	10			0	12				
06:15		1	7			2	14				
06:30		1	7			1	14				
06:45		8	15	10	39	4	5	7	45	17	84
07:00		6	10			6	17				
07:15		7	8			7	12				
07:30		24	8			16	12				
07:45		54	9	91	35	42	13	71	54	162	89
08:00		39	8			26	14				
08:15		21	8			14	12				
08:30		25	5			24	8				
08:45		20	7	105	28	26	13	90	47	195	75
09:00		17	8			12	10				
09:15		11	8			18	5				
09:30		20	8			12	12				
09:45		16	4	64	28	18	17	60	44	124	72
10:00		18	10			17	4				
10:15		14	4			14	5				
10:30		18	3			22	8				
10:45		10	9	60	26	10	7	63	24	123	50
11:00		13	9			23	8				
11:15		5	4			14	10				
11:30		14	4			21	4				
11:45		17	6	49	23	18	4	76	26	125	49
Total		420	619			413	885			833	1504
Percent		40.4%	59.6%			31.8%	68.2%			35.6%	64.4%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 22222222
Station ID:
4th St West of Glover St

Start Time	28-May-10 Fri	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		5	25			8	28				
12:15		4	16			5	31				
12:30		5	15			2	16				
12:45		1	22	15	78	3	21	18	96	33	174
01:00		3	3			1	3				
01:15		0	*			4	*				
01:30		2	*			2	*				
01:45		5	*	10	3	4	*	11	3	21	6
02:00		3	*			3	*				
02:15		2	*			3	*				
02:30		3	*			6	*				
02:45		2	*	10	0	2	*	14	0	24	0
03:00		0	*			1	*				
03:15		1	*			1	*				
03:30		0	*			0	*				
03:45		1	*	2	0	3	*	5	0	7	0
04:00		1	*			0	*				
04:15		0	*			0	*				
04:30		0	*			0	*				
04:45		0	*	1	0	1	*	1	0	2	0
05:00		0	*			0	*				
05:15		2	*			0	*				
05:30		0	*			0	*				
05:45		1	*	3	0	3	*	3	0	6	0
06:00		1	*			0	*				
06:15		1	*			0	*				
06:30		2	*			3	*				
06:45		5	*	9	0	4	*	7	0	16	0
07:00		4	*			3	*				
07:15		6	*			7	*				
07:30		15	*			6	*				
07:45		43	*	68	0	23	*	39	0	107	0
08:00		36	*			28	*				
08:15		16	*			13	*				
08:30		26	*			22	*				
08:45		16	*	94	0	16	*	79	0	173	0
09:00		24	*			26	*				
09:15		16	*			16	*				
09:30		13	*			18	*				
09:45		12	*	65	0	14	*	74	0	139	0
10:00		8	*			18	*				
10:15		17	*			22	*				
10:30		14	*			16	*				
10:45		14	*	53	0	13	*	69	0	122	0
11:00		16	*			22	*				
11:15		8	*			16	*				
11:30		18	*			20	*				
11:45		16	*	58	0	26	*	84	0	142	0
Total		388	81			404	99			792	180
Percent		82.7%	17.3%			80.3%	19.7%			81.5%	18.5%
Grand Total		1828	2682			1827	3780			3655	6462
Percent		40.5%	59.5%			32.6%	67.4%			36.1%	63.9%
ADT		ADT 2,453				AADT 2,453					

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 55555555
Station ID:
Front St under bridge

Start Time	24-May-10 Mon	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		*	14			*	12				
12:15		*	4			*	7				
12:30		*	8			*	6				
12:45		*	6	0	32	*	9	0	34	0	66
01:00		*	8			*	2				
01:15		*	13			*	7				
01:30		*	4			*	9				
01:45		*	14	0	39	*	10	0	28	0	67
02:00		*	14			*	6				
02:15		*	8			*	9				
02:30		*	15			*	6				
02:45		*	15	0	52	*	4	0	25	0	77
03:00		*	7			*	6				
03:15		*	6			*	6				
03:30		*	17			*	4				
03:45		*	13	0	43	*	3	0	19	0	62
04:00		*	13			*	6				
04:15		*	10			*	3				
04:30		*	10			*	6				
04:45		*	5	0	38	*	3	0	18	0	56
05:00		*	28			*	6				
05:15		*	14			*	13				
05:30		*	3			*	15				
05:45		*	9	0	54	*	9	0	43	0	97
06:00		*	8			*	1				
06:15		*	6			*	3				
06:30		*	10			*	1				
06:45		*	9	0	33	*	0	0	5	0	38
07:00		*	4			*	2				
07:15		*	3			*	0				
07:30		*	5			*	2				
07:45		*	4	0	16	*	0	0	4	0	20
08:00		*	5			*	1				
08:15		*	6			*	2				
08:30		*	6			*	1				
08:45		*	12	0	29	*	0	0	4	0	33
09:00		*	3			*	0				
09:15		*	5			*	2				
09:30		*	1			*	0				
09:45		*	2	0	11	*	1	0	3	0	14
10:00		*	1			*	0				
10:15		*	0			*	0				
10:30		*	1			*	0				
10:45		*	1	0	3	*	0	0	0	0	3
11:00		*	1			*	0				
11:15		*	0			*	0				
11:30		*	0			*	0				
11:45		11	1	11	2	12	0	12	0	23	2
Total		11	352			12	183			23	535
Percent		3.0%	97.0%			6.2%	93.8%			4.1%	95.9%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 55555555
Station ID:
Front St under bridge

Start Time	25-May-10 Tue	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	21			0	9				
12:15		0	11			0	5				
12:30		0	11			0	11				
12:45		0	17	0	60	0	16	0	41	0	101
01:00		1	15			0	6				
01:15		0	11			1	9				
01:30		0	4			0	7				
01:45		0	22	1	52	1	11	2	33	3	85
02:00		0	12			0	12				
02:15		1	9			0	7				
02:30		0	8			0	4				
02:45		0	8	1	37	0	6	0	29	1	66
03:00		0	9			0	8				
03:15		0	12			1	8				
03:30		0	8			0	2				
03:45		1	28	1	57	0	5	1	23	2	80
04:00		0	13			0	5				
04:15		0	12			0	6				
04:30		1	11			0	9				
04:45		0	13	1	49	1	5	1	25	2	74
05:00		1	35			0	3				
05:15		0	16			0	7				
05:30		0	10			0	9				
05:45		0	7	1	68	0	4	0	23	1	91
06:00		0	8			0	3				
06:15		0	6			0	1				
06:30		0	2			2	0				
06:45		1	12	1	28	5	2	7	6	8	34
07:00		1	2			4	2				
07:15		1	4			7	2				
07:30		2	7			18	1				
07:45		5	6	9	19	33	1	62	6	71	25
08:00		2	14			23	2				
08:15		2	4			16	2				
08:30		1	1			17	2				
08:45		5	2	10	21	17	0	73	6	83	27
09:00		9	1			10	0				
09:15		4	0			10	0				
09:30		8	0			15	0				
09:45		5	3	26	4	19	1	54	1	80	5
10:00		13	9			5	0				
10:15		0	1			4	0				
10:30		9	2			6	0				
10:45		5	2	27	14	12	0	27	0	54	14
11:00		11	2			7	1				
11:15		5	1			9	0				
11:30		10	0			8	1				
11:45		11	0	37	3	20	0	44	2	81	5
Total		115	412			271	195			386	607
Percent		21.8%	78.2%			58.2%	41.8%			38.9%	61.1%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 55555555
Station ID:
Front St under bridge

Start Time	26-May-10 Wed	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	21			1	12				
12:15		0	11			0	3				
12:30		1	18			0	10				
12:45		0	8	1	58	0	14	1	39	2	97
01:00		0	10			0	8				
01:15		0	5			0	7				
01:30		0	11			1	8				
01:45		0	19	0	45	1	18	2	41	2	86
02:00		0	6			1	8				
02:15		1	10			0	4				
02:30		0	10			1	5				
02:45		0	2	1	28	0	7	2	24	3	52
03:00		0	18			0	3				
03:15		1	8			0	6				
03:30		0	13			1	2				
03:45		0	17	1	56	0	1	1	12	2	68
04:00		0	17			0	6				
04:15		0	12			0	4				
04:30		1	11			1	7				
04:45		0	17	1	57	0	7	1	24	2	81
05:00		2	25			0	4				
05:15		1	16			0	4				
05:30		0	7			0	8				
05:45		0	14	3	62	0	8	0	24	3	86
06:00		0	10			1	6				
06:15		0	3			1	0				
06:30		0	6			4	1				
06:45		1	3	1	22	13	5	19	12	20	34
07:00		0	4			9	0				
07:15		1	7			5	1				
07:30		8	14			13	3				
07:45		5	6	14	31	36	3	63	7	77	38
08:00		4	12			25	0				
08:15		2	6			16	2				
08:30		2	4			13	0				
08:45		6	3	14	25	23	1	77	3	91	28
09:00		11	2			14	1				
09:15		4	0			9	0				
09:30		13	10			26	1				
09:45		11	2	39	14	16	0	65	2	104	16
10:00		10	0			12	0				
10:15		4	1			2	0				
10:30		6	1			6	0				
10:45		7	2	27	4	10	0	30	0	57	4
11:00		26	1			6	0				
11:15		12	1			7	0				
11:30		11	0			10	0				
11:45		15	0	64	2	24	1	47	1	111	3
Total		166	404			308	189			474	593
Percent		29.1%	70.9%			62.0%	38.0%			44.4%	55.6%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 55555555
Station ID:
Front St under bridge

Start Time	27-May-10 Thu	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	14			0	10				
12:15		1	15			0	4				
12:30		1	10			1	8				
12:45		0	9	2	48	1	8	2	30	4	78
01:00		0	13			1	7				
01:15		2	10			0	5				
01:30		0	4			0	6				
01:45		0	22	2	49	0	12	1	30	3	79
02:00		0	12			0	8				
02:15		0	10			0	3				
02:30		0	5			1	3				
02:45		0	4	0	31	1	3	2	17	2	48
03:00		1	7			0	3				
03:15		0	10			1	4				
03:30		0	8			0	2				
03:45		1	16	2	41	0	7	1	16	3	57
04:00		0	24			1	5				
04:15		0	11			1	6				
04:30		0	14			0	9				
04:45		0	12	0	61	0	9	2	29	2	90
05:00		0	21			1	7				
05:15		0	17			0	6				
05:30		0	12			0	6				
05:45		0	12	0	62	1	8	2	27	2	89
06:00		0	9			0	7				
06:15		0	3			0	2				
06:30		0	5			2	1				
06:45		0	1	0	18	3	1	5	11	5	29
07:00		1	9			5	1				
07:15		0	10			4	1				
07:30		3	12			6	2				
07:45		6	6	10	37	25	1	40	5	50	42
08:00		6	10			21	0				
08:15		4	1			11	0				
08:30		1	4			6	3				
08:45		5	3	16	18	18	1	56	4	72	22
09:00		4	1			13	1				
09:15		3	1			9	0				
09:30		2	9			15	0				
09:45		5	2	14	13	25	0	62	1	76	14
10:00		8	1			12	0				
10:15		7	0			3	0				
10:30		5	1			6	0				
10:45		11	2	31	4	11	0	32	0	63	4
11:00		12	1			7	0				
11:15		9	1			6	0				
11:30		9	0			13	1				
11:45		16	2	46	4	13	0	39	1	85	5
Total		123	386			244	171			367	557
Percent		24.2%	75.8%			58.8%	41.2%			39.7%	60.3%

Burgess & Niple, Inc.
5085 Reed Road
Columbus, OH 43220
(614) 459-2050

Site Code: 55555555
Station ID:
Front St under bridge

Start Time	28-May-10 Fri	Westbound		Hour Totals		Eastbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	15			0	9				
12:15		0	7			0	6				
12:30		0	10			1	10				
12:45		0	12	0	44	0	18	1	43	1	87
01:00		0	11			0	10				
01:15		1	5			0	5				
01:30		0	9			0	11				
01:45		0	3	1	28	1	9	1	35	2	63
02:00		0	4			0	1				
02:15		0	*			0	*				
02:30		0	*			0	*				
02:45		0	*	0	4	0	*	0	1	0	5
03:00		0	*			1	*				
03:15		2	*			0	*				
03:30		0	*			0	*				
03:45		0	*	2	0	0	*	1	0	3	0
04:00		0	*			0	*				
04:15		0	*			0	*				
04:30		0	*			0	*				
04:45		0	*	0	0	0	*	0	0	0	0
05:00		1	*			0	*				
05:15		0	*			1	*				
05:30		1	*			1	*				
05:45		0	*	2	0	0	*	2	0	4	0
06:00		0	*			0	*				
06:15		0	*			1	*				
06:30		0	*			1	*				
06:45		0	*	0	0	9	*	11	0	11	0
07:00		1	*			8	*				
07:15		0	*			5	*				
07:30		4	*			7	*				
07:45		0	*	5	0	12	*	32	0	37	0
08:00		3	*			24	*				
08:15		3	*			13	*				
08:30		2	*			7	*				
08:45		4	*	12	0	6	*	50	0	62	0
09:00		8	*			10	*				
09:15		4	*			9	*				
09:30		8	*			5	*				
09:45		9	*	29	0	9	*	33	0	62	0
10:00		15	*			4	*				
10:15		5	*			4	*				
10:30		7	*			9	*				
10:45		10	*	37	0	5	*	22	0	59	0
11:00		6	*			6	*				
11:15		8	*			5	*				
11:30		10	*			5	*				
11:45		8	*	32	0	4	*	20	0	52	0
Total		120	76			173	79			293	155
Percent		61.2%	38.8%			68.7%	31.3%			65.4%	34.6%
Grand Total		535	1630			1008	817			1543	2447
Percent		24.7%	75.3%			55.2%	44.8%			38.7%	61.3%
ADT		ADT 995		AADT 995							



Legend

- Existing Buildings
- Proposed Buildings
- Outdoor Activity Areas
- Lawn
- Roads & Parking
- Pedestrian Walks & Plazas
- Trees & Shrubs

Master Plan
Master Plan 2008 Forward
Shawnee State University



Appendix C

Summary of Synchro Inputs

Timings
6: 2nd St & US 23

6/11/2010



Lane Group	EBL2	EBL	EBR	NBL	NBT	NBR	SBT
Lane Configurations							
Volume (vph)	4	165	28	63	32	378	83
Lane Group Flow (vph)	4	179	30	0	103	411	139
Turn Type	Perm		Perm	Perm		Perm	
Protected Phases		4			2		6
Permitted Phases	4		4	2		2	
Detector Phase	4	4	4	2	2	2	6
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	34.0	34.0	34.0	56.0	56.0	56.0	56.0
Total Split (%)	37.8%	37.8%	37.8%	62.2%	62.2%	62.2%	62.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	Max	Max	Max	Max
Act Effct Green (s)	13.3	13.3	13.3		58.7	58.7	58.7
Actuated g/C Ratio	0.17	0.17	0.17		0.73	0.73	0.73
v/c Ratio	0.01	0.61	0.10		0.10	0.32	0.06
Control Delay	24.0	36.7	10.4		3.9	1.2	2.5
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	24.0	36.7	10.4		3.9	1.2	2.5
LOS	C	D	B		A	A	A
Approach Delay		32.8			1.8		2.5
Approach LOS		C			A		A
Queue Length 50th (ft)	2	78	0		11	0	5
Queue Length 95th (ft)	9	133	20		30	25	14
Internal Link Dist (ft)		445			207		209
Turn Bay Length (ft)							
Base Capacity (vph)	553	553	515		1078	1270	2471
Starvation Cap Reductn	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0		0	0	0
Storage Cap Reductn	0	0	0		0	0	0
Reduced v/c Ratio	0.01	0.32	0.06		0.10	0.32	0.06
Intersection Summary							
Cycle Length: 90							
Actuated Cycle Length: 80							
Natural Cycle: 40							
Control Type: Actuated-Uncoordinated							
Maximum v/c Ratio: 0.61							
Intersection Signal Delay: 9.5				Intersection LOS: A			
Intersection Capacity Utilization 28.0%				ICU Level of Service A			
Analysis Period (min) 15							

Timings
6: 2nd St & US 23

6/11/2010

Splits and Phases: 6: 2nd St & US 23



HCM Unsignalized Intersection Capacity Analysis

17: 4th St & US 23

6/11/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	50	0	0	70	15	10	260	30	0	0	0
Sign Control	Stop				Stop			Free			Free	
Grade	0%				0%			0%			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
Hourly flow rate (vph)	5	54	0	0	76	16	11	283	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	217	337	0	348	321	158	0				315	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	217	337	0	348	321	158	0				315	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	99	91	100	100	87	98	99				100	
cM capacity (veh/h)	633	579	1084	538	591	860	1622				1242	
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2							
Volume Total	5	54	92	152	174							
Volume Left	5	0	0	11	0							
Volume Right	0	0	16	0	33							
cSH	633	579	626	1622	1700							
Volume to Capacity	0.01	0.09	0.15	0.01	0.10							
Queue Length 95th (ft)	1	8	13	1	0							
Control Delay (s)	10.7	11.9	11.7	0.6	0.0							
Lane LOS	B	B	B	A								
Approach Delay (s)	11.8	11.7		0.3								
Approach LOS	B	B										
Intersection Summary												
Average Delay			3.9									
Intersection Capacity Utilization			19.7%	ICU Level of Service					A			
Analysis Period (min)			15									

Timings
23: 3rd St & Stinton

6/11/2010



Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations	↑	↑	↑	↑	↑
Volume (vph)	189	195	18	132	33
Lane Group Flow (vph)	205	212	20	143	49
Turn Type	Perm		Perm		
Protected Phases	4			8	2
Permitted Phases		4	8		
Detector Phase	4	4	8	8	2
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0
Total Split (s)	64.0	64.0	64.0	64.0	26.0
Total Split (%)	71.1%	71.1%	71.1%	71.1%	28.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	None	None	Max
Act Effect Green (s)	10.1	10.1	10.1	10.1	22.1
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.55
v/c Ratio	0.44	0.38	0.07	0.31	0.05
Control Delay	15.7	4.6	11.5	13.8	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	4.6	11.5	13.8	4.4
LOS	B	A	B	B	A
Approach Delay	10.1			13.5	4.4
Approach LOS	B			B	A
Queue Length 50th (ft)	39	0	3	26	3
Queue Length 95th (ft)	78	32	14	57	15
Internal Link Dist (ft)	204			215	104
Turn Bay Length (ft)			250		
Base Capacity (vph)	1242	1126	781	1242	959
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.19	0.03	0.12	0.05

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 40.2	
Natural Cycle: 40	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.44	
Intersection Signal Delay: 10.5	Intersection LOS: B
Intersection Capacity Utilization 25.0%	ICU Level of Service A
Analysis Period (min) 15	

Timings
23: 3rd St & Stinton

6/11/2010

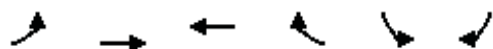
Splits and Phases: 23: 3rd St & Stinton



HCM Unsignalized Intersection Capacity Analysis

24: 4th St & Sinton St

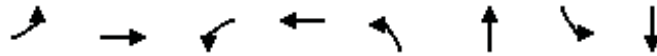
6/11/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	9	33	92	6	2	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	36	100	7	2	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)			546			
pX, platoon unblocked						
vC, conflicting volume	107				159	103
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	107				159	103
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	99
cM capacity (veh/h)	1484				827	952
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	46	107	13			
Volume Left	10	0	2			
Volume Right	0	7	11			
cSH	1484	1700	928			
Volume to Capacity	0.01	0.06	0.01			
Queue Length 95th (ft)	0	0	1			
Control Delay (s)	1.6	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	1.6	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			18.9%	ICU Level of Service		A
Analysis Period (min)			15			

Timings
42: 4th St & Waller St

6/11/2010

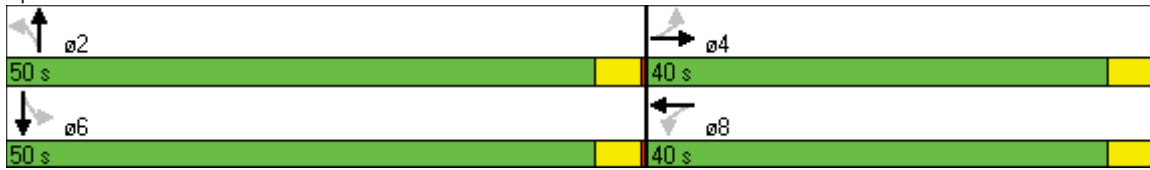


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	7	16	2	61	1	63	37	150
Lane Group Flow (vph)	0	28	0	151	0	77	0	214
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	40.0	40.0	40.0	40.0	50.0	50.0	50.0	50.0
Total Split (%)	44.4%	44.4%	44.4%	44.4%	55.6%	55.6%	55.6%	55.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effct Green (s)		8.8		8.8		55.0		55.0
Actuated g/C Ratio		0.12		0.12		0.76		0.76
v/c Ratio		0.14		0.54		0.05		0.16
Control Delay		23.1		19.9		2.5		2.9
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		23.1		19.9		2.5		2.9
LOS		C		B		A		A
Approach Delay		23.1		19.9		2.5		2.9
Approach LOS		C		B		A		A
Queue Length 50th (ft)		9		25		5		17
Queue Length 95th (ft)		28		71		17		42
Internal Link Dist (ft)		466		617		228		108
Turn Bay Length (ft)								
Base Capacity (vph)		607		684		1404		1342
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.05		0.22		0.05		0.16
Intersection Summary								
Cycle Length: 90								
Actuated Cycle Length: 72								
Natural Cycle: 40								
Control Type: Actuated-Uncoordinated								
Maximum v/c Ratio: 0.54								
Intersection Signal Delay: 9.5				Intersection LOS: A				
Intersection Capacity Utilization 31.9%				ICU Level of Service A				
Analysis Period (min) 15								

Timings
42: 4th St & Waller St

6/11/2010

Splits and Phases: 42: 4th St & Waller St



HCM Unsignalized Intersection Capacity Analysis

44: 3rd St & Waller St

6/11/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	53	133	21	105	113	13	18	24	12	3	144	32
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	58	145	23	114	123	14	20	26	13	3	157	35
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		541										
pX, platoon unblocked												
vC, conflicting volume	137			167			662	625	145	644	641	68
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	137			167			662	625	145	644	641	68
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			92			90	93	99	99	55	96
cM capacity (veh/h)	1445			1408			198	353	877	303	345	981
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	58	145	23	176	76	59	195					
Volume Left	58	0	0	114	0	20	3					
Volume Right	0	0	23	0	14	13	35					
cSH	1445	1700	1700	1408	1700	313	390					
Volume to Capacity	0.04	0.09	0.01	0.08	0.04	0.19	0.50					
Queue Length 95th (ft)	3	0	0	7	0	17	67					
Control Delay (s)	7.6	0.0	0.0	5.3	0.0	19.1	23.1					
Lane LOS	A			A		C	C					
Approach Delay (s)	1.9			3.7		19.1	23.1					
Approach LOS						C	C					
Intersection Summary												
Average Delay			9.6									
Intersection Capacity Utilization			37.5%			ICU Level of Service			A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

43: 2nd St & Waller St

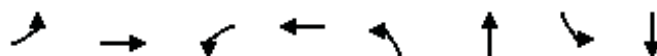
6/11/2010

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	111	13	15	24	36	117
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	121	14	16	26	39	127
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	235	29			42	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	235	29			42	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	99			98	
cM capacity (veh/h)	735	1045			1567	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	135	42	166			
Volume Left	121	0	39			
Volume Right	14	26	0			
cSH	758	1700	1567			
Volume to Capacity	0.18	0.02	0.02			
Queue Length 95th (ft)	16	0	2			
Control Delay (s)	10.8	0.0	1.9			
Lane LOS	B		A			
Approach Delay (s)	10.8	0.0	1.9			
Approach LOS	B					
Intersection Summary						
Average Delay		5.1				
Intersection Capacity Utilization		28.4%		ICU Level of Service		A
Analysis Period (min)		15				

Timings

52: 4th St & Offnere St

6/11/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔		↔		↔
Volume (vph)	24	5	10	23	6	107	9	223
Lane Group Flow (vph)	0	45	0	41	0	127	0	287
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	28.0	28.0	28.0	28.0	62.0	62.0	62.0	62.0
Total Split (%)	31.1%	31.1%	31.1%	31.1%	68.9%	68.9%	68.9%	68.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		8.0		8.0		83.4		83.4
Actuated g/C Ratio		0.08		0.08		0.86		0.86
v/c Ratio		0.32		0.29		0.08		0.18
Control Delay		29.5		32.8		1.7		1.9
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		29.5		32.8		1.7		1.9
LOS		C		C		A		A
Approach Delay		29.5		32.8		1.7		1.9
Approach LOS		C		C		A		A
Queue Length 50th (ft)		17		20		9		21
Queue Length 95th (ft)		43		44		21		43
Internal Link Dist (ft)		279		415		202		426
Turn Bay Length (ft)								
Base Capacity (vph)		347		370		1567		1561
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.13		0.11		0.08		0.18

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 97.4	
Natural Cycle: 40	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.32	
Intersection Signal Delay: 6.8	Intersection LOS: A
Intersection Capacity Utilization 28.1%	ICU Level of Service A
Analysis Period (min) 15	

Timings

52: 4th St & Offnere St

6/11/2010

Splits and Phases: 52: 4th St & Offnere St



HCM Unsignalized Intersection Capacity Analysis

54: 3rd St & Offnere St

6/11/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	31	21	2	75	10	33	61	0	10	83	155
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	65	34	23	2	82	11	36	66	0	11	90	168
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)											282	
pX, platoon unblocked												
vC, conflicting volume	386	334	174	374	418	66	259			66		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	386	334	174	374	418	66	259			66		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	94	97	100	84	99	97			99		
cM capacity (veh/h)	484	566	869	528	508	997	1306			1535		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	122	95	102	270								
Volume Left	65	2	36	11								
Volume Right	23	11	0	168								
cSH	552	538	1306	1535								
Volume to Capacity	0.22	0.18	0.03	0.01								
Queue Length 95th (ft)	21	16	2	1								
Control Delay (s)	13.4	13.1	2.9	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.4	13.1	2.9	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay			5.5									
Intersection Capacity Utilization			38.2%		ICU Level of Service				A			
Analysis Period (min)			15									

Timings 6: 2nd St & US 23

6/11/2010



Lane Group	EBL2	EBL	EBR	NBL	NBT	NBR	SBT
Lane Configurations							
Volume (vph)	16	180	116	37	44	290	370
Turn Type	Perm		Perm	Perm		Perm	
Protected Phases		4			2		6
Permitted Phases	4		4	2		2	
Detector Phase	4	4	4	2	2	2	6
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	34.0	34.0	34.0	56.0	56.0	56.0	56.0
Total Split (%)	37.8%	37.8%	37.8%	62.2%	62.2%	62.2%	62.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	13.5	13.5	13.5		54.4	54.4	54.4
Actuated g/C Ratio	0.18	0.18	0.18		0.72	0.72	0.72
v/c Ratio	0.05	0.62	0.33		0.08	0.26	0.18
Control Delay	24.4	36.6	7.6		4.2	1.2	3.9
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	24.4	36.6	7.6		4.2	1.2	3.9
LOS	C	D	A		A	A	A
Approach Delay		25.2			1.8		3.9
Approach LOS		C			A		A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 76

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 9.2

Intersection LOS: A

Intersection Capacity Utilization 36.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: 2nd St & US 23



HCM Unsignalized Intersection Capacity Analysis

17: 4th St & US 23

6/11/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	44	69	0	0	69	27	10	255	30	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	48	75	0	0	75	29	11	277	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	227	332	0	353	315	155	0			310		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	227	332	0	353	315	155	0			310		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	87	100	100	87	97	99			100		
cM capacity (veh/h)	615	583	1084	518	595	863	1622			1248		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2							
Volume Total	48	75	104	149	171							
Volume Left	48	0	0	11	0							
Volume Right	0	0	29	0	33							
cSH	615	583	652	1622	1700							
Volume to Capacity	0.08	0.13	0.16	0.01	0.10							
Queue Length 95th (ft)	6	11	14	1	0							
Control Delay (s)	11.3	12.1	11.6	0.6	0.0							
Lane LOS	B	B	B	A								
Approach Delay (s)	11.8		11.6	0.3								
Approach LOS	B		B									
Intersection Summary												
Average Delay			5.0									
Intersection Capacity Utilization			24.1%			ICU Level of Service			A			
Analysis Period (min)			15									

Timings 23: 3rd St & Stinton

6/11/2010

					
Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Volume (vph)	285	57	30	256	84
Turn Type		Perm	Perm		
Protected Phases	4			8	2
Permitted Phases		4	8		
Detector Phase	4	4	8	8	2
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0
Total Split (s)	56.0	56.0	56.0	56.0	34.0
Total Split (%)	62.2%	62.2%	62.2%	62.2%	37.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	None	None	Max
Act Effect Green (s)	13.9	13.9	13.9	13.9	30.1
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.58
v/c Ratio	0.62	0.13	0.16	0.56	0.10
Control Delay	22.5	5.2	16.0	20.8	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	5.2	16.0	20.8	5.9
LOS	C	A	B	C	A
Approach Delay	19.6			20.3	5.9
Approach LOS	B			C	A

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 52.1
Natural Cycle: 40
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 18.1
Intersection Capacity Utilization 33.7%
Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service A

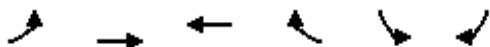
Splits and Phases: 23: 3rd St & Stinton

	
ø2	ø4
34 s	56 s
	
	ø8
	56 s

HCM Unsignalized Intersection Capacity Analysis

24: 4th St & Sinton St

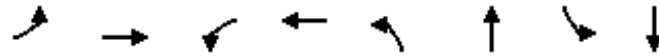
6/11/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Volume (veh/h)	4	101	82	9	10	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	110	89	10	11	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			546			
pX, platoon unblocked						
vC, conflicting volume	99				212	94
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	99				212	94
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	1494				774	963
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	114	99	27			
Volume Left	4	0	11			
Volume Right	0	10	16			
cSH	1494	1700	877			
Volume to Capacity	0.00	0.06	0.03			
Queue Length 95th (ft)	0	0	2			
Control Delay (s)	0.3	0.0	9.2			
Lane LOS	A		A			
Approach Delay (s)	0.3	0.0	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			18.6%	ICU Level of Service		A
Analysis Period (min)			15			

Timings 42: 4th St & Waller St

6/11/2010



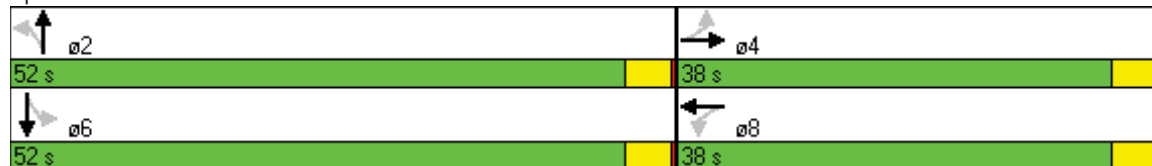
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	20	54	3	46	20	127	13	100
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	38.0	38.0	38.0	38.0	52.0	52.0	52.0	52.0
Total Split (%)	42.2%	42.2%	42.2%	42.2%	57.8%	57.8%	57.8%	57.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		9.6		9.5		63.5		63.5
Actuated g/C Ratio		0.12		0.12		0.80		0.80
v/c Ratio		0.44		0.31		0.12		0.10
Control Delay		29.9		23.3		2.5		2.4
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		29.9		23.3		2.5		2.4
LOS		C		C		A		A
Approach Delay		29.9		23.3		2.5		2.4
Approach LOS		C		C		A		A

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 79.5
 Natural Cycle: 40
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.44
 Intersection Signal Delay: 10.9
 Intersection Capacity Utilization 29.8%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 42: 4th St & Waller St



HCM Unsignalized Intersection Capacity Analysis

44: 3rd St & Waller St

6/11/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	38	212	42	15	172	7	78	120	40	9	57	49
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	41	230	46	16	187	8	85	130	43	10	62	53
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		541										
pX, platoon unblocked				1.00			1.00	1.00	1.00	1.00	1.00	
vC, conflicting volume	195			276			523	540	230	645	582	97
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	195			274			522	539	228	644	581	97
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			99			76	70	94	96	85	94
cM capacity (veh/h)	1376			1284			352	428	773	250	405	940
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	41	230	46	110	101	259	125					
Volume Left	41	0	0	16	0	85	10					
Volume Right	0	0	46	0	8	43	53					
cSH	1376	1700	1700	1284	1700	430	503					
Volume to Capacity	0.03	0.14	0.03	0.01	0.06	0.60	0.25					
Queue Length 95th (ft)	2	0	0	1	0	96	24					
Control Delay (s)	7.7	0.0	0.0	1.3	0.0	25.2	14.5					
Lane LOS	A			A		D	B					
Approach Delay (s)	1.0			0.7		25.2	14.5					
Approach LOS						D	B					
Intersection Summary												
Average Delay			9.6									
Intersection Capacity Utilization			46.3%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

43: 2nd St & Waller St

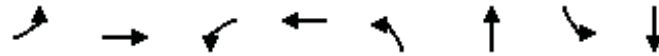
6/11/2010

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	36	23	135	99	21	84
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	25	147	108	23	91
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	338	201			254	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	338	201			254	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	97			98	
cM capacity (veh/h)	647	840			1311	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	64	254	114			
Volume Left	39	0	23			
Volume Right	25	108	0			
cSH	710	1700	1311			
Volume to Capacity	0.09	0.15	0.02			
Queue Length 95th (ft)	7	0	1			
Control Delay (s)	10.6	0.0	1.7			
Lane LOS	B		A			
Approach Delay (s)	10.6	0.0	1.7			
Approach LOS	B					
Intersection Summary						
Average Delay		2.0				
Intersection Capacity Utilization		32.1%		ICU Level of Service		A
Analysis Period (min)		15				

Timings

52: 4th St & Offnere St

6/11/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	51	17	10	14	7	212	15	210
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	33.0	33.0	33.0	33.0	57.0	57.0	57.0	57.0
Total Split (%)	36.7%	36.7%	36.7%	36.7%	63.3%	63.3%	63.3%	63.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		10.1		10.1		69.9		69.9
Actuated g/C Ratio		0.11		0.11		0.81		0.81
v/c Ratio		0.50		0.20		0.16		0.20
Control Delay		32.3		21.7		2.7		2.7
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		32.3		21.7		2.7		2.7
LOS		C		C		A		A
Approach Delay		32.3		21.7		2.7		2.7
Approach LOS		C		C		A		A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 86.1

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 8.1

Intersection LOS: A

Intersection Capacity Utilization 36.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 52: 4th St & Offnere St



HCM Unsignalized Intersection Capacity Analysis

54: 3rd St & Offnere St

6/11/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	132	71	33	2	50	7	30	88	5	16	106	110
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	143	77	36	2	54	8	33	96	5	17	115	120
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)											282	
pX, platoon unblocked												
vC, conflicting volume	408	376	175	448	433	98	235			101		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	408	376	175	448	433	98	235			101		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	71	86	96	99	89	99	98			99		
cM capacity (veh/h)	490	535	868	432	497	958	1333			1491		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	257	64	134	252								
Volume Left	143	2	33	17								
Volume Right	36	8	5	120								
cSH	536	524	1333	1491								
Volume to Capacity	0.48	0.12	0.02	0.01								
Queue Length 95th (ft)	64	10	2	1								
Control Delay (s)	17.7	12.8	2.0	0.6								
Lane LOS	C	B	A	A								
Approach Delay (s)	17.7	12.8	2.0	0.6								
Approach LOS	C	B										
Intersection Summary												
Average Delay			8.2									
Intersection Capacity Utilization			41.2%		ICU Level of Service				A			
Analysis Period (min)			15									

Timings 6: 2nd St & US 23

6/11/2010

							
Lane Group	EBL2	EBL	EBR	NBL	NBT	NBR	SBT
Lane Configurations							
Volume (vph)	4	165	28	63	32	378	83
Turn Type	Perm		Perm	Perm		Perm	
Protected Phases		4			2		6
Permitted Phases	4		4	2		2	
Detector Phase	4	4	4	2	2	2	6
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	12.1	12.1	12.1		47.5	47.5	47.5
Actuated g/C Ratio	0.18	0.18	0.18		0.70	0.70	0.70
v/c Ratio	0.01	0.57	0.10		0.10	0.33	0.06
Control Delay	19.2	29.4	8.9		4.1	1.3	2.6
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	19.2	29.4	8.9		4.1	1.3	2.6
LOS	B	C	A		A	A	A
Approach Delay		26.4			1.9		2.6
Approach LOS		C			A		A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 67.7

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 8.0

Intersection LOS: A

Intersection Capacity Utilization 28.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: 2nd St & US 23

	
ø2	ø4
45 s	45 s
	
ø6	
45 s	

HCM Unsignalized Intersection Capacity Analysis

17: 4th St & US 23

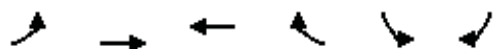
6/11/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	50	0	0	265	15	10	260	383	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	5	54	0	0	288	16	11	283	416	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	323	721	0	540	512	349	0			699		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	323	721	0	540	512	349	0			699		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	84	100	100	37	97	99			100		
cM capacity (veh/h)	294	350	1084	372	460	647	1622			894		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2							
Volume Total	5	54	304	152	558							
Volume Left	5	0	0	11	0							
Volume Right	0	0	16	0	416							
cSH	294	350	468	1622	1700							
Volume to Capacity	0.02	0.16	0.65	0.01	0.33							
Queue Length 95th (ft)	1	14	114	1	0							
Control Delay (s)	17.5	17.2	25.9	0.6	0.0							
Lane LOS	C	C	D	A								
Approach Delay (s)	17.2		25.9	0.1								
Approach LOS	C		D									
Intersection Summary												
Average Delay			8.4									
Intersection Capacity Utilization			41.3%			ICU Level of Service			A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

24: 4th St & Sinton St

6/11/2010

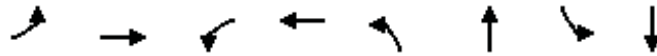


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	30	440	280	6	2	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	478	304	7	2	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)			546			
pX, platoon unblocked						
vC, conflicting volume	311				851	308
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	311				851	308
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	99
cM capacity (veh/h)	1250				322	732
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	511	311	13			
Volume Left	33	0	2			
Volume Right	0	7	11			
cSH	1250	1700	604			
Volume to Capacity	0.03	0.18	0.02			
Queue Length 95th (ft)	2	0	2			
Control Delay (s)	0.8	0.0	11.1			
Lane LOS	A		B			
Approach Delay (s)	0.8	0.0	11.1			
Approach LOS			B			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			53.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Timings

42: 4th St & Waller St

6/11/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	75	120	2	206	40	10	37	70
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	48.0	48.0	48.0	48.0	42.0	42.0	42.0	42.0
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	46.7%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)		13.9		13.9		8.9		8.9
Actuated g/C Ratio		0.45		0.45		0.29		0.29
v/c Ratio		0.63		0.38		0.16		0.33
Control Delay		9.7		6.8		10.1		10.9
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		9.7		6.8		10.1		10.9
LOS		A		A		B		B
Approach Delay		9.7		6.8		10.1		10.9
Approach LOS		A		A		B		B

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 31.2

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 9.0

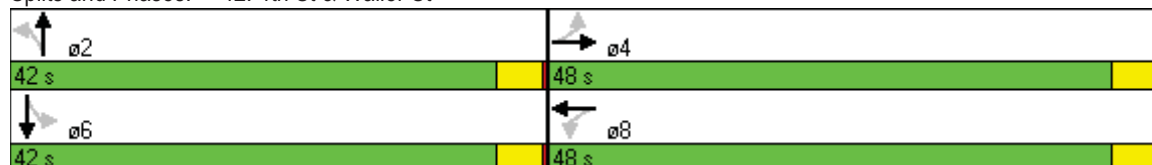
Intersection LOS: A

Intersection Capacity Utilization 58.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 42: 4th St & Waller St



HCM Unsignalized Intersection Capacity Analysis

44: 3rd St & Walle St

6/11/2010

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	123	13	47	15	3	310
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	134	14	51	16	3	337
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						308
pX, platoon unblocked						
vC, conflicting volume	403	59			67	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	403	59			67	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	78	99			100	
cM capacity (veh/h)	602	1006			1534	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	148	67	340			
Volume Left	134	0	3			
Volume Right	14	16	0			
cSH	626	1700	1534			
Volume to Capacity	0.24	0.04	0.00			
Queue Length 95th (ft)	23	0	0			
Control Delay (s)	12.5	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	12.5	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay		3.4				
Intersection Capacity Utilization		33.0%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

43: 2nd St & Waller St

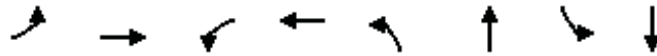
6/11/2010

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	111	13	15	24	36	117
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	121	14	16	26	39	127
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						598
pX, platoon unblocked						
vC, conflicting volume	235	29			42	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	235	29			42	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	99			98	
cM capacity (veh/h)	735	1045			1567	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	135	42	166			
Volume Left	121	0	39			
Volume Right	14	26	0			
cSH	758	1700	1567			
Volume to Capacity	0.18	0.02	0.02			
Queue Length 95th (ft)	16	0	2			
Control Delay (s)	10.8	0.0	1.9			
Lane LOS	B		A			
Approach Delay (s)	10.8	0.0	1.9			
Approach LOS	B					
Intersection Summary						
Average Delay		5.1				
Intersection Capacity Utilization		28.4%		ICU Level of Service		A
Analysis Period (min)		15				

Timings

52: 4th St & Offnere St

6/11/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔		↔		↔
Volume (vph)	74	5	10	23	56	57	9	128
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	48.0	48.0	48.0	48.0	42.0	42.0	42.0	42.0
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	46.7%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		9.8		9.8		49.2		49.2
Actuated g/C Ratio		0.15		0.15		0.73		0.73
v/c Ratio		0.55		0.16		0.12		0.22
Control Delay		23.1		19.1		3.4		3.1
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		23.1		19.1		3.4		3.1
LOS		C		B		A		A
Approach Delay		23.1		19.1		3.4		3.1
Approach LOS		C		B		A		A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 67.4

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 8.8

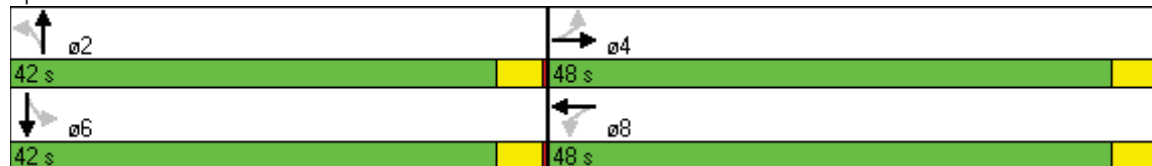
Intersection LOS: A

Intersection Capacity Utilization 45.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 52: 4th St & Offnere St



HCM Unsignalized Intersection Capacity Analysis

54: 3rd St & Offnere St

6/11/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	11	11	2	55	30	10	85	0	30	93	60
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	11	12	12	2	60	33	11	92	0	33	101	65
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)											282	
pX, platoon unblocked												
vC, conflicting volume	376	313	134	331	346	92	166			92		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	376	313	134	331	346	92	166			92		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	99	100	89	97	99			98		
cM capacity (veh/h)	505	585	915	591	561	965	1412			1502		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	35	95	103	199								
Volume Left	11	2	11	33								
Volume Right	12	33	0	65								
cSH	632	656	1412	1502								
Volume to Capacity	0.06	0.14	0.01	0.02								
Queue Length 95th (ft)	4	13	1	2								
Control Delay (s)	11.0	11.4	0.9	1.4								
Lane LOS	B	B	A	A								
Approach Delay (s)	11.0	11.4	0.9	1.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization			29.8%		ICU Level of Service					A		
Analysis Period (min)			15									

Timings 6: 2nd St & US 23

6/11/2010

							
Lane Group	EBL2	EBL	EBR	NBL	NBT	NBR	SBT
Lane Configurations							
Volume (vph)	16	180	116	37	44	290	370
Turn Type	Perm		Perm	Perm		Perm	
Protected Phases		4			2		6
Permitted Phases	4		4	2		2	
Detector Phase	4	4	4	2	2	2	6
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	38.0	38.0	38.0	52.0	52.0	52.0	52.0
Total Split (%)	42.2%	42.2%	42.2%	57.8%	57.8%	57.8%	57.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	Max	Max	Max	Max
Act Effct Green (s)	13.0	13.0	13.0		50.4	50.4	50.4
Actuated g/C Ratio	0.18	0.18	0.18		0.70	0.70	0.70
v/c Ratio	0.05	0.61	0.32		0.09	0.26	0.18
Control Delay	22.6	33.9	7.3		4.3	1.2	4.0
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	22.6	33.9	7.3		4.3	1.2	4.0
LOS	C	C	A		A	A	A
Approach Delay		23.5			1.9		4.0
Approach LOS		C			A		A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 71.5

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 8.8

Intersection LOS: A

Intersection Capacity Utilization 36.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: 2nd St & US 23

	
ø2	ø4
52 s	38 s
	
ø6	
52 s	

HCM Unsignalized Intersection Capacity Analysis

17: 4th St & US 23

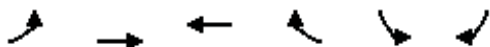
6/11/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	44	69	0	0	375	27	10	255	370	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	48	75	0	0	408	29	11	277	402	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	393	701	0	538	500	340	0			679		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	393	701	0	538	500	340	0			679		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	64	79	100	100	13	96	99			100		
cM capacity (veh/h)	133	359	1084	356	468	656	1622			909		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2							
Volume Total	48	75	437	149	541							
Volume Left	48	0	0	11	0							
Volume Right	0	0	29	0	402							
cSH	133	359	477	1622	1700							
Volume to Capacity	0.36	0.21	0.92	0.01	0.32							
Queue Length 95th (ft)	37	19	263	1	0							
Control Delay (s)	46.6	17.7	52.4	0.6	0.0							
Lane LOS	E	C	F	A								
Approach Delay (s)	28.9		52.4	0.1								
Approach LOS	D		F									
Intersection Summary												
Average Delay			21.2									
Intersection Capacity Utilization			54.0%			ICU Level of Service			A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

24: 4th St & Sinton St

6/11/2010

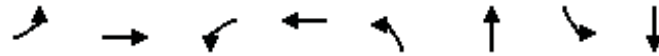


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	20	440	385	10	10	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	478	418	11	11	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)			546			
pX, platoon unblocked						
vC, conflicting volume	429				946	424
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	429				946	424
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				96	97
cM capacity (veh/h)	1130				285	630
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	500	429	27			
Volume Left	22	0	11			
Volume Right	0	11	16			
cSH	1130	1700	424			
Volume to Capacity	0.02	0.25	0.06			
Queue Length 95th (ft)	1	0	5			
Control Delay (s)	0.6	0.0	14.1			
Lane LOS	A		B			
Approach Delay (s)	0.6	0.0	14.1			
Approach LOS			B			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			49.4%	ICU Level of Service		A
Analysis Period (min)			15			

Timings

42: 4th St & Waller St

6/11/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	58	259	3	150	182	89	13	60
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	48.0	48.0	48.0	48.0	42.0	42.0	42.0	42.0
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	46.7%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)		19.3		19.3		16.9		16.9
Actuated g/C Ratio		0.43		0.43		0.37		0.37
v/c Ratio		0.64		0.23		0.58		0.21
Control Delay		14.9		9.5		17.5		8.4
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		14.9		9.5		17.5		8.4
LOS		B		A		B		A
Approach Delay		14.9		9.5		17.5		8.4
Approach LOS		B		A		B		A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 45.1

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 13.9

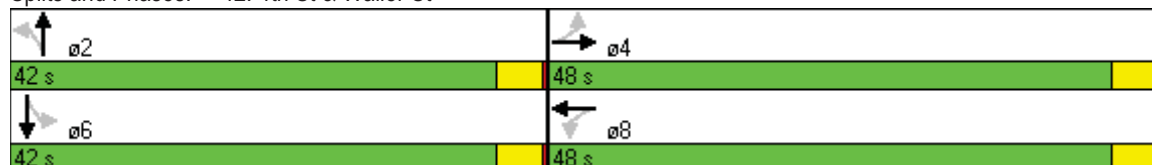
Intersection LOS: B

Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 42: 4th St & Waller St



HCM Unsignalized Intersection Capacity Analysis

44: 3rd St & Waller St

6/11/2010

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	35	7	284	52	10	180
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	8	309	57	11	196
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						308
pX, platoon unblocked						
vC, conflicting volume	554	337			365	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	554	337			365	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	99			99	
cM capacity (veh/h)	489	705			1193	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	46	365	207			
Volume Left	38	0	11			
Volume Right	8	57	0			
cSH	515	1700	1193			
Volume to Capacity	0.09	0.21	0.01			
Queue Length 95th (ft)	7	0	1			
Control Delay (s)	12.7	0.0	0.5			
Lane LOS	B		A			
Approach Delay (s)	12.7	0.0	0.5			
Approach LOS	B					
Intersection Summary						
Average Delay		1.1				
Intersection Capacity Utilization		28.1%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

43: 2nd St & Waller St

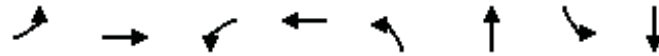
6/11/2010

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	36	23	135	99	21	84
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	25	147	108	23	91
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						598
pX, platoon unblocked						
vC, conflicting volume	338	201			254	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	338	201			254	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	97			98	
cM capacity (veh/h)	647	840			1311	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	64	254	114			
Volume Left	39	0	23			
Volume Right	25	108	0			
cSH	710	1700	1311			
Volume to Capacity	0.09	0.15	0.02			
Queue Length 95th (ft)	7	0	1			
Control Delay (s)	10.6	0.0	1.7			
Lane LOS	B		A			
Approach Delay (s)	10.6	0.0	1.7			
Approach LOS	B					
Intersection Summary						
Average Delay		2.0				
Intersection Capacity Utilization		32.1%		ICU Level of Service		A
Analysis Period (min)		15				

Timings

52: 4th St & Offnere St

6/11/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	171	17	10	14	58	90	15	120
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	48.0	48.0	48.0	48.0	42.0	42.0	42.0	42.0
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	46.7%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		16.7		16.7		39.3		39.3
Actuated g/C Ratio		0.26		0.26		0.61		0.61
v/c Ratio		0.73		0.10		0.18		0.27
Control Delay		30.3		12.3		7.1		6.0
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		30.3		12.3		7.1		6.0
LOS		C		B		A		A
Approach Delay		30.3		12.3		7.1		6.0
Approach LOS		C		B		A		A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 64

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 15.3

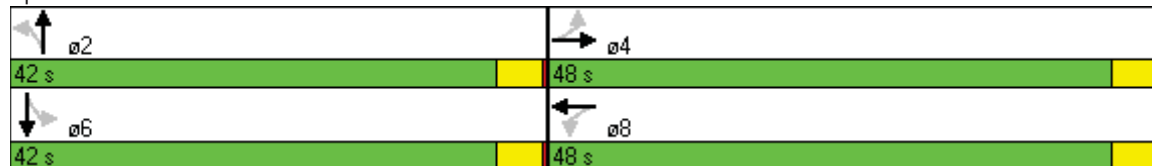
Intersection LOS: B

Intersection Capacity Utilization 54.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 52: 4th St & Offnere St



HCM Unsignalized Intersection Capacity Analysis

54: 3rd St & Offnere St

6/11/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	11	10	2	10	47	10	108	5	75	106	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	43	12	11	2	11	51	11	117	5	82	115	22
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											282	
pX, platoon unblocked												
vC, conflicting volume	488	434	126	448	442	120	137			123		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	488	434	126	448	442	120	137			123		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	98	99	100	98	95	99			94		
cM capacity (veh/h)	434	483	924	481	478	931	1447			1464		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	66	64	134	218								
Volume Left	43	2	11	82								
Volume Right	11	51	5	22								
cSH	485	781	1447	1464								
Volume to Capacity	0.14	0.08	0.01	0.06								
Queue Length 95th (ft)	12	7	1	4								
Control Delay (s)	13.6	10.0	0.7	3.1								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.6	10.0	0.7	3.1								
Approach LOS	B	B										
Intersection Summary												
Average Delay			4.8									
Intersection Capacity Utilization			34.3%	ICU Level of Service						A		
Analysis Period (min)			15									

Timings 6: 2nd St & US 23

6/11/2010



Lane Group	EBL2	EBL	EBR	NBL	NBT	NBR	SBT
Lane Configurations							
Volume (vph)	4	165	28	123	32	378	83
Turn Type	Perm		Perm	Perm		Perm	
Protected Phases		4			2		6
Permitted Phases	4		4	2		2	
Detector Phase	4	4	4	2	2	2	6
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	12.1	12.1	12.1		47.5	47.5	47.5
Actuated g/C Ratio	0.18	0.18	0.18		0.70	0.70	0.70
v/c Ratio	0.01	0.57	0.10		0.19	0.33	0.08
Control Delay	19.2	29.4	8.9		4.6	1.3	2.2
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	19.2	29.4	8.9		4.6	1.3	2.2
LOS	B	C	A		A	A	A
Approach Delay		26.4			2.3		2.2
Approach LOS		C			A		A

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 67.7
 Natural Cycle: 40
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.57
 Intersection Signal Delay: 7.6
 Intersection Capacity Utilization 32.4%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 6: 2nd St & US 23

	ø2		ø4
45 s		45 s	
	ø6		
45 s			

HCM Unsignalized Intersection Capacity Analysis

17: 4th St & US 23

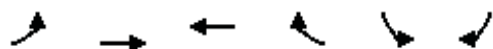
6/11/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	60	0	0	371	15	10	260	378	0	0	0
Sign Control	Stop				Stop				Free			
Grade	0%				0%				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
Hourly flow rate (vph)	5	65	0	0	403	16	11	283	411	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381	715	0	542	510	347	0				693	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381	715	0	542	510	347	0				693	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	96	81	100	100	13	97	99				100	
cM capacity (veh/h)	137	352	1084	361	462	649	1622				898	
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2							
Volume Total	5	65	420	152	552							
Volume Left	5	0	0	11	0							
Volume Right	0	0	16	0	411							
cSH	137	352	467	1622	1700							
Volume to Capacity	0.04	0.19	0.90	0.01	0.32							
Queue Length 95th (ft)	3	17	248	1	0							
Control Delay (s)	32.3	17.5	50.1	0.6	0.0							
Lane LOS	D	C	F	A								
Approach Delay (s)	18.7		50.1	0.1								
Approach LOS	C		F									
Intersection Summary												
Average Delay	18.8											
Intersection Capacity Utilization	46.7%			ICU Level of Service					A			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

24: 4th St & Sinton St

6/11/2010

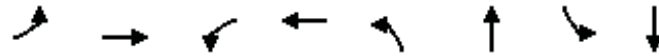


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Volume (veh/h)	30	333	408	6	2	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	362	443	7	2	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			546			
pX, platoon unblocked						
vC, conflicting volume	450				874	447
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	450				874	447
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	98
cM capacity (veh/h)	1110				311	612
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	395	450	13			
Volume Left	33	0	2			
Volume Right	0	7	11			
cSH	1110	1700	527			
Volume to Capacity	0.03	0.26	0.02			
Queue Length 95th (ft)	2	0	2			
Control Delay (s)	1.0	0.0	12.0			
Lane LOS	A		B			
Approach Delay (s)	1.0	0.0	12.0			
Approach LOS			B			
Intersection Summary						
Average Delay		0.6				
Intersection Capacity Utilization		52.4%		ICU Level of Service	A	
Analysis Period (min)		15				

Timings

42: 4t St & Waller St

6/11/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	83	125	174	303	21	6	37	42
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	48.0	48.0	48.0	48.0	42.0	42.0	42.0	42.0
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	46.7%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)		28.9		28.9		9.5		9.5
Actuated g/C Ratio		0.61		0.61		0.20		0.20
v/c Ratio		0.41		0.68		0.23		0.48
Control Delay		5.6		10.7		11.9		16.6
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		5.6		10.7		11.9		16.6
LOS		A		B		B		B
Approach Delay		5.6		10.7		11.9		16.6
Approach LOS		A		B		B		B

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 47

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 10.1

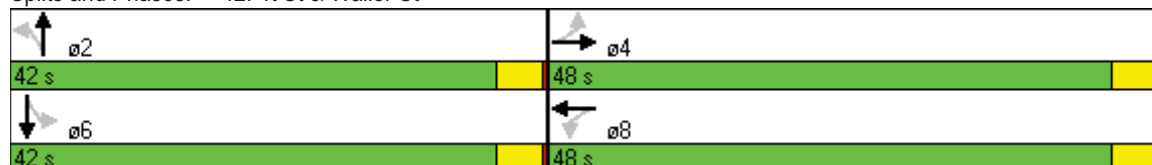
Intersection LOS: B

Intersection Capacity Utilization 62.8%

ICU Level of Service B

Analysis Period (min) 15

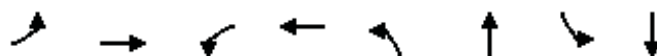
Splits and Phases: 42: 4t St & Waller St



Timings

52: 4th St & Offnere ST

6/11/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔		↔		↔
Volume (vph)	94	5	10	23	178	57	9	18
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	48.0	48.0	48.0	48.0	42.0	42.0	42.0	42.0
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	46.7%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		10.8		10.8		42.9		42.9
Actuated g/C Ratio		0.17		0.17		0.69		0.69
v/c Ratio		0.62		0.14		0.32		0.25
Control Delay		24.3		17.9		5.7		1.5
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		24.3		17.9		5.7		1.5
LOS		C		B		A		A
Approach Delay		24.3		17.9		5.7		1.5
Approach LOS		C		B		A		A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 61.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 9.0

Intersection LOS: A

Intersection Capacity Utilization 56.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 52: 4th St & Offnere ST

HCM Unsignalized Intersection Capacity Analysis

54: 4th St & Offnere ST

6/11/2010

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	87	150	0	41	107
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	95	163	0	45	116
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						282
pX, platoon unblocked						
vC, conflicting volume	368	163			163	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	368	163			163	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	89			97	
cM capacity (veh/h)	612	882			1416	
Direction, Lane #	NB 1	SB 1				
Volume Total	163	161				
Volume Left	0	45				
Volume Right	0	0				
cSH	1700	1416				
Volume to Capacity	0.10	0.03				
Queue Length 95th (ft)	0	2				
Control Delay (s)	0.0	2.3				
Lane LOS		A				
Approach Delay (s)	0.0	2.3				
Approach LOS						
Intersection Summary						
Average Delay			Err			
Intersection Capacity Utilization			Err%	ICU Level of Service		H
Analysis Period (min)			15			

Timings 6: 2nd St & US 23

6/11/2010

							
Lane Group	EBL2	EBL	EBR	NBL	NBT	NBR	SBT
Lane Configurations							
Volume (vph)	16	209	116	56	44	291	370
Turn Type	Perm		Perm	Perm		Perm	
Protected Phases		4			2		6
Permitted Phases	4		4	2		2	
Detector Phase	4	4	4	2	2	2	6
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	40.0	40.0	40.0	50.0	50.0	50.0	50.0
Total Split (%)	44.4%	44.4%	44.4%	55.6%	55.6%	55.6%	55.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	14.0	14.0	14.0		47.7	47.7	47.7
Actuated g/C Ratio	0.20	0.20	0.20		0.68	0.68	0.68
v/c Ratio	0.05	0.64	0.30		0.12	0.27	0.20
Control Delay	21.2	33.2	6.7		5.0	1.3	4.4
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	21.2	33.2	6.7		5.0	1.3	4.4
LOS	C	C	A		A	A	A
Approach Delay		23.6			2.3		4.4
Approach LOS		C			A		A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 69.7

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 9.3

Intersection LOS: A

Intersection Capacity Utilization 39.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: 2nd St & US 23

	
ø2	ø4
50 s	40 s
	
ø6	
50 s	

HCM Unsignalized Intersection Capacity Analysis

17: 4th St & US 23

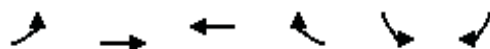
6/11/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	44	74	0	0	390	27	10	255	401	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	48	80	0	0	424	29	11	277	436	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	402	735	0	557	517	357	0			713		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	402	735	0	557	517	357	0			713		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	50	77	100	100	7	95	99			100		
cM capacity (veh/h)	95	343	1084	337	458	640	1622			883		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2							
Volume Total	48	80	453	149	574							
Volume Left	48	0	0	11	0							
Volume Right	0	0	29	0	436							
cSH	95	343	466	1622	1700							
Volume to Capacity	0.50	0.23	0.97	0.01	0.34							
Queue Length 95th (ft)	55	22	306	1	0							
Control Delay (s)	76.4	18.7	64.8	0.6	0.0							
Lane LOS	F	C	F	A								
Approach Delay (s)	40.2		64.8	0.1								
Approach LOS	E		F									
Intersection Summary												
Average Delay			26.5									
Intersection Capacity Utilization			55.7%			ICU Level of Service			B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

24: 4th St & Sinton St

6/11/2010

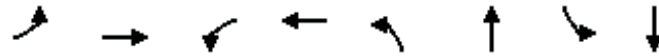


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	20	410	370	10	10	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	446	402	11	11	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			546			
pX, platoon unblocked						
vC, conflicting volume	413				897	408
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	413				897	408
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				96	97
cM capacity (veh/h)	1146				305	644
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	467	413	27			
Volume Left	22	0	11			
Volume Right	0	11	16			
cSH	1146	1700	445			
Volume to Capacity	0.02	0.24	0.06			
Queue Length 95th (ft)	1	0	5			
Control Delay (s)	0.6	0.0	13.6			
Lane LOS	A		B			
Approach Delay (s)	0.6	0.0	13.6			
Approach LOS			B			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			47.9%	ICU Level of Service	A	
Analysis Period (min)			15			

Timings

42: 4th St & Wahler St

6/11/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔		↔		↔
Volume (vph)	125	259	50	175	99	49	13	35
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	51.0	51.0	51.0	51.0	39.0	39.0	39.0	39.0
Total Split (%)	56.7%	56.7%	56.7%	56.7%	43.3%	43.3%	43.3%	43.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)		22.0		22.0		16.4		16.4
Actuated g/C Ratio		0.46		0.46		0.35		0.35
v/c Ratio		0.69		0.35		0.65		0.26
Control Delay		16.3		10.2		17.4		6.8
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		16.3		10.2		17.4		6.8
LOS		B		B		B		A
Approach Delay		16.3		10.2		17.4		6.8
Approach LOS		B		B		B		A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 47.5

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 14.2

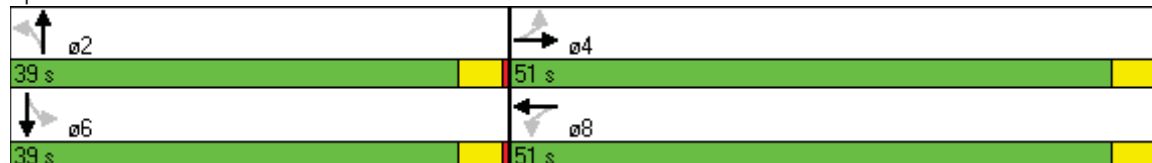
Intersection LOS: B

Intersection Capacity Utilization 75.6%

ICU Level of Service D

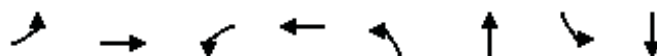
Analysis Period (min) 15

Splits and Phases: 42: 4th St & Wahler St



Timings 52: 4th St & Offnere St

6/11/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔		↔		↔
Volume (vph)	321	17	10	14	80	10	15	75
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	56.0	56.0	56.0	56.0	34.0	34.0	34.0	34.0
Total Split (%)	62.2%	62.2%	62.2%	62.2%	37.8%	37.8%	37.8%	37.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		27.0		27.0		30.6		30.6
Actuated g/C Ratio		0.41		0.41		0.47		0.47
v/c Ratio		0.82		0.06		0.19		0.35
Control Delay		28.3		7.5		14.3		9.8
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		28.3		7.5		14.3		9.8
LOS		C		A		B		A
Approach Delay		28.3		7.5		14.3		9.8
Approach LOS		C		A		B		A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 65.8

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 19.8

Intersection LOS: B

Intersection Capacity Utilization 63.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 52: 4th St & Offnere St

HCM Unsignalized Intersection Capacity Analysis

54: 3rd St & Offnere St

6/11/2010

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	60	40	5	90	100
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	65	43	5	98	109
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						282
pX, platoon unblocked						
vC, conflicting volume	351	46			49	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	351	46			49	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	94			94	
cM capacity (veh/h)	606	1023			1558	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	67	49	207			
Volume Left	2	0	98			
Volume Right	65	5	0			
cSH	1001	1700	1558			
Volume to Capacity	0.07	0.03	0.06			
Queue Length 95th (ft)	5	0	5			
Control Delay (s)	8.9	0.0	3.8			
Lane LOS	A		A			
Approach Delay (s)	8.9	0.0	3.8			
Approach LOS	A					
Intersection Summary						
Average Delay		4.3				
Intersection Capacity Utilization		27.4%		ICU Level of Service		A
Analysis Period (min)		15				

Appendix D

Warrant Analysis

US 23/Gay Street & 4th Street

SSU: Campus Expansion

Signal warrant analysis was conducted for the intersection of US 23/Gay Street and 4th Street for the proposed configuration of the study area in which 3rd street is closed to vehicular traffic between Gay Street and Waller Street. The hourly traffic distributions required for this analysis were estimated using the 24-hour counts on 3rd and 4th Street obtained by B&N, and a historic 24-hour count on US 23 available from ODOT traffic monitoring website.

4th Street

As stated in the report, it is assumed that all the traffic that currently uses 3rd Street will instead use 4th Street when 3rd Street is closed. Using this assumption, hourly distributions on 4th Street were obtained by combining the current distributions on 3rd and 4th streets. The resulting distributions are tabulated in table 1.

US 23/Gay Street

ODOT conducted a 24 hour count on US 23 just east of its intersection with 2nd Street in 2008. These hourly distributions were used in conjunction with 2010 estimated ADT to generate hourly distributions for 2010 on US 23/Gay Street. Hourly traffic distributions from this count are provided in table 2. As inferred from table x, 22.41% of the daily traffic at this location is between the hours of 7 AM-9 AM and 4 PM – 6 PM.

ADT Estimation for US 23/Gay Street

To estimate the 2010 ADT on US 23, ODOT manual counts at the intersection of US 23 and 3rd Street, obtained in 2006, were first adjusted to match 2010 traffic counts on 3rd Street using an average of the commonly used ratio and difference method. According to the 2006 ODOT count, 665 vehicles should be using 3rd Street EB, east of its intersection with US 23 between the hours of 7 AM-9 AM and 4 PM – 6 PM. The 2010 count at the same location indicated that 990 vehicles would be using it in the same time frame. To match the 2010 count, the 2006 ODOT count for the intersection of US 23 and Third Street was adjusted using an average of ratio and difference methods. Such an adjustment resulted in 1962 vehicles using US 23 west of its intersection with 3rd Street between the hours of 7 AM-9 AM and 4 PM – 6 PM. Using similar hourly distributions as shown in Table 2, these 1962 vehicles would be 22.41% of 2010 ADT on US 23 at this location, making the ADT 8760 vehicles. The 2010 hourly distributions on US 23 for the warrant analysis was computed using this ADT of 8760 vehicles and the percentages shown in table 2. The resulting estimated hourly distributions for 2010 are shown in Table 3.

Warrant Analysis

Hourly projections of the traffic data for the proposed condition at the intersection of US 23/Gay Street was compared to the guidelines set forth in the *Manual on Uniform Traffic Control Devices (MUTCD)*. The manual describes eight warrants to be considered as justifying criteria

necessary to be met before traffic signal installation should be approved. The eight warrants are listed in Table 4.

A minimum of one warrant must be met for a signal to be considered at an intersection. We analyzed the proposed intersection for Warrant 1 (Eight Hour Vehicular Volume) which is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic signal or where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street. Warrant 1 has two conditions but is intended to be treated as a single warrant. If either Condition A or B is satisfied, then the criteria for Warrant 1 is satisfied.

To meet the requirements for Warrant 1A (Minimum Vehicular Volume), the total number of vehicles per hour on the major street and the higher-volume minor street approaches should meet the required minimum volumes. At least 8 hours are needed to satisfy this warrant. As shown in Table 5, at the proposed US 23/Gay Street and 4th Street intersection 8 hours met this requirement; therefore Warrant 1A is met.

To meet the requirements for Warrant 1B (Interruption of Continuous Traffic), the total number of vehicles per hour on the major street and the higher-volume minor street approaches should meet the required minimum volumes. At least 8 hours are needed to satisfy this warrant. No hours reached this requirement, and therefore Warrant 1B is not met.

Warrant analysis indicates that a signal at the proposed US 23 and 4th Street intersection is warranted.

Table 1: 4th Street 2010 Hourly Distributions

Time	2010 Hourly Distributions	
	4th St EB	4th St WB
12:00 AM	4	33
1:00 AM	8	23
2:00 AM	7	15
3:00 AM	2	5
4:00 AM	3	12
5:00 AM	3	26
6:00 AM	4	58
7:00 AM	42	189
8:00 AM	49	208
9:00 AM	72	203
10:00 AM	80	208
11:00 AM	94	282
12:00 PM	107	351
1:00 PM	82	333
2:00 PM	91	331
3:00 PM	97	370
4:00 PM	102	341
5:00 PM	69	301
6:00 PM	54	202
7:00 PM	37	220
8:00 PM	43	192
9:00 PM	22	140
10:00 PM	25	73
11:00 PM	13	57
Total	1110	4173

Table 2: US 23/Gay Street 2008 Hourly Distributions

Time	2008 Hourly Distributions	
	Volume (vph)	Percentage
12:00 AM	34	0.60%
1:00 AM	26	0.46%
2:00 AM	16	0.28%
3:00 AM	25	0.44%
4:00 AM	35	0.61%
5:00 AM	102	1.79%
6:00 AM	208	3.64%
7:00 AM	300	5.26%
8:00 AM	344	6.03%
9:00 AM	315	5.52%
10:00 AM	330	5.78%
11:00 AM	370	6.48%
12:00 PM	437	7.66%
1:00 PM	423	7.41%
2:00 PM	410	7.18%
3:00 PM	417	7.31%
4:00 PM	387	6.78%
5:00 PM	384	6.73%
6:00 PM	327	5.73%
7:00 PM	226	3.96%
8:00 PM	237	4.15%
9:00 PM	178	3.12%
10:00 PM	104	1.82%
11:00 PM	72	1.26%
Total	5707	100.00%

Table 3: US 23/Gay Street 2010 Estimated Hourly Distributions

Time	2010 Hourly Estimated Distributions	
	Volume (vph)	Percentage
12:00 AM	52	0.60%
1:00 AM	40	0.46%
2:00 AM	25	0.28%
3:00 AM	38	0.44%
4:00 AM	54	0.61%
5:00 AM	157	1.79%
6:00 AM	319	3.64%
7:00 AM	460	5.26%
8:00 AM	528	6.03%
9:00 AM	484	5.52%
10:00 AM	507	5.78%
11:00 AM	568	6.48%
12:00 PM	671	7.66%
1:00 PM	649	7.41%
2:00 PM	629	7.18%
3:00 PM	640	7.31%
4:00 PM	594	6.78%
5:00 PM	589	6.73%
6:00 PM	502	5.73%
7:00 PM	347	3.96%
8:00 PM	364	4.15%
9:00 PM	273	3.12%
10:00 PM	160	1.82%
11:00 PM	111	1.26%
Total	8760	100.00%

Table 4: MUTCD Signal Warrants

MUTCD Signal Warrants	
Warrant 1	Eight-Hour Vehicular Volume
Warrant 2	Four-Hour Vehicular Volume
Warrant 3	Peak Hour
Warrant 4	Pedestrian Volume
Warrant 5	School Crossings
Warrant 6	Coordinated Signal System
Warrant 7	Crash Experience
Warrant 8	Roadway Network

Table 5: Warrant Analysis

Intersection : 4th Street @ US 23/Gay Street

		ADJUSTED HOURLY VOLUMES			Condition A				Condition B			
COND- ITION	NO. LANE	MAJOR ST 2-WAY	MINOR ST 1-WAY (EB/NB)	MINOR ST 1-WAY (WB/SB)	100%		80%		100%		80%	
* NORM	1		X	x	500	150	400	120	750	75	600	60
	2+	X			600	200	480	160	900	100	720	80
* 70%	1				350	105	280	84	525	53	420	42
	2+				420	140	336	112	630	70	504	56
Mid-1AM		70	30	16								
1AM-2AM		44	17	8								
2AM-3AM		35	13	8								
3AM-4AM		35	13	8								
4AM-5AM		61	22	19								
5AM-6AM		166	61	48								x
6AM-7AM		319	4	58								
7AM-8AM		598*	42	189	x	x	x	x	x	x	x	x
8AM-9AM		637*	49	208	x	x	x	x	x	x	x	x
9AM-10AM		483	72	203		x	x	x		x		x
10AM-11AM		506	80	208		x	x	x		x		x
11AM-NOON		568	94	282		x	x	x		x		x
NOON-1PM		670	107	351	x	x	x	x		x		x
1PM-2PM		649	82	333	x	x	x	x		x		x
2PM-3PM		629	91	331	x	x	x	x		x		x
3PM-4PM		640	97	370	x	x	x	x		x		x
4PM-5PM		671*	102	341	x	x	x	x	x	x	x	x
5PM-6PM		619*	69	301	x	x	x	x	x	x	x	x
6PM-7PM		502	54	214		x	x	x		x		x
7PM-8PM		394	221	130		x		x		x		x
8PM-9PM		333	186	111		x		x		x		x
9PM-10PM		263	139	79				x		x		x
10PM-11PM		175	87	45						x		x
11PM-MID		123	56	32								
HOURS MET					8		12		4		4	
CRITERIA MET					Yes		Yes		No		No	

CONDITION IS DETERMINED BY ENVIROMENT: USE 70% VALUES IF 85 PERCENTILE SPEED EXCEEDS 40 MPH ON THE MAJOR APPROACH OR IF LOCATION IS IN THE BUILT-UP AREA OF AN ISOLATED COMMUNITY WITH A POPULATION OF LESS THAN 10,000.

Highlighted Cells Adjusted to Reflect Regular Enrollment at SSU